

## 1. ECONOMIC ASSUMPTIONS

### Introduction

A year ago, the two-year old recovery from the 1990-91 recession was still very fragile; now it is secure. This transformation was the result of a series of corrective actions taken by the private and public sectors. Households reduced their share of disposable income needed to service outstanding debt. Businesses improved their balance sheets by relying on equity rather than debt financing. In the construction industry, the overhang of excess office space was reduced substantially.

But most importantly, the Federal Government seriously addressed its own deficit problem. Congress enacted the Administration's deficit reduction plan, committed itself to follow with further cuts in health care costs and refocused spending priorities on productivity-enhancing investment.

The return to fiscal responsibility contributed to a fall of one percentage point in long-term interest rates between the election in November 1992 and the end of 1993. Even though they increased slightly in the closing months of the year, long-term interest rates in the fourth quarter were the lowest in over two decades. Falling rates stimulated key interest-sensitive sectors, pushed the stock market to record highs and reduced the debt servicing costs of governments, households and businesses.

By the second half of 1993, households and businesses were willing and able to undertake the investment spending that produces self-sustaining growth. Business and consumer confidence improved noticeably as sales picked up, orders increased, payrolls expanded and incomes rose. Even though the pace of economic activity quickened during 1993 and the unemployment rate declined steadily, inflation remained well under control. Thus, as 1994 begins, the essential elements for sustained, noninflationary growth are in place.

### Signs of a Secure Expansion

The favorable trends evident in product and labor markets last year suggest that the economy in 1994—and the five years beyond—will be healthier than it has been during the past half dozen years.

- Real GDP growth was faster in each successive quarter of 1993, reaching an estimated 4-1/2 percent annual rate in the final quarter. The acceleration was achieved through faster growth of spending on the investment components of GDP (consumer durables, housing and business equipment) rather than inventory accumulation or foreign trade.
- To meet growing demand, businesses both lengthened the workweek and increased their hiring. In

the fourth quarter, the manufacturing workweek set a record high for the post-World War II period; factory overtime reached the highest level since record keeping began in 1956; and factories increased their payrolls by 40,000 following seven consecutive months of reductions. In addition to the manufacturing sector, the construction industry added significantly to its payrolls in the fourth quarter and private sector service jobs continued to grow.

- The unemployment rate in December was 6.4 percent, down from 7.3 percent a year earlier. All major demographic groups experienced substantial unemployment rate declines during 1993.
- The Consumer Price Index (CPI) rose just 2.7 percent during 1993; the producer price index, a mere 0.2 percent. The reduction of inflation was broadly based; even the medical component of the CPI slowed last year. In addition, energy prices fell near the end of 1993. Faster growth of productivity in the second half of the year helped restrain inflation by providing an offset to rising labor compensation.

There were important restraints on growth during 1993, some of which will continue during 1994, and perhaps even beyond.

- On the domestic side, the shift from defense to nondefense priorities in the post-Cold War world has caused a sharp retrenchment by defense-related industries. During 1993, industries with 50 percent or more of their output geared to defense reduced their payrolls by 140,000, about the same as in 1992. At the state and local government level, fiscal pressures have curtailed hiring and spending, although these pressures might ease as a growing economy boosts tax revenues. In the construction sector, investment in new office buildings and multifamily rental housing was depressed in 1993 by the high vacancy rates of recent years. These rates, however, came down during 1993, suggesting a turnaround may be in the offing.
- Abroad, recessions in Europe and Japan contributed to a widening of the U.S. trade deficit last year, and a further deterioration is probable this year. During 1993, industries with 20 percent or more of their employment directly or indirectly tied to exports lost 120,000 jobs, considerably less than the 230,000 of 1992.
- Finally, the same competition from foreign and domestic firms that helps hold inflation in check will maintain pressure on U.S. companies to control costs by downsizing their workforces wherever feasible.

In the view of the Administration, and most private sector forecasters, however, the growth-promoting trends in the economy far outweigh the restraining ones. If the Congress delivers on its commitment to fiscal responsibility and the Federal Reserve continues to provide sufficient growth of the monetary aggregates to sustain the expansion, the economic future will be brighter than it has been in many years.

### Economic Assumptions

The Administration's economic assumptions developed in early December 1993 project a continuation of the trends evident in 1993: real economic growth sufficiently strong to lower unemployment gradually without reigniting inflation. (See Table 1-1 for details.)

- Between the fourth quarter of 1993 and the fourth quarter of 1994, real GDP is expected to increase 3.0 percent. From 1995 through 1999, the growth rate slows progressively to 2.5 percent, close to the estimate of potential growth.
- The unemployment rate is expected to decline 0.3 percentage point in 1994. Further decreases of about this magnitude are projected each year through 1998, at which time the unemployment

rate is projected to be close to the noninflationary unemployment rate.<sup>1</sup>

- Inflation, as measured by the Consumer Price Index, is projected to be 3.0 percent during 1994, compared with 2.7 percent during 1993. As the slack in labor and product markets is taken up, the inflation rate is assumed to edge up slightly, leveling off at 3.4 percent per year during 1997-1999.
- Short-term interest rates are projected to rise moderately from their exceptionally low current levels as the economy expands, while long-term rates are projected to remain unchanged at their levels at the end of 1993.

Data that became available after these assumptions were completed suggest that real growth in the fourth quarter of 1993 was stronger than anticipated, while unemployment, inflation and interest rates were lower. Economic assumptions updated for these recent developments would raise the level of both real and nominal GDP by about 0.2 percent each year 1994-1999, but

<sup>1</sup> Because of a major revision of the monthly labor force questionnaire beginning in January 1994, there is likely to be a noticeable break in the official unemployment rate beginning with 1994. Table 1-1 shows an unemployment rate projection consistent with the historical data through 1993. The unemployment rate based on the revised questionnaire might be about one-half percentage point higher than this.

TABLE 1-1. ECONOMIC ASSUMPTIONS<sup>1</sup>  
(Calendar years; dollar amounts in billions)

	Actual 1992	Projections							
		1993	1994	1995	1996	1997	1998	1999	
<b>Gross Domestic Product (GDP):</b>									
Levels, dollar amounts in billions:									
Current dollars .....	6,038	6,371	6,736	7,118	7,522	7,950	8,400	8,870	
Constant (1987) dollars .....	4,986	5,126	5,284	5,433	5,579	5,725	5,873	6,021	
Implicit price deflator (1987 = 100), annual average .....	121.1	124.3	127.5	131.0	134.8	138.9	143.0	147.3	
Percent change, fourth quarter over fourth quarter:									
Current dollars .....	6.7	5.0	5.8	5.6	5.7	5.7	5.7	5.6	
Constant (1987) dollars .....	3.9	2.3	3.0	2.7	2.7	2.6	2.6	2.5	
Implicit price deflator (1987 = 100) .....	2.8	2.6	2.7	2.8	2.9	3.0	3.0	3.0	
Percent change, year over year:									
Current dollars .....	5.5	5.5	5.7	5.7	5.7	5.7	5.7	5.6	
Constant (1987) dollars .....	2.6	2.8	3.1	2.8	2.7	2.6	2.6	2.5	
Implicit price deflator (1987 = 100) .....	2.9	2.6	2.6	2.8	2.9	3.0	3.0	3.0	
<b>Incomes, billions of current dollars:</b>									
Personal income .....	5,145	5,385	5,691	6,016	6,365	6,746	7,148	7,551	
Wages and salaries <sup>2</sup> .....	2,973	3,083	3,261	3,442	3,636	3,849	4,071	4,293	
Corporate profits before tax .....	395	447	508	531	555	573	595	631	
<b>Consumer Price Index (all urban):<sup>3</sup></b>									
Level (1982-84 = 100), annual average .....	140.3	144.5	148.6	153.3	158.3	163.6	169.2	174.9	
Percent change, fourth quarter over fourth quarter .....	3.1	2.8	3.0	3.2	3.3	3.4	3.4	3.4	
Percent change, year over year .....	3.0	3.0	2.8	3.2	3.3	3.3	3.4	3.4	
<b>Unemployment rate, civilian, percent:<sup>4</sup></b>									
Fourth quarter level .....	7.3	6.7	6.4	6.0	5.8	5.6	5.5	5.5	
Annual average .....	7.4	6.8	6.5	6.1	5.9	5.7	5.5	5.5	
Federal pay raises, January, percent <sup>5</sup> .....	4.2	3.7	.....	1.6	2.2	2.5	2.5	2.5	
<b>Interest rates, percent:</b>									
91-day Treasury bills <sup>6</sup> .....	3.5	3.0	3.4	3.8	4.1	4.4	4.4	4.4	
10-year Treasury notes .....	7.0	5.9	5.8	5.8	5.8	5.8	5.8	5.8	

<sup>1</sup> Based on information available as of December 1993.

<sup>2</sup> Pre-health care reform. Reform is assumed to increase wages and salaries by \$23 billion in 1997, \$35 billion in 1998 and \$47 billion in 1999.

<sup>3</sup> CPI for all urban consumers.

<sup>4</sup> Pre-1994 basis. The introduction of a new labor force questionnaire in January 1994 may result in higher unemployment rates than those shown in the table.

<sup>5</sup> In January 1994 there was a 2.2% pay raise for military personnel.

<sup>6</sup> Average rate (bank discount basis) on new issues within period.

## 1. ECONOMIC ASSUMPTIONS

**TABLE 1-2. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 1994 AND 1995 BUDGETS**  
 (Calendar years; dollar amounts in billions)

	1993	1994	1995	1996	1997	1998
Percent increase:						
Nominal GDP:						
1994 budget assumptions <sup>1</sup> .....	6,348	6,692	7,046	7,397	7,740	8,070
1995 budget assumptions .....	6,371	6,736	7,118	7,522	7,950	8,400
Real GDP (percent change): <sup>2</sup>						
1994 budget assumptions .....	2.8	3.0	2.8	2.6	2.2	1.8
1995 budget assumptions .....	2.3	3.0	2.7	2.7	2.6	2.6
GDP deflator (percent change): <sup>2</sup>						
1994 budget assumptions .....	2.5	2.4	2.3	2.2	2.2	2.2
1995 budget assumptions .....	2.6	2.7	2.8	2.9	3.0	3.0
Consumer Price Index (percent change): <sup>2</sup>						
1994 budget assumptions .....	2.8	2.7	2.7	2.7	2.7	2.7
1995 budget assumptions .....	2.8	3.0	3.2	3.3	3.4	3.4
Civilian unemployment rate (percent): <sup>3</sup>						
1994 budget assumptions .....	7.1	6.6	6.2	6.0	5.8	5.7
1995 budget assumptions .....	6.8	6.5	6.1	5.9	5.7	5.5
91-day Treasury bill rate (percent):						
1994 budget assumptions .....	3.2	3.7	4.3	4.7	4.8	4.9
1995 budget assumptions .....	3.0	3.4	3.8	4.1	4.4	4.4
10-year Treasury note rate (percent):						
1994 budget assumptions .....	6.7	6.6	6.6	6.5	6.5	6.4
1995 budget assumptions .....	5.9	5.8	5.8	5.8	5.8	5.8

<sup>1</sup>Adjusted for August 1993 revisions.<sup>2</sup>Fourth quarter to fourth quarter.<sup>3</sup>Pre-1994 basis.

would not change the growth rates shown in Table 1-1. The update would also reduce the unemployment rate by one or two tenths in 1994–1997 and lower the ten-year Treasury note by one-tenth percentage point through 1999. These revisions are included in the Administration assumptions published in the Council of Economic Advisors, *Economic Report of the President*, 1994. The changes would reduce the deficits for 1995–1999 by \$5–6 billion a year compared to the deficits estimated using Table 1-1 assumptions.

The economic assumptions presume enactment of the Administration's budget proposals. The Administration's health care reform proposal was also taken into account in framing them. While there are likely to be important sectoral effects from health care reform, these are expected to be largely offsetting at the level of the economy as a whole. Thus, the projections of nominal and real GDP, the GDP implicit price deflator, the overall CPI, unemployment and interest rates shown in Table 1-1 are assumed to be unaffected.<sup>2</sup>

### Impact of Changes in Economic Assumptions

The budget for 1994 was based on economic assumptions identical to those used by the Congressional Budget Office (CBO) at the time. In contrast, the 1995 budget is based on the Administration's own forecast and assumptions. While the rate of real growth projected for the next few years is similar, the 1995 budget assumptions show somewhat stronger real growth in the

out-years. They also show slightly higher inflation, and lower interest rates (the latter particularly reflecting the experience of this past year).

The changes in economic assumptions have significant effects on the budget outlook. Higher real growth and inflation rates both contribute to raising estimates of receipts. The higher inflation, however, also increases estimates of outlays for programs such as social security, the benefits for which rise automatically each year due to cost-of-living adjustments. Lower interest rates reduce estimated outlays for payment of interest on the public debt. The changes in economic assumptions since last year's budget lower the 1994 deficit by \$5.5 billion while the 1998 deficit is reduced by \$40.6 billion (Table 1-3).

### Omnibus Trade and Competitiveness Act of 1988

As required by the Omnibus Trade and Competitiveness Act of 1988, Table 1-4 shows estimates for economic variables related to saving, investment, and foreign trade consistent with the economic assumptions. The merchandise trade and current account balances deteriorated in fiscal year 1993, as growth in U.S. exports was restrained by recessions in Europe and Japan. The continued faster rate of growth in the United States than abroad is likely to further widen our external deficits.

Net private investment in the United States is projected to increase substantially as the economy expands. The sources of finance for the increased private investment are the substantial decline in the Federal deficit plus the larger inflow of foreign capital. Private domestic saving is expected to change little through 1995.

The Act requires information on the amount of borrowing by the Federal Government in private credit

<sup>2</sup>The medical component of the CPI is expected to rise more slowly as a result of health care reform. By 1999, when the reform is fully implemented, medical inflation is assumed to be one percentage point higher than the overall CPI, compared with 2 percentage points higher in a baseline that excludes health care reform. This difference is assumed to be offset by differences in inflation outside the medical sector so that the overall rate of inflation is the same for baseline and policy estimates. See Chapter 17, "Current Services Estimates."

**TABLE 1-3. EFFECTS ON THE BUDGET OF CHANGE IN ECONOMIC ASSUMPTIONS SINCE LAST YEAR**  
(In billions of dollars)

	1994	1995	1996	1997	1998
<b>Budget totals under 1994 budget economic assumptions and 1995 budget policies:</b>					
Receipts .....	1,249.5	1,352.0	1,425.4	1,492.1	1,555.1
Outlays .....	1,489.7	1,529.4	1,609.3	1,701.1	1,786.2
Deficit (-) .....	-240.2	-177.4	-183.9	-209.0	-231.1
<b>Changes due to economic assumptions:</b>					
Receipts .....	-0.4	+1.8	+1.9	+13.0	+31.8
Outlays:					
Inflation, mandatory programs .....	-0.7	+0.7	+3.8	+9.0	+15.6
Unemployment .....	-0.8	-0.9	-0.9	0.0	-2.1
Interest rates .....	-4.4	-9.8	-14.2	-16.5	-18.5
Interest on changes in borrowing .....	-*	-0.5	-1.1	-2.0	-3.7
Total, outlays .....	-5.9	-10.5	-12.4	-9.6	-8.7
Decrease in deficit .....	5.5	12.3	14.3	22.6	40.6
<b>Budget totals under 1995 budget economic assumptions and policies:</b>					
Receipts .....	1,249.1	1,353.8	1,427.3	1,505.1	1,586.9
Outlays .....	1,483.8	1,518.9	1,596.9	1,691.4	1,777.4
Deficit (-) .....	-234.8	-165.1	-169.6	-186.4	-190.5

**TABLE 1-4. SAVING, INVESTMENT, AND TRADE BALANCE**  
(Fiscal years; in billions of dollars)

	1993 actual	1995 estimate
Current account .....	-101	-145 to -105
Merchandise trade balance .....	-123	-175 to -135
Net foreign investment .....	-89	-140 to -100
Net domestic saving (excluding Federal saving) <sup>1</sup> .....	332	325 to 365
Net private domestic investment .....	203	280 to 320

<sup>1</sup>Defined for purposes of Public Law 100-418 as the sum of private saving and the surpluses of State and local governments. All series are based on National Income and Product Accounts except for the current account balance.

markets. This is presented in Chapter 13, "Federal Borrowing and Debt."

It is difficult to gauge with precision the effect of Federal Government borrowing from the public on interest rates and exchange rates, as required by the Act. Both are influenced by many factors besides Government borrowing in a complicated process involving supply and demand for credit and perceptions of fiscal and monetary policy here and abroad.

#### Structural vs. Cyclical Deficit

When there is slack in the economy, receipts are lower than they would be if resources were fully employed, and outlays for unemployment-sensitive programs (such as unemployment compensation and food

stamps) are higher. As a result, the deficit is higher than it would be at full employment. The portion of the deficit that can be traced to such factors is called the cyclical deficit. The remainder, the portion that would remain at full employment (consistent with a 5.5 percent unemployment rate), is called the structural deficit.

Changes in the structural deficit give a better picture of the impact of budget policy on the economy than the unadjusted deficit affords. The structural deficit also gives a clearer picture of the deficit problem that fiscal policy must address, since this part of the deficit will persist even when the economy has fully recovered, unless policy changes.

**TABLE 1-5. ADJUSTED STRUCTURAL DEFICIT**  
(In billions of dollars)

	1992	1993	1994	1995	1996	1997	1998	1999
Actual deficit (unadjusted) .....	290.4	254.7	234.8	165.1	169.6	186.4	190.5	181.1
Cyclical component .....	61.8	52.0	42.4	30.3	21.1	15.1	7.6	4.0
Structural deficit .....	228.6	202.6	192.4	134.9	148.5	171.3	182.9	177.1
Deposit insurance <sup>1</sup> .....	2.4	28.0	3.3	11.1	11.3	6.1	4.9	3.3
Adjusted structural deficit .....	231.0	230.6	195.7	146.0	159.8	177.4	187.8	180.4

<sup>1</sup>For 1992 includes allied contributions for Desert Storm.

## 1. ECONOMIC ASSUMPTIONS

In recent years, outlays for deposit insurance (mainly for resolving insolvencies in the savings and loan industry) have had substantial impacts on the actual deficit. However, these outlays have little current impact on economic performance, because the Federal liability for S&L insolvencies occurred years ago. Furthermore, these are in the nature of one-time expenditures that will not be repeated. Indeed, future outlays for this purpose are expected to be negative as the Government sells the assets acquired in shutting down insolvent S&Ls. It has therefore become customary to remove deposit insurance outlays as well as the cyclical component from the actual deficit to compute the adjusted structural deficit. This is shown in Table 1-5.

The downward trend of the adjusted structural deficit over the next several years measures real progress in correcting the fiscal imbalance inherited by this Administration. Some period of restrictive policy was unavoidable if the actual deficit was to be reduced from the unsustainably high levels of the past decade. The decline in the level of the structural deficit is neither so pronounced nor abrupt as to pose a threat to sustained moderate economic growth. In particular, it is consistent with the economic assumptions underlying the budget, presented above.

#### Sensitivity of the Budget to Economic Assumptions

Both receipts and outlays are affected by changes in economic conditions. This sensitivity seriously complicates budget planning because errors in economic assumptions lead to errors in the budget projections. It is therefore useful to examine the implications of alternative economic assumptions.

Many of the budgetary effects of changes in economic assumptions are fairly predictable, and a set of rules of thumb embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the deficit. The final table summarizes these rules of thumb.

Economic variables that affect the budget do not usually change independently of one another. Employment and output tend to move together in the short run: a higher rate of real GDP growth is associated with declining unemployment, while weak or negative growth is accompanied by rising unemployment. In the long run, however, changes in the average rate of growth of real GDP are mainly due to changes in the rates of growth of productivity and labor supply, and are not associated with changes in the average rate of unemployment. Inflation and interest rates are also linked: a higher expected rate of inflation tends to increase interest rates, while lower expected inflation reduces rates. Changes in real GDP growth or inflation have a much greater cumulative effect on the budget over time if they are sustained for several years than if they occur for only one year.

The table shows that if real GDP growth is lower by one percentage point in calendar year 1994 and the unemployment rate rises by one-half percentage point,

the 1994 deficit would increase by \$7.5 billion. Receipts in 1994 would be lower by \$6.6 billion, and outlays would be higher by \$1.0 billion, primarily for unemployment-sensitive programs. If growth resumes at its previously assumed rate in 1995, the receipts shortfall would nonetheless grow further that year, to \$14.4 billion, and outlays would be increased by \$5.0 billion, raising the 1995 deficit by \$19.4 billion relative to the base case. The budget effects would continue to grow slightly in later years. The permanent change in the deficit is due to the permanent reduction in the level of real (and nominal) GDP and taxable incomes and the permanent increase in unemployment relative to the baseline economic path, even though the rate of real growth in calendar year 1995 and beyond is the same.

The budget effects grow much larger if the real growth rate is assumed to be one percentage point less in each year, 1994–1999, with the unemployment rate continuing to rise by one-half percentage point, relative to its base path, in each year. On these assumptions, the levels of real and nominal GDP would be below the base case by a cumulatively growing percentage. The deficit would be \$146.2 billion higher than under the base case by 1999.

The effects of slower productivity growth are shown in a third example, where real growth is one percentage point lower per year while the unemployment rate is unchanged. In this case, the estimated budget effects mount steadily over the years, but more slowly. The effect on the deficit reaches \$121.5 billion by 1999.

Joint changes in interest rates and inflation have a smaller effect on the deficit than equal percentage point changes in real GDP growth because their effects on receipts and outlays are substantially offsetting. An example is the effect of a one percentage point higher rate of inflation and one percentage point higher interest rates during calendar year 1994 only. In subsequent years, the price level and nominal GDP would be one percent higher than in the base case, but interest rates are assumed to return to their base levels. Outlays for 1994 rise by \$5.7 billion and receipts by \$7.3 billion, for a decrease of \$1.6 billion in the 1994 deficit. In 1995, outlays would be above the base by \$13.3 billion, due in part to lagged cost-of-living adjustments; receipts would rise \$15.4 billion above the base, however, resulting in a \$2.0 billion decrease in the deficit. In subsequent years, the amounts added to receipts would be larger than the additions to outlays.

If the rate of inflation and the level of interest rates are higher by one percentage point in all years, the price level and nominal GDP would rise by a cumulatively growing percentage above their base levels. In this case, the effects on receipts and outlays mount steadily in successive years, adding \$75.0 billion to outlays and \$98.7 billion to receipts in 1999, which reduces the 1999 deficit by \$23.6 billion.

The table also shows the interest rate and the inflation effects separately, and rules of thumb for the added

interest cost associated with higher or lower deficits (increased or reduced borrowing).

The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table. The impact of a one percentage point lower rate of inflation or higher real growth would have about the same magnitude as the effects shown in the table, but with the opposite sign.

These rules of thumb are computed while holding the income share composition of GDP constant; i.e., while assuming the same fractions of GDP go to wages and profits in all cases. Because different income components are subject to different taxes and tax rates, estimates of total receipts can be affected significantly by changing income shares. These relationships, however, have proved to be too complex to reduce to simple rules.

**TABLE 1-6. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS**  
(In billions of dollars)

Budget effect	1994	1995	1996	1997	1998	1999
<b>Real Growth and Employment</b>						
Effects of 1 percent lower real GDP growth in calendar year 1994 only, including higher unemployment: <sup>1</sup>						
Receipts .....	-6.6 1.0	-14.4 5.0	-16.8 6.5	-17.3 8.1	-18.0 9.9	-18.8 11.6
Deficit increase (+) .....	7.5	19.4	23.3	25.4	27.9	30.3
Effects of a sustained 1 percent lower annual real GDP growth rate during 1994-1999, including higher unemployment: <sup>1</sup>						
Receipts .....	-6.6 1.0	-21.3 6.9	-39.0 14.1	-58.0 21.9	-78.5 34.0	-100.8 45.3
Outlays .....	7.5	28.2	53.1	80.0	112.5	146.2
Deficit increase (+) .....	-6.6 0.1	-21.6 0.8	-40.1 2.4	-60.3 5.3	-82.4 9.4	-106.6 14.9
Effects of a sustained 1 percent lower annual real GDP growth rate during 1994-1999, with no change in unemployment:	6.7	22.4	42.5	65.5	91.7	121.5
<b>Inflation and Interest Rates</b>						
Effects of 1 percentage point higher rate of inflation and interest rates during calendar year 1994 only:						
Receipts .....	7.3 5.7	15.4 13.3	16.0 10.9	15.4 9.4	16.2 9.2	17.0 9.4
Deficit increase (+) .....	-1.6	-2.0	-5.2	-6.0	-7.0	-7.6
Effects of a sustained 1 percentage point higher rate of inflation and interest rates during 1994-1999:						
Receipts .....	7.3 5.8	23.2 19.1	40.6 30.6	58.2 42.4	77.5 55.5	98.7 75.0
Outlays .....	-1.6	-4.1	-10.0	-15.8	-22.0	-23.6
Deficit increase (+) .....	0.7 5.3	1.8 15.2	2.4 21.3	2.7 26.7	2.9 31.9	3.2 44.3
Effects of a sustained 1 percentage point higher interest rate during 1994-1999 (no inflation change):	4.6	13.4	18.9	24.0	29.0	41.2
Receipts .....	6.6 0.5	21.4 3.9	38.2 9.3	55.5 15.7	74.6 23.6	95.5 30.7
Outlays .....	-6.2	-17.5	-28.9	-39.8	-50.9	-64.8
<b>Interest Cost of Higher Federal Borrowing</b>						
Effect of \$100 billion additional borrowing during 1994 .....	2.2	4.6	5.0	5.5	6.0	6.3

<sup>1</sup> The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

### Introduction

This chapter presents a framework for describing the financial condition of the Federal Government and its performance as a steward of publicly-owned resources. Although the data are similar in some ways, there are basic conceptual differences that distinguish the tables below from a business balance sheet. The Government's sovereign powers have no counterparts in the business world, and its resources and responsibilities extend beyond the types of assets and liabilities found on a conventional balance sheet. For this reason, it is not possible to judge how well the Government is discharging its stewardship obligations simply from an examination of its own books. A review of the Government's contribution to national well-being and security is also needed.

The differences between Government and business accounting, together with serious limitations in the available data, argue for caution in interpreting the material presented below. Conclusions based on this presentation are necessarily tentative and subject to future revision as the estimating methods are improved and better data become available. The presentation consists of three components:

- The first, summarized in Table 2-1, shows Federal assets and Federal liabilities resulting from past Government operations. In this table, what the Government owns and what it owes are defined relatively narrowly. This table corresponds most closely to a corporate balance sheet.
- The second component, as reflected in Chart 2-2, consists of Federal budget projections. The projections indicate possible future paths for the balance between Federal resources and responsibilities and show how policy changes can affect that balance. In this section, Table 2-2 also shows the actuarial balances for the major social insurance programs and how they have changed in the past year.
- The final component consists of various ways in which Federal activities contribute to social and economic well-being. Table 2-3 shows how Federal investments have contributed to national wealth. In a future development, this framework could be expanded to include tables showing Government performance measures including broad indicators of social and economic well-being.

The Federal Government does not have a single bottom line that would reveal its financial status in a glance, but the tables and charts shown here can contribute to a balanced view of that condition and the Government's stewardship of its resources. The Government's liabilities exceed its owned assets and that gap

has widened markedly over the last decade or more. The President's economic plan should narrow the gap as a result of deficit reduction, national health reform, and expanded Federal investments.

### Relationship with FASAB Objectives

The framework presented here meets one of the four objectives<sup>1</sup> of Federal financial reporting recommended by the Federal Accounting Standards Advisory Board and adopted for use by the Federal Government in September 1993. This Stewardship Objective says:

Federal financial reporting should assist report users in assessing the impact on the country of the Government's operations and investments for the period and how, as a result, the Government's and the Nation's financial conditions have changed and may change in the future. Federal financial reporting should provide information that helps the reader to determine:

- 3a. Whether the Government's financial position improved or deteriorated over the period.
- 3b. Whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due.
- 3c. Whether Government operations have contributed to the Nation's current and future well-being.

The Board is in the process of developing guidance as to the specific displays that would meet this Objective and the accounting standards for use in such statements and schedules. This experimental presentation explores one possible approach for meeting the Objective at the Governmentwide level.

### What Can Be Learned from a Balance Sheet Approach

The budget is an essential tool for allocating resources within the Federal Government, but the standard budget presentation with its focus on annual outlays, receipts, and the deficit, does not provide sufficient information for a full analysis of the Government's financial and investment decisions. Additional information about the stocks of Federal assets and liabilities is needed as well. It is also important to examine the effects of Government decisions on national wealth and well-being. Measurements that correct for inflation are also useful. The framework presented here would fill some of these needs.

Assessing the financial condition of the Government is more complicated than drawing up a balance sheet for a business enterprise. The Government's sovereign powers to tax, regulate commerce, and set monetary policy give it resources that no private enterprise possesses. Although these resources are not "assets" in any conventional sense, they need to be considered in

<sup>1</sup>Objectives of Federal Financial Reporting. Statement of Federal Financial Accounting Concepts Number 1, September 2, 1993. The other three Objectives relate to budgetary integrity, operating performance, and systems and controls.

## Figure 2-1 - A BALANCE SHEET PRESENTATION FOR THE FEDERAL GOVERNMENT

<b>ASSETS/ RESOURCES</b>		<b>LIABILITIES/ RESPONSIBILITIES</b>
<b>Federal Assets</b>		<b>Federal Liabilities</b>
Financial Assets		Financial Liabilities
Gold and Foreign Exchange		Currency and Bank Reserves
Other Monetary Assets		Debt Held by the Public
Mortgages and Other Loans		Miscellaneous
Less Expected Loan Losses		Guarantees and Insurance Liabilities
Other Financial Assets		Deposit Insurance
Physical Assets		Pension Benefit Guarantees
Fixed Reproducible Capital		Loan Guarantees
Defense		Other Insurance
Nondefense		Federal Pension Liabilities
Inventories		Net Balance
Non-reproducible Capital		
Land		
Mineral Rights		
<b>Resources/Receipts</b>		<b>Responsibilities/Outlays</b>
Projected Receipts		Discretionary Outlays
Addendum: Real GDP Projections		Mandatory Outlays
		Social Security
		Health Programs
		Other Programs
		Net Interest
		Deficit
<b>National Assets/Resources</b>		<b>National Needs/Conditions</b>
Federally Owned Physical Assets		Indicators of economic, social,
State & Local Physical Assets		educational, and environmental
Federal Contribution		conditions to be used as a guide to
Privately Owned Physical Assets		Government investment and
Education Capital		management.
Federal Contribution		
R&D Capital		
Federal Contribution		

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## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

any complete review of the Government's financial condition.

Similar differences exist on the liabilities side. Some Government obligations have clear counterparts in the business world. For example, Treasury notes are similar to corporate bonds and clearly belong on a Government balance sheet. But the Government has other obligations with a financial dimension for which there are no clear analogues in business accounting. For example, the Government's obligation to promote the general welfare has led in the twentieth century to the establishment of a broad array of social welfare programs. It is reasonable to expect that these programs will continue in the future, and that they will require future Federal funding. Does this make them a liability?

Such obligations are different from the legally binding liabilities normally found on a business balance sheet, but they can have implications for the Treasury that are similar to a liability. If such obligations were ignored, a Government balance sheet would provide an incomplete picture of the Government's financial condition, but it is hard to know where to draw the line between obligations that belong on and off the balance sheet once the analogy with a business liability is abandoned.

Further complicating the issue, almost all of the broader Federal resources and responsibilities are subject to change through the political process, and future decisions by Congress and the President could alter

their value. If they were included in a balance sheet with Government debt, it would be very difficult to estimate the size of the Government's liabilities.

In the presentation that follows, these issues are resolved by presenting a series of tables and charts no single one of which is "the balance sheet." The schematic diagram, Chart 2-1, shows how they fit together. The tables and charts should be viewed as an ensemble. The main elements of each can be grouped together in two broad categories, either as assets/resources or as liabilities/responsibilities. When combined with appropriate data, this framework permits a balanced assessment of Federal stewardship.

- Reading down the left-hand side of the diagram shows the range of Federal resources, including assets the Government owns, tax receipts it can expect to collect, and national wealth that provides the base for Government revenues.
- Reading down the right-hand side reveals the full range of Federal obligations and responsibilities, beginning with Government's acknowledged liabilities, such as the debt held by the public, and going on to include future budget outlays. This column potentially would include a set of indicators highlighting areas where Government activity might require adjustment either through new investment or through reductions or reallocations of existing resources.

### THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2-1 presents data on the value of Federal assets and liabilities summarizing what the Government owns and what it owes as a result of its past operations. The values are measured in terms of constant 1993 dollars to remove the distorting effects of inflation on the comparisons across time.

For more than three decades, the Government's liabilities have exceeded the value of its assets. In the 1960s, however, the disparity was small and for many years it deteriorated only gradually. In the late 1970s a speculative run-up in the prices of oil, gold, and other real assets boosted the value of Federal assets. Temporarily, the balance of Federal assets and liabilities improved.<sup>2</sup> Following 1981, however, there was an especially large decline in the net balance which has continued.

The sharp decline in net Federal assets was due in large part to the Federal budget deficits of the 1980s, which led to a rapid increase in Federal debt, as well as to the declining market value of some Federal assets. Currently, the net balance of assets and liabilities is about -\$2,800 billion or almost -\$11,000 per capita.

#### Assets

The assets in Table 2-1 reflect a complete listing of physical and financial resources owned by the Federal Government. They correspond to the items that would appear on a Federal balance sheet, but they do not constitute an exhaustive catalogue of Federal resources. For example, the Government's most important financial resource, its ability to tax, is not reflected.

*Financial Assets:* At the end of 1993, the Federal Government's holdings of financial assets amounted to about \$570 billion. Government loans (measured in constant dollars) reached a peak in the mid-1980s. Since then, Federal loans have declined. Government-owned mortgages expanded during the savings and loan crisis, and have declined sharply over the last two years.

The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future loan losses is about \$58 billion as of 1993. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth. These estimated losses increased by \$18 billion in real terms between 1990 and 1993.

Over time, variations in the price of gold have accounted for major swings in this category. Since 1980, gold prices have fallen by 80 percent and the real value

<sup>2</sup>This temporary improvement highlights the importance of the other tables in this presentation. What was good for the Federal Government as an asset holder was not necessarily favorable to the economy. The decline in inflation, which reversed the speculative runup in gold and other commodity prices, reversed the improvement in the Federal balance sheet while improving national economic performance.

TABLE 2-1. GOVERNMENT ASSETS AND LIABILITIES\*

(As of the end of the fiscal year, in billions of 1993 dollars)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993
<b>ASSETS</b>										
Financial assets:										
Gold and foreign exchange .....	101	70	59	130	318	154	194	176	173	171
Other monetary assets .....	38	54	32	14	37	23	29	21	37	37
Mortgages and other loans .....	126	159	202	200	270	327	263	266	245	219
Less expected loan losses .....	-2	-6	-10	-20	-37	-36	-40	-46	-48	-58
Other financial assets .....	59	78	63	63	81	104	157	185	213	190
Subtotal .....	323	355	346	387	669	571	603	604	620	559
Physical assets:										
Fixed reproducible capital:										
Defense .....	853	856	839	674	569	667	735	749	749	747
Nondefense .....	151	178	189	213	241	239	243	240	239	240
Inventories .....	260	221	203	178	214	242	209	191	177	163
Nonreproducible capital:										
Land .....	84	116	144	224	284	305	301	272	243	222
Mineral rights .....	302	279	230	320	581	655	436	412	389	370
Subtotal .....	1,650	1,649	1,605	1,610	1,889	2,108	1,924	1,865	1,798	1,742
Total assets .....	1,973	2,005	1,951	1,996	2,558	2,679	2,527	2,469	2,418	2,301
<b>LIABILITIES</b>										
Financial liabilities:										
Currency and bank reserves .....	227	245	268	270	271	284	341	344	360	385
Debt held by the public .....	985	957	800	777	989	1,736	2,369	2,552	2,785	2,922
Miscellaneous .....	60	60	57	52	59	66	91	83	72	68
Subtotal .....	1,272	1,262	1,125	1,099	1,318	2,086	2,802	2,980	3,217	3,375
Insurance liabilities:										
Deposit insurance .....	.....	.....	.....	.....	2	8	108	84	77	53
Pension benefit guarantees .....	.....	.....	.....	41	29	39	57	59	62	75
Loan guarantees .....	.....	1	6	17	31	26	38	60	70	27
Other insurance .....	31	27	21	19	25	15	18	17	17	23
Subtotal .....	31	29	27	77	87	90	221	220	226	178
Federal employee pension liabilities .....	739	923	1,078	1,207	1,656	1,625	1,550	1,538	1,547	1,577
Total liabilities .....	2,042	2,214	2,230	2,383	3,062	3,801	4,572	4,738	4,990	5,130
Balance .....	-69	-209	-279	-387	-504	-1,122	-2,045	-2,270	-2,572	-2,829
Per capita (in 1993 dollars) .....	-382	-1,077	-1,361	-1,790	-2,206	-4,692	-8,161	-8,957	-10,039	-10,925

\*This table shows assets and liabilities for the Government as a whole, including the Federal Reserve System. Therefore, it does not break out separately the assets held in certain Government accounts, such as social security, that are the obligation of specific Government agencies. Estimates for 1993 are extrapolated in some cases.

of U.S. gold and foreign exchange holdings has dropped by about half.

**Fixed Reproducible Capital:** The Federal Government is a major investor in physical capital. Government-owned stocks of fixed capital amounted to over \$1.0 trillion in 1993. About three-quarters of this capital is in the form of military equipment and structures. From 1960 to 1980, the net stock of defense capital fell as a share of GDP, but since 1980 the ratio has held steady at between 12 and 13 percent. The slowdown in defense purchases that followed the end of the Cold War has not yet had much effect on the accumulated net stock of fixed defense capital.

**Inventories:** The effects of the slowdown in defense purchases have been more noticeable for inventories. Data on Federal inventories are maintained by the Bureau of Economic Analysis, Department of Commerce. Since the late 1980s, Federal inventories have declined by about 20 percent, accounted for entirely by a drop in military stocks.

**Non-reproducible Capital:** The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings. Researchers in the private sector have estimated what they are worth, and these estimates are extrapolated in Table 2-1. Since the late 1980s, land values have fallen; oil prices have fluctuated but are lower now than three years ago. These shifts have pulled down the value of Federal land and mineral deposits.

**Total Assets:** The total real value of Government assets has declined somewhat over the last 10 years, principally because of declines in the real prices of gold, land, and minerals. At the end of 1993, the Government's holdings of all assets were worth about \$2.3 trillion.

### Liabilities

The liabilities shown in Table 2-1 are analogous to a business corporation's liabilities and include public

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

debt, trade credit, and pension obligations owed to Federal workers. Other Federal financial responsibilities, however, are not reflected in this table.

*Financial Liabilities:* These amounted to about \$3.4 trillion at the end of 1993. The largest component was the Federal debt held by the public, amounting to \$2.9 trillion. This measure of Federal debt is net of the holdings of the Federal Reserve System, which exceeded \$300 billion in 1993. The Federal Reserve is an independent agency, but it is part of the Federal Government, and its assets and liabilities are included here in the Federal totals.

In addition to debt held by the public, the Government's financial liabilities include \$390 billion in currency and bank reserves, which are mainly obligations of the Federal Reserve System, and about \$70 billion in miscellaneous liabilities.

*Guarantees and Insurance Liabilities:* The Federal Government has contingent liabilities arising from loan guarantees and insurance programs. When the Government guarantees a loan or offers insurance, the initial outlays may be small or even negative, if a fee is charged, but the risk of future outlays can be large. The deposit insurance programs have experienced large losses recently following many years in which these programs had no budgetary cost in excess of premiums.

In the past, the budget did not recognize the risk of such future outlays, even when they were predictable. In the last few years, however, techniques have been developed which permit an estimate of the budgetary cost incurred from current commitments that risk future outlays. These estimates are reported in Table 2-1. They amounted to about \$180 billion in 1993.

*Federal Pension Liabilities:* The Federal Government owes pension benefits to its retired workers and to current employees who will eventually retire. The amount of these liabilities is large. As of 1992, the discounted present value of the benefits is estimated to have been around \$1.5 trillion. The estimate for 1993 is an extrapolation of the recent trend.<sup>3</sup>

### The Balance of Net Liabilities

The balance between Federal liabilities and Federal assets has deteriorated over the past decade at a rapid rate. In 1981, the negative balance was less than 10 percent of GDP. Currently, it is estimated to be over 40 percent. Although the Government need not maintain a positive balance, because the range of Government resources extends beyond the conventional assets shown in Table 2-1, continuation of this trend would be worrisome.

## THE BALANCE OF RESOURCES AND RESPONSIBILITIES

The data summarized in Table 2-1 are useful in showing some of the consequences of the Government's past policies, but the Government's continuing commitments to provide public services are not reflected in this table, nor can the Government's broader resources be displayed in a table limited to assets that it owns. A better way to examine the balance between future Government obligations and resources is a budget projection. Examples of such projections are summarized in Chart 2-2.

The Government's budget deficit is highlighted in this chart. Last year's budget agreement brings down the Federal deficit over the next few years. This will be a significant improvement, but permanent success in controlling the deficit will depend on health reform and its effectiveness in controlling Federal medical costs in the years after 1998. The initial estimates of the effect

of health reform suggest that significant deficit reduction is achievable by the end of the decade.

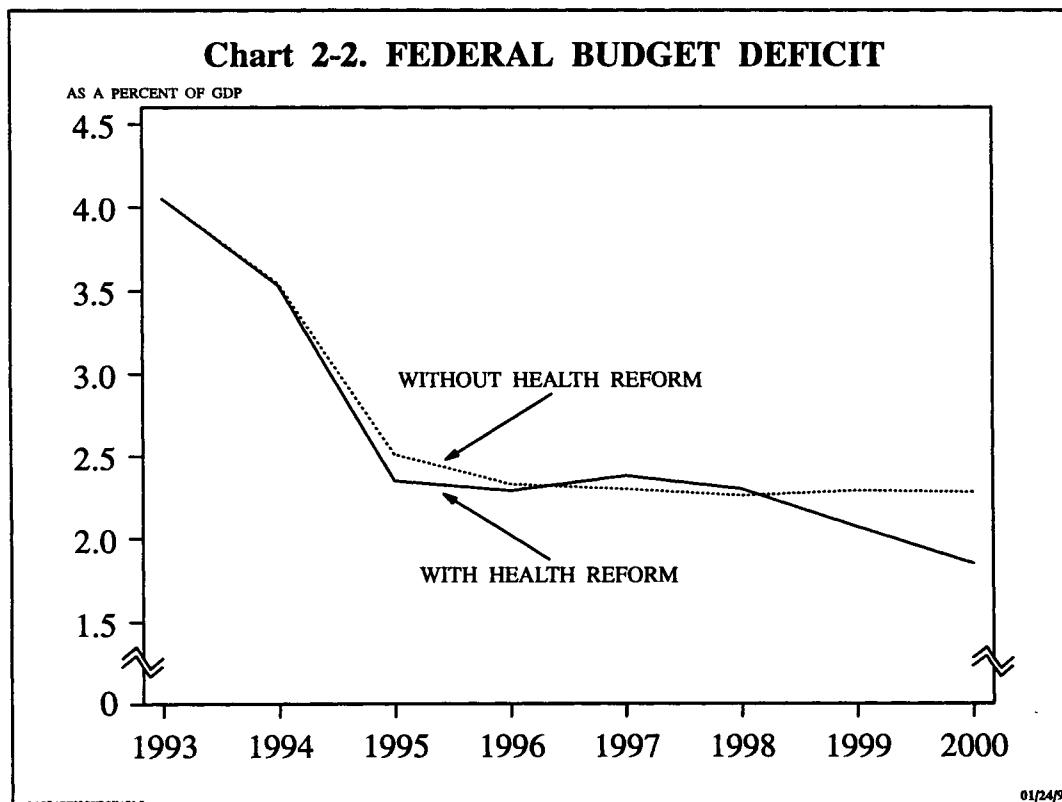
For the period beyond the year 2000, the budget outlook is highly uncertain. Demographic trends that will begin to assert themselves early in the next century promise to raise the Federal cost of social security and other benefits for the elderly. Future adjustments may be needed to cope with these responsibilities.

Some future claims on budgetary resources deserve special emphasis because of their importance in individual retirement planning. These claims are highlighted in Table 2-2. The Social Security Trustees present an annual report on the balance in the Social Security Trust Fund based on a 75-year projection of future costs and benefits. Table 2-2 shows how these projections changed between 1992 and 1993. The table also reports similar projections for the Medicare Trust Fund.

<sup>3</sup>These pension liabilities are expressed as the actuarial present value of benefits accrued-to-date based on past and projected salaries. In the version of this table published previously, this liability was based only on past salaries.

**TABLE 2-2. CHANGE IN 75-YEAR ACTUARIAL BALANCE FOR OASDI AND HI TRUST FUNDS  
(ALTERNATIVE II)**  
(As a percent of taxable payroll)

	OASI	DI	OASDI	HI
Actuarial balance in 1992 report .....	-1.01	-0.46	-1.46	-4.20
Changes in balance due to changes in:				
Valuation period .....	-0.05	0.00	-0.05	-0.12
Economic and demographic assumptions .....	0.09	0.01	0.10	0.09
Disability assumptions .....	0.00	-0.08	-0.08	.....
Revised base due to 1992 costs .....	.....	.....	.....	-0.52
Home health utilization .....	.....	.....	.....	-0.46
Other changes .....	0.00	0.03	0.03	0.10
Total changes .....	0.04	-0.04	0.00	-0.91
Actuarial balance in 1993 report .....	-0.97	-0.49	-1.46	-5.11



#### NATIONAL WEALTH AND FEDERAL INVESTMENTS

Unlike a private corporation, the Federal Government routinely invests in ways that do not add directly to its assets. For example, Federal grants are frequently used to fund capital projects that involve investment at the State or local level of government. Such investments are often valuable nationally, but they are not owned by the Federal Government.

The Federal Government also invests in education and R&D. These outlays contribute to future productivity and are in that sense analogous to an investment in physical capital. Indeed, economists have computed stocks of human and knowledge capital to reflect the

accumulation of such investments. Nonetheless, these capital stocks are not owned by the Federal Government, nor would they appear on a Federal balance sheet.

Table 2-3 presents a national balance sheet. It includes estimates of total national wealth classified in three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories, and these contributions are also shown in the table.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

**TABLE 2-3. NATIONAL WEALTH**  
(As of the end of the fiscal year, in trillions of 1993 dollars)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993
<b>ASSETS</b>										
Publicly owned physical assets:										
Structures and equipment .....	2.1	2.4	2.8	3.3	3.6	3.6	3.7	3.7	3.8	3.8
Federally owned or financed .....	1.1	1.2	1.3	1.3	1.3	1.4	1.5	1.5	1.5	1.5
Federally owned .....	1.0	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.0	1.0
Grants to state and local governments .....	0.1	0.2	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Funded by state and local governments .....	0.9	1.2	1.5	2.1	2.3	2.1	2.2	2.2	2.2	2.2
Other Federal assets .....	0.7	0.7	0.6	0.8	1.4	1.3	1.1	1.0	0.9	0.9
Subtotal .....	2.8	3.0	3.4	4.2	5.0	4.9	4.8	4.7	4.7	4.6
Privately owned physical assets:										
Reproducible assets .....	5.6	6.3	7.9	10.1	12.6	13.0	14.3	14.3	14.3	14.5
Residential structures .....	2.0	2.3	2.7	3.6	4.7	4.7	5.2	5.2	5.3	5.4
Nonresidential plant and equipment .....	2.0	2.3	3.0	3.9	4.9	5.3	5.7	5.7	5.7	5.7
Inventories .....	0.7	0.8	0.9	1.1	1.3	1.2	1.2	1.1	1.1	1.1
Consumer durables .....	0.9	1.0	1.3	1.4	1.7	1.8	2.2	2.2	2.3	2.3
Land .....	2.0	2.3	2.6	3.3	4.9	5.6	5.6	5.1	4.5	4.1
Subtotal .....	7.6	8.6	10.4	13.3	17.5	18.6	19.9	19.3	18.8	18.6
Education capital:										
Federally financed .....	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.7	0.7	0.8
Financed from other sources .....	6.3	8.0	10.5	11.8	14.5	17.3	22.0	23.0	24.2	25.5
Subtotal .....	6.3	8.2	10.7	12.1	14.9	17.9	22.7	23.7	24.9	26.3
Research and development capital:										
Federally financed R&D .....	0.2	0.3	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8
R&D Financed from other sources .....	0.1	0.2	0.3	0.4	0.4	0.6	0.8	0.8	0.8	0.8
Subtotal .....	0.3	0.5	0.7	0.9	1.0	1.2	1.5	1.5	1.6	1.6
Total assets .....	17.0	20.4	25.3	30.5	38.5	42.5	48.9	49.3	50.0	51.2
<b>LIABILITIES:</b>										
Net claims of foreigners on U.S. .....	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	0.3	0.4	0.5	0.6
Balance .....	17.2	20.6	25.6	30.7	38.9	42.7	48.6	48.9	49.5	50.6
Per capita (thousands of 1993 dollars) .....	95.0	106.0	124.8	142.3	170.4	178.8	193.7	192.9	193.3	195.3
<b>ADDENDA:</b>										
Total Federally funded capital .....	2.1	2.3	2.6	2.9	3.7	3.9	4.0	4.0	4.0	4.0
Percent of national wealth .....	12.2	11.2	10.2	9.5	9.4	9.1	8.2	8.1	8.0	7.9

Data in this table are especially uncertain, because of the assumptions needed to prepare the estimates. Overall, the Federal contribution to the current level of national wealth is about 8 percent. Chart 2-3 illustrates the relative contribution of different categories of wealth to the national total.

#### Physical Assets

These include stocks of plant and equipment, office buildings, residential structures, and government physical assets such as military hardware. Automobiles and consumer appliances are also included in this category. The total amount of such capital is vast, amounting to around \$23 trillion in 1993. By comparison GDP was only \$6 trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus \$0.6 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed about one-quarter of the physical capital held by other levels of government.

#### Education Capital

Economists have developed the concept of human capital to reflect the notion that individuals and society invest in people as well as in physical assets. Investment in education is a good example of how human capital is accumulated.

For this table an estimate has been made of the stock of capital represented by the Nation's investment in education. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over. The idea is to measure how much it would cost to reeducate the U.S. workforce at today's prices.

This is a crude measure, but it can provide a rough order of magnitude. According to this measure, the stock of education capital amounted to \$26 trillion in 1993, of which about 3 percent was financed by the Federal Government. The total exceeded the Nation's stock of physical capital. The main investors in education capital have been State and local governments, parents, and the students themselves who often forego earning opportunities in order to acquire education.

## Research and Development Capital

Research and development (R&D) can also be thought of as an investment, because R&D represents a current expenditure for which there is a prospect of future returns. After adjusting for depreciation, the flow of R&D investment can be added up to provide an estimate of the current R&D stock.<sup>4</sup> That stock is estimated to have been about \$1.6 trillion in 1993. Although this is a large amount of research, it is a relatively small portion of the total national wealth. About half of this stock was funded by the Federal Government.

## Liabilities

When considering the debts of the Nation as a whole, the private debts that Americans owe to one another cancel out, and the only debts that remain are those owed to foreigners. America's foreign debt has been increasing rapidly in recent years, as a consequence of the U.S. trade deficit, but the size of this debt is small compared with America's total stock of assets.

Most of the Federal debt held by the public is owned by Americans, so it does not appear in Table 2-3. Only that portion of the Federal debt held by foreigners is included in this table. Even so, it is of interest to compare the imbalance between Federal assets and liabilities with national wealth. The Federal imbalance as estimated in Table 2-1 amounts to less than 5 percent of total national wealth.

## Trends in National Wealth

The net stock of wealth in the United States at the end of 1993 was about \$50 trillion. Since 1980 it has increased in real terms at an annual rate of about 2 percent per year—about half the average annual growth rate from 1960 to 1980. (In this section all comparisons are in terms of constant 1993 dollars.)

Public capital formation slowed down markedly between the two periods. Aside from the reproducible capital owned by the Federal Government, consisting largely of military hardware, the net stock of public capital was lower in 1993 than in 1980. During this period, Federal grants to State and local governments for capital projects increased at an average rate of 0.7 percent per year compared with 7.9 percent in the 1960s and 1970s, while capital funded directly by State and local governments shrank at an average yearly rate of 0.4 percent. Government holdings of land and mineral rights lost value over the same period.

Private capital formation in tangible assets also grew more slowly after 1980. The net stock of nonresidential plant and equipment grew 1.2 percent per year from 1980 to 1993 compared with 4.6 percent in the 1960s and 1970s, and the stock of business inventories actually declined. Overall, the stock of private tangible capital grew at an average rate of just 0.5 percent per year between 1980 and 1993.

The accumulation of education capital, as measured here, did not slow down in the 1980s. It maintained

about the same rate of increase as in the 1960s and 1970s, around 4½ percent per year. This continuing growth reflects both the rising cost of education and the extra resources devoted to schooling in this period. R&D stocks grew faster than physical capital, but at a somewhat slower rate after 1980 than in earlier decades.

## Other Federal Contributions to Wealth

Many Federal policies contributed to the slowdown in capital formation that occurred after 1980. Federal investment policies obviously were important, but the Federal Government also contributes to wealth in ways that cannot be easily captured in a formal presentation. Monetary and fiscal policies affect the rate and direction of capital formation. Regulatory and tax policies affect how capital is invested, as do the Federal Government's credit assistance policies.

One important channel of influence is the Federal budget deficit, which determines the size of the Federal Government's borrowing requirement. Smaller deficits in the 1980s would have resulted in a smaller gap between Federal liabilities and assets than is shown in Table 2-1. It is also likely that, had the \$1.9 trillion in added Federal debt since 1980 been avoided, a significant share of these funds would have gone into private investment. National wealth might have been 2 to 4 percent larger in 1993 had fiscal policy avoided the buildup in the debt.

## Government Performance Measures and Indicators of Well-Being

Unlike private business, Government typically lacks a direct measure of the value of its services. As a result, the costs of Government are reported while the benefits often are not. For this reason, it can be difficult to evaluate how well Government agencies are performing their functions. With passage of the Government Performance and Results Act of 1993, Federal Departments and agencies will be selecting performance measures with which to monitor outputs and outcomes of their activities.<sup>5</sup>

Examples of performance measures for agency outputs would include:

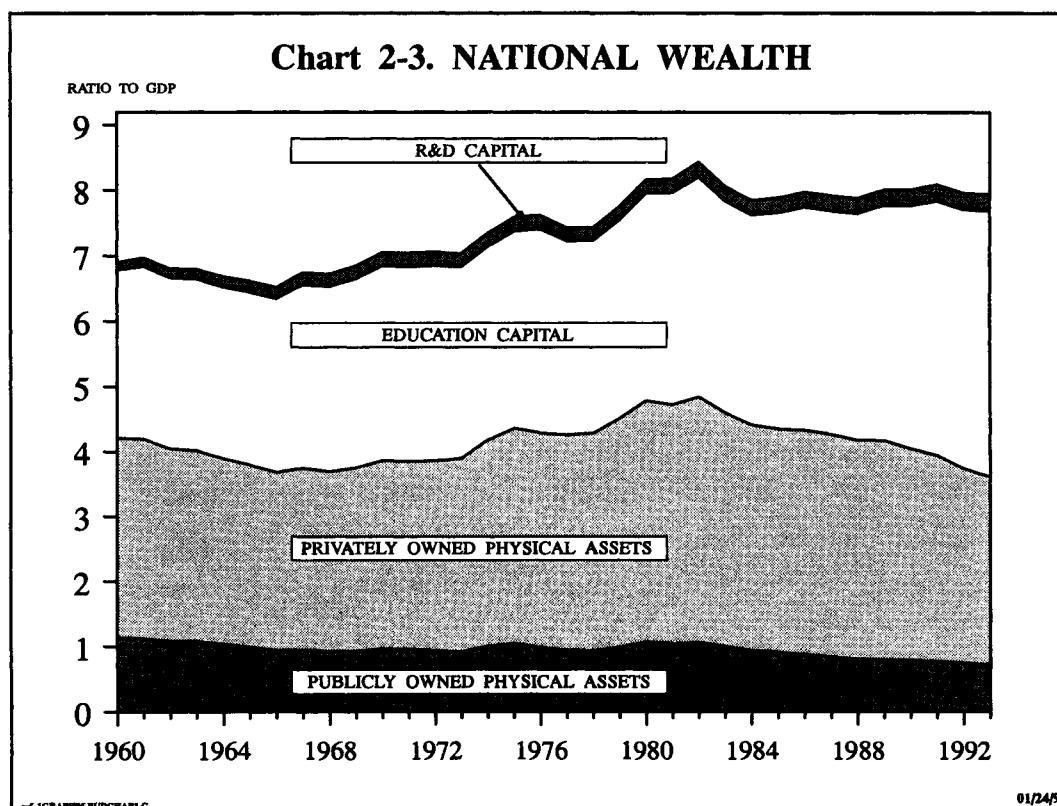
- Numbers of loans extended for Federal credit programs
- The timeliness with which social security checks are issued.
- Number of inspections by the Animal and Plant Health Inspection Service.

Measures of outcomes show how such outputs affect people's lives. Examples might include:

- The number of households lifted out of poverty by social security.
- Lives saved or losses prevented through inspection and control measures.

<sup>4</sup>R&D depreciates in the sense that the economic value of applied research tends to decline with the passage of time and movement in the technological frontier.

<sup>5</sup>Performance measures for Government agencies were given a hearty endorsement in the report of the National Performance Review, "Creating a Government that Works Better & Costs Less."



As appropriate performance measures are developed, it should be possible to integrate them with reports on the cost of Government activities to create a system of financial reporting that would more analogous to private sector accounting statements.

#### *Indicators of Well-Being*

There are certain broad responsibilities that are unique to the Federal Government as a whole. Especially important are the Government's role in fostering healthy economic conditions, maintaining national security, protecting the environment, and promoting health and social welfare. The design for the set of tables presented here includes a place for a table of social and economic indicators that would serve as rough measures of how well the Federal Government was doing in promoting general welfare and security.

The individual measures in this table would be influenced by many Government policies and programs, as well as by external factors beyond the Government's control. Thus, they would not be outcome indicators in the sense defined above, because such measures indicate the direct results achieved through a program.

Such a table would serve two functions. First, it would highlight areas where the Federal Government

might need to modify its current practices or consider fresh action in order to better serve the public. Second, it would provide a context for evaluating the other tables. For example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective, as in a recession when increased government borrowing adds to its liabilities while providing an automatic stabilizer for the private sector.

#### **An Interactive Analytical Framework**

No single framework can encompass all of the factors that affect the financial condition of the Federal Government. Nor is any framework a substitute for analysis. Nevertheless, the framework presented above offers a useful way of tracing the major financial effects of Federal policies. Increased Federal support for investment, the reduction in Federal absorption of saving through deficit reduction, and other Administration policies to enhance economic growth are expected to promote national wealth and improve the future financial condition of the Federal Government. As that occurs, the efforts will be clearly revealed in these tables.

## TECHNICAL NOTE: SOURCES OF DATA AND METHOD OF ESTIMATION

### Federally Owned Assets and Liabilities

#### Assets

**Financial Assets:** The source of data is the Federal Reserve Board's Flow-of-Funds Accounts. Two adjustments were made to this data. First, U.S. Government holdings of financial assets were consolidated with the holdings of the monetary authority, i.e., the Federal Reserve System. Second, the gold stock, which is valued in the Flow-of-Funds at a constant historical price, is revalued using the market value for gold.

**Fixed Reproducible Capital:** Estimates were developed from the OMB historical data base for physical capital outlays presented in Chapter 8. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. The source data are in current dollars. To estimate investment flows in constant dollars, it is necessary to deflate the nominal investment series. This was done using Commerce Department price deflators for Federal purchases of durables and structures. These price deflators are available going back as far as 1940. For earlier years, deflators were based on Census Bureau historical statistics for constant price public capital formation. The capital stock series were adjusted for depreciation on a straight-line basis, assuming useful lives of 46 years for water and power projects; 40 years for other direct Federal construction; and 16 years for major nondefense equipment and for defense procurement.

**Fixed Nonreproducible Capital:** Historical estimates for 1960–1985 were based on estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, "Government Saving, Capital Formation and Wealth in the United States, 1947–1985," published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University of Chicago Press, 1989). Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and in the Producer Price Index for Crude Energy Materials.

#### Liabilities

**Financial Liabilities:** The principal source of data is the Federal Reserve's Flow-of-Funds Accounts.

**Contingent Liabilities:** Sources of data are the OMB Deposit Insurance Model and the OMB Pension Guarantee Model. Historical data on contingent liabilities for deposit insurance were also drawn from the Congressional Budget Office's study, *The Economic Effects of the Savings and Loan Crisis*, issued January 1992.

**Pension Liabilities:** For 1979–1992, the estimates are the actuarial accrued liabilities as reported in the annual reports for the Civil Service Retirement System, the Federal Employees Retirement System, and the Military Retirement System (adjusted for inflation). Estimates for the years before 1979 are not actuarial; they are extrapolations. The estimate for 1993 is a projection.

### National Balance Sheet

**Publicly Owned Physical Assets:** Basic sources of data for the federally owned or financed stocks of capital are the investment flows described in Chapter 8. Federal grants for State and local government capital were added together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local government capital come from the capital stock data prepared by John Musgrave of the Bureau of Economic Analysis, Commerce Department.

**Privately Owned Physical Assets:** Data are from the flow-of-funds national balance sheet. Preliminary estimates for 1993 were prepared based on net investment from the National Income and Product Accounts.

**Education Capital:** The stock of education capital is computed by valuing the cost of replacing the total years of education embodied in the U.S. population 16 years of age and older at the current cost of providing additional schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' foregone earnings, i.e., it reflects the opportunity cost of education.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions and for research and development conducted at colleges and universities because these outlays are classified elsewhere as investment in physical capital and investment in R&D capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate education spending in HHS, Defense and Agriculture; and most outlays for vocational training.

Data on investment in education financed from other sources come from educational institution reports on the sources of their funds, published in U.S. Department of Education, *Digest of Education Statistics*. Nominal expenditures were deflated by the implicit price deflator for GDP to convert them to constant dollar values. Education capital is assumed not to depreciate. An education capital stock computed using this method with different source data can be found in Walter McMahon, "Relative Returns To Human and Physical Capital in the U.S. and Efficient Investment Strategies," *Economics of Education Review*, Vol. 10, No. 4, 1991. The method is described in detail in Walter McMahon, "Investment in Higher Education," 1974.

**Research and Development Capital:** The stock of R&D capital financed by the Federal Government was developed from a data base that measures the conduct of R&D. The data exclude Federal outlays for physical capital used in R&D because such outlays are classified elsewhere as investment in federally financed physical

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

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capital. Nominal outlays were deflated using the GDP deflator to convert them to constant dollar values.

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent for applied research and development. Basic research is assumed not to depreciate. Chapter 8 contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and nondefense components (see *Budget of the U.S.*

*Government, Fiscal Year 1993*, 1993, January 1992, Part Three, pages 39–40).

A similar method was used to estimate the stock of R&D capital financed from sources other than the Federal Government. The component financed by universities, colleges and other nonprofit organizations is based on data from the National Science Foundation, Surveys of Science Resources. The industry-financed R&D stock component is from that source and from the U.S. Department of Labor, "The Impact of Research and Development on Productivity Growth," Bulletin 2331, September 1989.



### 3. GENERATIONAL ACCOUNTING

Government deficits, taxes, transfer payments, and other expenditures affect the distribution of income and wealth among different generations. Generational accounting is a new method for considering the fiscal treatment of different generations.<sup>1</sup> It is still being refined, and a number of the assumptions used to estimate the accounts are controversial.<sup>2</sup> Further development of generational accounting is needed to improve the quality of the estimates and the usefulness of the method.

Generational accounts indicate, in present value terms, what the members of each generation can expect to pay on average, now and in the future, in net taxes (taxes paid to the government less transfers received, such as social security benefits). This is shown for both existing generations and future generations. Generational accounting can also be used to calculate the lifetime net tax rate of each generation—the net taxes that a generation pays as a percentage of labor income, over its entire lifetime, in present value terms.

Generational accounts were presented in chapters in the fiscal year 1993 *Budget* and the January 1993 *Budget Baselines, Historical Data, and Alternatives for the Future*. These chapters explained the concept and provided some illustrative results of how the accounts would be affected by policy changes. The chapter in *Budget Baselines* initiated the use of lifetime net tax rates by generation. The present chapter provides baseline generational accounts for 1992, estimates the effect of the Omnibus Budget Reconciliation Act of 1993 (OBRA93), and estimates the further effect of the Administration's proposal for health care reform. It also compares U.S. generational accounts with those for Italy and Norway.

The present analysis reaches the following major conclusions:

- The lifetime net tax rates paid by Americans in the "baby boom" and later generations is higher than the lifetime net tax rates paid by Americans born earlier.
- The lifetime net tax rate estimated for future generations is much higher than the lifetime net tax rates estimated for existing generations.
- The deficit reduction in the Omnibus Budget Reconciliation Act of 1993 significantly reduced the lifetime net tax rate facing future generations.

<sup>1</sup> Generational accounting was developed by Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff. See Auerbach, Gokhale, and Kotlikoff, "Generational Accounts: A Meaningful Alternative to Deficit Accounting," in David Bradford, ed., *Tax Policy and the Economy*, vol. 5 (MIT Press for the National Bureau of Economic Research, 1991), pp. 55–110; and Kotlikoff, *Generational Accounting—Knowing Who Pays, and When, for What We Spend* (New York: The Free Press, 1992).

<sup>2</sup> The merits of generational accounting are debated in two companion articles that will be published in the Spring 1994 issue of *The Journal of Economic Perspectives*. One is Auerbach, Gokhale, and Kotlikoff, "Generational Accounting—A Meaningful Way to Assess the Stance of Fiscal Policy." The other is Robert Haveman, "Should Generational Accounts Replace Public Budgets and Deficits?"

- The Administration's health care reform proposal would further significantly reduce the lifetime net tax rate facing future generations. The combined effect of OBRA93 and health care reform would reduce the previous generational imbalance by over one-half.
- The fiscal policies of Italy and Norway, like that of the United States, suggest a severe imbalance in the treatment of future and existing generations.

#### The Nature of Generational Accounts and Lifetime Net Tax Rates

The budget normally measures receipts and outlays for one year at a time, and it usually shows these estimates for only a few years into the future. Moreover, while the standard budget presentation divides receipts and outlays into a number of categories, it does not do so in a way that shows the effects of the budget on different generations.

Generational accounts, in contrast, look ahead many decades; and they classify taxes paid and transfers received—such as social security, medicare, and food stamps—according to the generation that pays or receives the money. For an existing generation, they estimate its taxes and transfers year-by-year over its entire remaining lifespan; and they summarize these amounts for that generation in terms of one number, the present value of its entire annual series of average future tax payments net of transfers received. For future generations, generational accounts estimate the net tax payments based on the proposition that the government's bills that are not paid by people who are now alive will have to be paid by future generations. They calculate how much future generations will have to pay on average to the government, above the amounts they will receive in transfers, if the government's total spending is not reduced from the projected path and if the people now alive do not pay more than projected.

Defined more precisely, generational accounts measure, as of a particular base year, the present value of the average future taxes that a member of each given generation is estimated to pay to the government minus the present value of the average future transfers that a member is estimated to receive. This difference is called the "net tax payment" or "net tax" in the following discussion. A generation is defined as all the males or females who are born in a given year.

The generational accounts as such—i.e., these net tax payments—are prospective, considering only the present value of future taxes and transfers as of a base year for existing generations and generations yet to be born. A prospective analysis can estimate the effect of policy changes, because all the effects of a

policy change are in the future; and it can compare the lifetime net taxes of the newly born and future generations, because their entire lifetime taxes and transfers are in the future. However, it cannot compare the lifetime net taxes paid by one existing generation with the lifetime net taxes paid by a different existing generation or with the lifetime net taxes paid by future generations, because part of any living generation's taxes and transfers were in the past and therefore are not taken into account.

A comparison of one existing generation with another, or with future generations, must be based on their entire lifetime taxes and transfers. The lifetime net tax rate of a generation is defined as the present value of its lifetime net taxes (taxes paid less transfers received) divided by the present value of its lifetime labor income. The present values are calculated as of the generation's year of birth, so that each generation can be evaluated from the standpoint of when it was born. Since lifetime taxes, transfers, and income have tended to rise over time and have fluctuated to some extent, the relative net tax paid by different generations is compared in terms of lifetime net tax rates rather than the absolute amounts of lifetime net tax payments.

Generational accounting can be used to make two types of comparison. First, through the use of lifetime net tax rates, it can be used to compare the lifetime net taxes of future generations, of the generation of people just born, and of different generations of people born in the past. The lifetime net taxes of generations born in the past are based on estimates of actual taxes paid and transfer payments received in past years up through 1992 and projections of taxes to be paid and transfer payments to be received in the future.

Secondly, generational accounting can be used to compare the effects of actual or proposed policy changes on the remaining lifetime net tax payments of generations currently alive and on future generations. Such comparisons may be made in terms of lifetime net tax rates; or they may be made in terms of the absolute amounts of the generational accounts, because the changes in all lifetime taxes and transfers will be in the future for every generation and thus will be included in the comparison. The comparisons can be made equally well for policies that change the totals of receipts or expenditures while also changing the deficit; for policies that change the composition of receipts or expenditures without affecting the deficit; and for policies that change the levels of receipts and expenditures together without affecting the deficit.

Generational accounts have a number of limitations as they are now constructed. These accounts, unlike almost every other table in this budget, include the taxes and transfers of all levels of government alike—Federal, State, and local. While this is appropriate for some analyses, the accounts do not show the separate effect of the Federal budget alone or the State and local sector alone. However, the difference in generational accounts due to a Federal Government policy change can be analyzed alone. Thus, this consolida-

tion does not limit generational accounts as a method for assessing the effects of a change in Federal policy.

Generational accounts reflect only taxes paid to the government and transfers received. They do not impute to particular generations the value of the government purchases of goods and services made to provide them with education, highways, national defense, and other services. Therefore, they do not show the full net benefit or burden that any generation receives from government fiscal policy as a whole. Insofar as the benefits of purchases could be imputed, they would reduce the net tax payments. This omission may be important, because government purchases are about half of total government expenditures. Nevertheless, generational accounts can show a generation's net benefit or burden from a particular policy change that affects only taxes and transfers. Moreover, although they do not show how the benefits of government purchases are spread across generations, they do illuminate which generations will pay for this spending. In the future, the usefulness of generational accounting would be improved if the value of certain types of government purchases such as education were imputed to specific generations.

Generational accounting does not, as yet, incorporate any feedback of policy on the economy's growth and interest rates. Feedback effects can be significant, but they generally occur slowly, so their impact on the discounted values used in the generational accounts are likely to be small. Moreover, there is reason to believe they would reinforce the conclusions derived in this chapter. For example, policies that decrease the net tax payment by existing generations and increase the net tax payment by future generations are likely to stimulate more current consumption and thereby reduce the saving available to finance investment. This, in turn, will lower productivity and real wage growth and raise real interest rates, which on balance will harm future generations.

Generational accounting divides the people born in the same year into only two categories, males and females, each designated a "generation." This is an important distinction, for males and females differ significantly in characteristics such as lifetime earnings and longevity. However, it does not reveal differences with respect to other characteristics, such as income level or race, nor does it reveal the wide diversity among individuals within any grouping. The categories would be expanded if more data were available.

Lifetime net tax rates introduce a number of further conceptual issues. For example, how should lifetime income be measured? Lifetime income is defined as a present value, like lifetime taxes and transfers. The present value calculation should include all income that increases a generation's resources: labor earnings, inherited wealth, and capital gains over and above the normal return to saving. The normal return to saving is not itself included in income, because that would be double counting. Saving out of labor income and then earning a normal rate of return on the amount saved does not increase the present value of a house-

## 3. GENERATIONAL ACCOUNTING

hold's resources when its income is discounted at the same rate as the normal rate of return. Data do not exist on the share of each generation's income that has come from inherited wealth or supernormal capital gains, so labor earnings are used to represent income.<sup>3</sup>

Even within the scope of generational accounts as now constructed, the results in this chapter should be viewed as experimental and illustrative. They are limited by the availability and quality of data, especially for earlier years. The lifetime net tax rates are calculated from historical data on taxes, transfers, and income up to 1992 and on projections of future data. The historical data, however, are not available to the same extent as the data for recent years that underlie the projections, and in some cases they are not available at all. As work on generational accounting progresses, the estimates can be expected to change due to improvements in the data and refinements in the method. Some of the changes from a year ago are discussed in the technical note at the end of the chapter.

In addition, the generational accounts are necessarily based on a number of simplifying assumptions, about which reasonable people may disagree. They assume that government intergenerational redistribution does not substitute for, and is not offset by, private intergenerational transfers. This is similar to the usual assumption made in cross-section estimates of the distributional effect of taxes and transfers by income class or other characteristic. The generational accounts are also based on assumptions concerning the pattern of future taxes and spending, the interest rate used to discount future taxes and transfers to form present values, mortality and birth rates, and so forth. The absolute amounts of the generational accounts are sensitive to these assumptions.

The projections of government expenditures are especially sensitive to the assumptions about health care costs. Health care expenditures have risen from 9 percent of GDP in 1980 to 14 percent currently and have been projected to reach more than 20 percent early in the next century unless they are constrained by cost control. The government pays for around 45 percent of health care costs, and its costs have been rising more rapidly than the private sector's, so future trends in government expenditures are strongly influenced by future trends in health care costs. The estimates in this chapter without health care reform reflect continued rapid growth in cost, but the probable pattern is very uncertain.

Despite these qualifications, the generational accounts can be illuminating when considered in the light of their assumptions, as has been the case for the 75-year projections made every year by the social security trustees. Moreover, the most fundamental result holds for a wide range of reasonable changes in the assumptions: the net tax payment by future generations is

<sup>3</sup>The error due to this omission is relatively small in the aggregate, given that labor income has long accounted for approximately four-fifths of all income and that only part of the remaining income from capital should be included. However, the errors for different generations could vary depending on trends and fluctuations in asset values and bequest behavior.

relatively much larger than the net tax payment by the generation just born or other existing generations.

The following sections illustrate the results of generational accounting. A technical note at the end explains the concepts, data sources, calculations, and other assumptions more fully.

#### Lifetime Net Tax Rates before Deficit Reduction

Table 3-1 estimates the lifetime net tax rates for different generations as they stood before OBRA93 reduced the deficit. Lifetime net tax rates are shown for the generations born in 1900 and every tenth year thereafter; for the generation born in 1992, the "newly born" in this year's analysis; and for the future generations, those born in 1993 and later. All Federal, State, and local taxes and transfers are included in the calculations. Males and females are combined.<sup>4</sup> The calculations in this table and throughout the chapter are as of calendar year 1992. Because of the time needed to prepare these estimates, they are based on the receipts and outlays in the *Mid-Session Review of the 1994 Budget* rather than this budget. Since the budget outlook has improved since the *Mid-Session Review*, lifetime net tax rates for both existing and future generations would probably be smaller if based on the estimates in the present budget.

TABLE 3-1. LIFETIME NET TAX RATES BEFORE OBRA93  
(In percentages)

Generation's year of birth	Net tax rate	Components of net tax rate	
		Gross tax rate	Transfer rate
1900 .....	23.6	27.3	3.7
1910 .....	27.2	33.0	5.8
1920 .....	29.0	35.9	6.9
1930 .....	30.5	38.7	8.2
1940 .....	31.6	40.9	9.2
1950 .....	32.8	43.7	10.9
1960 .....	34.4	46.7	12.3
1970 .....	35.7	49.8	14.1
1980 .....	36.0	51.5	15.0
1990 .....	35.5	51.5	16.0
1992 .....	35.4	51.5	16.2
Future generations .....	93.7	.....	.....
Percentage difference: future generations and 1992 .....	165.1	.....	.....

The lifetime net tax rates exhibit a strong upward trend over the past century, rising from 24 percent for the generations born in 1900 to 35–36 percent for the generations born since 1970.<sup>5</sup> The lifetime net tax rate on future generations was much larger before OBRA93 was enacted—94 percent. This was 165 percent higher than the lifetime net tax rate for the generation of people newly born in 1992.

<sup>4</sup>Males and females were combined because of the conceptual problem of how to attribute taxes, transfers, and income within a family. The technical note explains the present method and the change from last year. For further discussion of the conceptual problem, see the January 1993 *Budget Baselines*, page 537.

<sup>5</sup>The lifetime net tax rate for the generation born in 1900 was estimated as 21.5 percent in the January 1993 *Budget Baselines* rather than the 23.6 percent reported here. The increase is primarily due to a reduction in the estimate of lifetime labor earnings, which is the denominator of the lifetime net tax rate. This revision also raises the lifetime net tax rate of generations born after 1900, including future generations, by roughly 10 percent.

Table 3-1 also breaks down the net tax rates between gross tax rates and transfer rates. To calculate these latter rates, the present value of a generation's lifetime taxes (or transfers) is divided by the present value of its lifetime income. This breakdown reveals the expanded role of government transfer payments during the past century. The lifetime transfer rate more than quadrupled between the generations born in 1900 and those born in 1992, starting at 3.7 percent and increasing each decade to a rate of 16.2 percent. The increase was more rapid, in both relative and absolute terms, for the generations born before World War II than afterwards.

The gross tax rate has risen much more than the net tax rate. It nearly doubled between the generations born in 1900 and 1992, starting at 27.3 percent and increased each decade to a rate of 51.5 percent. In contrast, the net tax rate increased by about a half. The larger increase in the gross tax rate is because a generation's lifetime gross taxes pay for the government's purchases of goods and services as well as transfers and pay for transfers to other generations as well as its own.

The estimates of lifetime net tax rates by generation, such as shown in this table, are affected by the amounts of future taxes, transfers, and other government expenditures that are assumed year-by-year in the underlying projections. These assumptions could differ widely, and the actual amounts that eventuate could differ substantially from any assumptions made. As explained in the technical note, the projection methods generally seek to maintain current policy in some sense. However, "current policy" can be interpreted in different ways, especially for discretionary expenditures such as defense; and the long-term projections for medicare and medicaid assume that even in the absence of the Administration's health care reform some policy actions or other forces will eventually hold the spending growth to the overall rate of economic expansion (adjusted for shifts in the age and sex composition of the population), even though the projected growth rate is still quite rapid relative to GDP for the next few decades.<sup>6</sup>

The lifetime net tax rates—and, hence, the imbalance between future generations and existing generations—are defined in such a way that the generations now alive, including the newly born, do not pay any more taxes (or receive any less transfers) than projected under the specified fiscal policy. This assumption is an analytical device for determining the size of the fiscal imbalance; it is not meant to suggest that future generations will in fact close the gap all by themselves. Any actual policy change—whether a policy change enacted in the past, or one proposed for the future—is almost certain to bear in some degree on generations now living as well as those to be born in the future. If such a policy change is made, the net tax rates paid by the newly born and other existing generations would

be higher than shown in this table. Policy changes of this kind are considered below.

The generational imbalance shown in table 3-1 depends on the assumption that all future generations of the same sex have the same lifetime net tax rate. Alternatively, suppose that the future generations born during 1993–2000 pay the same lifetime net tax rate as the generation born in 1992. Because these future generations would pay less than otherwise assumed, those future generations born after 2000 would have to pay more. The greater the number of future generations who pay no more than the generation newly born, the larger is the lifetime net tax rate that will be required of those generations who are born still later.

The size of the imbalance estimated between future generations and the newly born is also sensitive to the assumptions about the interest rate used for discounting and the growth rate of the economy. Table 3-2 shows the percentage differential under alternative assumptions. It considers interest rates of 3, 6, and 9 percent and productivity growth rates of 0.25, 0.75, and 1.25 percent. The assumptions used for all other calculations in this chapter were an interest rate of 6 percent and a growth rate of 0.75 percent. This led to a 165 percent larger net payment by future generations than the newly born. Under the alternatives in table 3-2, the difference ranges from 93 percent to 350 percent. While this range is large, the basic conclusion holds for all alternatives. Future generations are estimated to make a much larger payment of taxes to the government, net of the transfers they receive, than the generation just born or other existing generations.

TABLE 3-2. PERCENTAGE DIFFERENCE IN LIFETIME NET TAX RATES OF FUTURE GENERATIONS AND THE 1992 GENERATION FOR ALTERNATIVE ASSUMPTIONS

Interest rate	Growth rate		
	0.25	0.75	1.25
3.0 .....	167	127	93
6.0 .....	205	165	131
9.0 .....	350	297	249

#### Effects of OBRA93

The Omnibus Budget Reconciliation Act of 1993 reduced the estimated deficits from 1994 through 1998 by a cumulative total of around \$500 billion. Table 3-3 compares the lifetime net tax rates of different generations with and without this Act. OBRA93 reduced the lifetime net tax rate of future generations from 94 percent to 82 percent. In order to accomplish this, it raised the lifetime net tax rate on existing generations: on the very young generations by roughly 1 percentage point, on the baby boom generations by about 0.3 to 0.6 percentage points, and on older generations by 0.3 percentage point or less. The lower impact on the lifetime net tax rates of older generations is partly because they have fewer remaining years of life to be affected and any given dollar amount of taxes or transfers is discounted over more years in order to calculate the present value as of the generation's year of birth.

<sup>6</sup>A pure extrapolation of recent trends, in contrast, would imply that health care costs would eventually bankrupt the government.

TABLE 3-3. LIFETIME NET TAX RATES UNDER ALTERNATIVE POLICIES

(in percentages)

Generation's year of birth	Before OBRA93	After OBRA93	With health care reform	Health care reform but faster cost growth
1900 .....	23.6	23.6	23.6	23.6
1910 .....	27.2	27.2	27.2	27.2
1920 .....	29.0	29.0	29.1	29.1
1930 .....	30.5	30.6	30.9	30.9
1940 .....	31.6	31.9	32.4	32.2
1950 .....	32.8	33.2	34.0	33.5
1960 .....	34.4	35.0	35.9	35.2
1970 .....	35.7	36.5	37.6	36.6
1980 .....	36.0	36.9	38.2	36.7
1990 .....	35.5	36.5	38.3	36.2
1992 .....	35.4	36.3	38.3	36.0
Future generations .....	93.7	82.0	66.5	75.2
Percentage difference: future generations and 1992 .....	165.1	126.0	73.9	108.8

OBRA93 thus brought the lifetime net tax rates of future generations and existing generations closer to each other. The generational imbalance—defined as the percentage difference in lifetime net tax rate between future generations and the newly born—was reduced by about one-quarter, from 165 percent to 126 percent. These calculations roughly show where the lifetime net tax rates stand now. The generational imbalance remains large despite OBRA93. To a great extent this is because the government's health care spending is projected to continue to rise rapidly relative to GDP unless government policy changes to limit it.

#### Effects of Health Care Reform

The Administration has proposed a program of health care reform to provide every American with comprehensive health care benefits and to limit the rapid growth of health care costs as a share of GDP. If enacted and implemented as proposed, this plan would substantially reduce the generational imbalance. Table 3-3 shows the lifetime net tax rates with health care reform. Health care reform would reduce the lifetime net tax rate of future generations beyond the effect of OBRA93—from 82 percent to 66 percent. Because estimates of health care reform on taxes and spending were not available after 2000, this calculation is based on rough projections for subsequent years (as explained in the technical note to this chapter). Medicare and medicaid transfers after 2000 are assumed to grow at a similar rate as benefits under health reform, although their spending is not directly limited by the plan. The estimates do not include the premiums paid to the health alliances or the benefits financed by these premiums.

Health care reform would increase the lifetime net tax rates of all existing generations by decreasing the lifetime transfers that they would be recorded as receiving. This is because government health care spending is recorded as a transfer from the government to those individuals who receive the health care. However, one

of the basic principles of the Administration proposal is to reduce the complexity and in general to improve the efficiency of the health care system. To the extent that efficiency is improved, health care reform will allow lower government transfer payments but people will not receive less health care or have worse health. The measured decline in the lifetime transfers to existing generations would overstate the change in the value of benefits they receive, and the increase in the lifetime net tax rates from this effect would not represent an increase in actual fiscal burden.

The effect of health care reform is shown in table 3-3 to reduce the generational imbalance by about two-fifths, from 126 percent to 74 percent. In combination, OBRA93 and health care reform would eliminate over half of the previous imbalance of 165 percent.

Table 3-3 also illustrates the importance of implementing the cost-containment principle of health care reform. It estimates the lifetime net tax rates from enacting the proposal but modified so that all government health care transfers grow from 2000 through 2020 at a rate that is 2 percentage points higher than warranted by demographic change and economy-wide productivity growth. In this case the generational imbalance is only reduced from 126 percent to 109 percent instead of the 74 percent under the full Administration proposal.

#### Net Tax Payments by Different Generations

Tables 3-4 and 3-5 provide a complementary perspective to lifetime net tax rates by showing the net tax payments for different generations in absolute amounts solely for those taxes and transfers to be paid or received in the future. These are the "generational accounts" as defined previously in this chapter and as emphasized in most presentations of generational accounting. The generational accounts in the year of a generation's birth are the same as its lifetime net tax payments.

TABLE 3-4. GENERATIONAL ACCOUNTS FOR MALES: PRESENT VALUE OF TAXES AND TRANSFERS, WITH OBRA93  
(in thousands of dollars)

Generation's age in 1992	Net tax payment	Taxes paid				Transfers received		
		Labor income taxes	Capital income taxes	Payroll taxes	Excise taxes	Social security	Health	Welfare
0 .....	78.4	32.2	7.9	34.7	30.2	6.8	16.2	3.6
5 .....	99.3	41.3	10.1	44.6	35.6	8.6	19.1	4.6
10 .....	124.8	52.6	12.9	56.9	41.3	10.3	22.7	5.9
15 .....	157.2	67.1	16.6	72.8	47.4	11.9	27.3	7.6
20 .....	187.7	80.8	21.0	88.2	51.4	13.3	31.0	9.2
25 .....	203.0	88.2	25.2	96.7	52.2	16.4	33.0	9.9
30 .....	201.6	87.8	30.2	96.5	51.4	20.1	34.7	9.4
35 .....	192.4	84.5	36.1	93.2	50.4	25.2	37.9	8.7
40 .....	170.9	77.2	40.8	85.4	49.4	31.7	42.3	8.0
45 .....	132.5	64.9	43.5	72.0	46.7	39.8	47.5	7.2
50 .....	81.0	49.6	44.0	55.2	42.8	50.4	53.6	6.5
55 .....	19.5	32.7	42.2	36.6	37.8	63.7	60.2	5.8
60 .....	-43.9	17.5	38.9	19.6	32.2	80.4	66.7	5.1
65 .....	-94.1	6.2	34.3	6.9	26.9	90.6	73.4	4.4
70 .....	-98.6	2.5	27.1	2.9	21.5	82.7	66.1	3.8
75 .....	-92.9	1.2	18.2	1.3	16.4	69.0	57.8	3.2
80 .....	-79.4	0.6	9.2	0.7	11.5	52.0	47.2	2.2
85 .....	-69.4	0.3	.....	0.3	7.9	39.4	37.5	1.0
90 .....	-11.6	.....	.....	.....	1.7	6.9	6.4	.....
Future generations .....	177.1	—	—	—	—	—	—	—
Percentage difference in net tax payment: future generations and age zero .....	126.0	—	—	—	—	—	—	—

TABLE 3-5. GENERATIONAL ACCOUNTS FOR FEMALES: PRESENT VALUE OF TAXES AND TRANSFERS, WITH OBRA93  
(in thousands of dollars)

Generation's age in 1992	Net tax payment	Taxes paid				Transfers received		
		Labor income taxes	Capital income taxes	Payroll taxes	Excise taxes	Social security	Health	Welfare
0 .....	44.1	16.6	8.4	18.0	29.2	6.4	13.1	8.6
5 .....	54.8	21.3	10.8	23.0	34.2	8.1	15.5	11.0
10 .....	67.3	27.1	13.8	29.4	39.3	9.7	18.6	14.0
15 .....	82.5	34.4	17.7	37.5	44.5	11.1	22.6	17.9
20 .....	96.9	40.7	22.3	44.6	48.0	12.4	25.8	20.5
25 .....	101.5	42.1	27.3	46.2	49.1	15.4	29.4	18.5
30 .....	96.9	39.5	32.2	43.5	49.0	18.9	33.4	15.0
35 .....	87.8	36.3	37.3	40.0	48.9	23.7	39.1	11.9
40 .....	69.1	31.5	40.5	34.9	47.8	29.9	46.6	9.1
45 .....	39.7	25.1	41.4	27.8	45.4	37.9	55.3	6.8
50 .....	2.4	18.1	40.2	20.2	41.5	48.4	64.1	5.2
55 .....	-40.2	11.6	38.1	13.0	37.0	62.0	73.9	4.1
60 .....	-86.3	6.0	34.9	6.8	31.8	79.2	83.2	3.5
65 .....	-122.5	2.2	29.5	2.4	26.6	88.4	91.6	3.1
70 .....	-124.6	0.9	20.7	1.0	21.7	81.4	84.6	2.8
75 .....	-117.9	0.4	11.4	0.5	16.5	69.1	75.2	2.4
80 .....	-100.5	0.2	4.3	0.2	12.1	54.1	61.2	2.0
85 .....	-79.3	0.1	.....	0.1	9.2	39.9	47.1	1.6
90 .....	-11.3	.....	.....	.....	1.6	5.9	6.7	0.3
Future generations .....	99.6	—	—	—	—	—	—	—
Percentage difference in net tax payment: future generations and age zero .....	126.0	—	—	—	—	—	—	—

The amounts in these tables are the generational accounts as of calendar year 1992 for every fifth generation alive in that year. The first column, "net tax payment," is the difference between the present value of taxes that a member of each generation will pay, on average, over his or her remaining life and the present value of the transfers he or she will receive. The other columns show the average present values of different taxes and transfers. As with the lifetime net tax rates,

all Federal, State, and local taxes and transfers are included in these calculations. Federal spending and receipts include the effects of OBRA93.

**Remaining net tax payments by existing generations.**—The present value of the future taxes to be paid by the young and middle aged generations is much more than the present value of the future transfers they will receive. For males who were age 40 in 1992, for example, the present value of future taxes is

\$171,000 more than the present value of future transfers. The amounts are large because these generations are close to their peak tax paying years. For newborn males, on the other hand, the present value of the net tax payment is much smaller, \$78,000, because they will not pay much in taxes for a number of years.

The older generations, who are largely retired, will receive more social security, medicare, and other future benefits than they will pay in future taxes. That is, they have negative net tax payments. Females have smaller net tax payments than males, mostly because they earn less income and therefore pay less income and social security taxes.

Since the figures in these tables show the *remaining* lifetime net tax payments of particular generations, they do not include the taxes a generation paid in the past or the transfer payments it received in the past. This needs to be kept in mind in considering the net tax payments by those now alive. The portion of a generation's lifetime net tax payments that is remaining depends on whether it is 10, 40, or 65 years old. The fact that 40 year-old males can expect to pay more in the future than they receive, in present value terms, while the reverse is true for 65 year-old males, does not mean that the Federal, State, and local governments are treating 40 year-old males unfairly. Males who are now 65 paid substantial taxes when they were younger, and these past taxes are not included in the remaining lifetime net tax payments shown in their generational accounts. Therefore, the remaining lifetime net tax payment by one existing generation cannot be directly compared with that of another. The lifetime net tax payments of existing generations can be compared, however, using the lifetime net tax rates presented previously.

Tables 3-4 and 3-5 also show the different generational effects of various taxes and transfers. For example, the present value of future labor income taxes and payroll taxes is much higher for the generations under 60 than for older generations, whereas the present value of future capital income taxes and excise taxes is higher for the generations under 60 but not by so much. This is because the elderly tend to be retired from the labor force but still own homes and buy goods and services subject to property tax, sales tax, and other excises. As another example, the present value of social security and health care transfers is much higher for the elderly than the young and middle aged, because these kinds of transfers are made largely to the elderly and thus are discounted in the calculations over a relatively few years. Welfare benefits, on the other hand, provide relatively large benefits to the young, so the present value of these benefits is higher for these age groups than for others.

**Net tax payments by future generations.**—Future generations—those born in 1993 and later—are estimated to make a 126 percent larger net tax payment to the government, on average, than those born in 1992. The \$177,000 average net tax payment by future males and the \$100,000 average net tax payment by future

females are calculated assuming that the ratio of net tax payments by males to that of females is the same for future generations as those born in 1992.

The calculations also assume that all people of a particular sex born in the future will make the same average net tax payment over their lifetimes after adjusting for overall productivity growth in the economy. A growth adjustment is needed to the average net tax payment because future generations will pay more in taxes, net of the transfers they receive, simply because their incomes will be higher. This does not represent a heavier fiscal burden. To properly assess the net tax payment by future generations relative to the newly born, it is necessary to calculate the net payment they would make above and beyond the amount due to economic growth. The generational accounts assume that all future generations pay the same net taxes apart from the effect of growth. This net tax is the number shown in the table for all future generations of the same sex.

**OBRA93 and health care reform.**—Table 3-6 displays the generational accounts for the three policy regimes previously evaluated using lifetime net tax rates: a baseline before the enactment of OBRA93, estimates including OBRA93 (as shown with more detail in tables 3-4 and 3-5), and estimates including both OBRA93 and health care reform.

This table is a different way of viewing the generational effects of policy changes and complements the effects revealed in table 3-3 on lifetime net tax rates. OBRA93 and health care reform substantially reduce the generational imbalance between future generations and living generations. The net tax payments of future generations (in present value) are reduced by both policies. The net tax payment for future generations of males is lowered by \$25,000 by OBRA93 and \$32,000 by health care reform; for females, by \$14,000 and \$20,000, respectively. Each existing generation pays a larger net amount in present value, but not by as much as the reduction for future generations. For example, 50 year-old males pay \$5,000 more due to OBRA93 and \$10,000 more due to health care reform. As explained above, the lower transfer payments received under health care reform do not represent less health care to the extent they reflect a more efficient health care system.

#### International Comparisons

The Italian and Norwegian governments have prepared generational accounts to examine the long-term sustainability of their fiscal policies,<sup>7</sup> and the Japanese government is in the process of estimating generational accounts for Japan.

<sup>7</sup>See Daniele Franco, Jagadeesh Gokhale, Luigi Guiso, Laurence J. Kotlikoff, and Nicola Sartor, "Generational Accounting—The Case of Italy," Report to the Bank of Italy (January 1991) and Boston University Department of Economics, The Ruth Pollack Working Paper Series on Economics, no. 18 (January 1990); and Alan J. Auerbach, Jagadeesh Gokhale, Laurence J. Kotlikoff, and Erling Steigum, Jr., "Generational Accounting in Norway: Is Norway Overconsuming Its Petroleum Wealth?," Report to the Norwegian Research Council for Applied Social Science (October 1993) and Boston University Department of Economics, The Ruth Pollack Working Paper Series on Economics, no. 24 (October 1993).

TABLE 3-6. GENERATIONAL ACCOUNTS UNDER DIFFERENT POLICIES

(In thousands of dollars)

Generation's Age in 1992	Before OBRA93		After OBRA93		With health care reform		Health care reform but faster cost growth	
	Males	Females	Males	Females	Males	Females	Males	Females
	76.4	42.9	78.4	44.1	83.2	45.8	79.3	42.2
0 .....	76.4	42.9	78.4	44.1	83.2	45.8	79.3	42.2
5 .....	96.8	53.3	99.3	54.8	104.8	56.5	100.3	52.5
10 .....	121.6	65.5	124.8	67.3	130.8	68.9	126.0	64.6
15 .....	153.2	80.3	157.2	82.5	163.8	84.3	158.7	79.6
20 .....	183.0	94.2	187.7	96.9	194.7	100.1	189.5	95.0
25 .....	197.8	98.4	203.0	101.5	210.2	106.5	204.9	101.0
30 .....	196.2	93.4	201.6	96.9	209.3	103.8	203.9	97.9
35 .....	186.9	84.0	192.4	87.8	200.9	96.7	195.2	90.2
40 .....	165.2	65.0	170.9	69.1	180.3	80.1	174.4	73.0
45 .....	127.0	35.4	132.5	39.7	142.6	52.1	137.1	45.1
50 .....	75.9	-2.0	81.0	2.4	91.1	15.2	87.0	9.4
55 .....	14.7	-44.8	19.5	-40.2	29.3	-27.4	27.5	-30.9
60 .....	-48.4	-91.2	-43.9	-86.3	-35.0	-74.4	-35.5	-76.3
65 .....	-98.1	-127.1	-94.1	-122.5	-87.6	-113.2	-87.0	-113.4
70 .....	-101.9	-128.4	-98.6	-124.6	-94.2	-118.0	-93.2	-116.9
75 .....	-95.3	-120.9	-92.9	-117.9	-90.3	-114.0	-89.4	-112.5
80 .....	-80.9	-102.6	-79.4	-100.5	-77.9	-98.2	-77.5	-97.4
85 .....	-70.4	-80.7	-69.4	-79.3	-68.9	-78.5	-68.9	-78.5
90 .....	-11.6	-11.3	-11.6	-11.3	-11.6	-11.3	-11.6	-11.3
Future generations .....	202.5	113.8	177.1	99.6	144.7	79.7	165.6	88.2
Percentage difference in net tax payments: future generations and age zero .....	165.1	165.1	126.0	126.0	73.9	73.9	108.8	108.8

Italy has changed its fiscal policies since the generational accounts were constructed for 1990, and therefore the estimates for Italy will not be displayed in a table. The 1990 accounts, however, showed the Italian generational imbalance to be two to three times greater than the U.S. imbalance after OBRA93.

This result was primarily due to three factors. First, Italy's ratio of government debt to GDP was almost twice that of the United States. Second, its transfer payments were roughly twice as large as those in the United States, relative to GDP, while its taxes were

only one-quarter larger. Consequently, relative to GDP, the current net tax payments of existing generations were lower than in the United States. Third, Italy is aging more rapidly. Given that annual net tax payments fall with age in both countries, an aging population means that in future years the existing generations will make lower aggregate net tax payments. Furthermore, government purchases were nearly as large as in the United States. The combination of these factors produces a relatively large net tax to be paid by future generations of Italians.

TABLE 3-7. U.S. AND NORWEGIAN GENERATIONAL ACCOUNTS

(In thousands of dollars)

Generation's age in 1992	United States		Norway	
	Males	Females	Males	Females
0 .....	78.4	44.1	104.7	47.7
5 .....	99.3	54.8	127.6	52.6
10 .....	124.8	67.3	154.6	57.4
15 .....	157.2	82.5	186.1	63.6
20 .....	187.7	96.9	214.5	66.1
25 .....	203.0	101.5	237.9	67.3
30 .....	201.6	96.9	241.0	62.0
35 .....	192.4	87.8	225.6	59.7
40 .....	170.9	69.1	198.8	54.1
45 .....	132.5	39.7	157.5	35.1
50 .....	81.0	2.4	105.4	6.8
55 .....	19.5	-40.2	46.6	-24.7
60 .....	-43.9	-86.3	-14.2	-60.3
65 .....	-94.1	-122.5	-57.8	-71.6
70 .....	-98.6	-124.6	-61.1	-71.1
75 .....	-92.9	-117.9	-68.3	-66.8
80 .....	-79.4	-100.5	-50.4	-54.0
85 .....	-69.4	-79.3	-36.0	-43.2
90 .....	-11.6	-11.3	-26.1	-34.8
Future generations .....	177.1	99.6	178.2	81.2
Percentage difference in net tax payments: future generations and age zero .....	126.0	126.0	68.9	68.9

Norway's generational accounts are compared in table 3-7 with those of the United States after OBRA93. Because of its large petroleum and hydroelectric wealth, the Norwegian government has positive net wealth equal to roughly 20 percent of GDP. Norway is aging at about the same rate as the United States. Its government purchases are almost 40 percent greater than in the United States, relative to GDP, and its transfer payments are about 60 percent greater. However, Norwegian gross taxes are higher, and Norwegian net tax payments relative to GDP are about 50 percent greater.

#### TECHNICAL NOTE: CONSTRUCTION OF THE GENERATIONAL ACCOUNTS

##### The Present Value Constraint

Generational accounting is based on the present value budget constraint of the government sector. In simple terms, this constraint says that the government must ultimately pay for its purchases of goods and services with resources it obtains from current and future generations or with its current assets (net of debt). If current generations pay less in taxes (net of transfers received) to finance government purchases, future generations will have to pay more.

This does not mean that the government ever has to fully retire its debt at any point in time. What it does require is that the government pay the interest on its debt through the net taxation of existing or future generations (or with its current assets). For example, suppose that through borrowing the payments for the government's bills were repeatedly shifted to future generations by each successive current generation. Then this debt would grow, with interest. Eventually the interest on this debt would exceed the lifetime income of future generations, which would result in default.

More precisely, the government's present value constraint says that, at any point in time, the present value of the government's future purchases of goods and services cannot exceed the sum of three items: (1) the present value of future taxes to be paid (net of transfers received) by existing generations (i.e., the sum of their generational accounts multiplied by the number of people in each generation), (2) the present value of taxes to be paid (net of transfers received) by future generations, and (3) the value of government assets that yield income, less the government debt. Generational accounting estimates the present value of the government's purchases of goods and services and the amounts (1) and (3). Amount (2), the present value of taxes to be paid by all future generations (net of transfers received), is calculated as the present value of future government purchases minus amounts (1) and (3).

The generational accounts for future generations are derived from the aggregate amount (2). For the illustrations in this chapter, different net tax payments (after adjusting for economic growth) are not estimated for

As a result, the Norwegian primary deficit—expenditures, other than interest, less taxes—is smaller relative to GDP than in the United States.

The large government net wealth in Norway and the lower primary deficit relative to GDP have led to a smaller generational imbalance than in the United States. Table 3-7 estimates the imbalance to be 69 percent in Norway, just over half the U.S. amount. The absolute net tax payment by future generations is similar in the two countries, but the higher net tax payment by existing Norwegians produces a lower imbalance.

#### TECHNICAL NOTE: CONSTRUCTION OF THE GENERATIONAL ACCOUNTS

different future generations. Rather, the aggregate present value net tax payment by future generations is divided on an even basis among all future generations in such a way that the average net tax payment by the members of each generation keeps pace with the economy's growth in productivity. Thus, as shown in tables 3-4 and 3-5, one single (growth adjusted) average figure stands as the generational account for all future generations of a given sex. Because the generational account for future generations is calculated indirectly from the above aggregates, it can only be shown as a single number and cannot be divided among specific taxes and transfers.

The lifetime net tax rate of future generations is the ratio of the present value of total net tax payments by future generations to the present value of total labor income earned by future generations. This calculation is made under the assumption that labor income increases at the same rate as the economy's growth in productivity.

##### The Underlying Calculations

The calculation of the generational accounts is a three-step process. The first step entails projecting each currently living generation's average taxes and transfers to each future year in which at least some member of the generation will be alive. The second step converts these projected average taxes and transfers into an actuarial present value, using assumptions for the discount rate and the probability that the generation's members will be alive in each future year. The sum of these present values, with transfers subtracted from taxes, is the generational account or "net tax payment" for existing generations shown in the first column of tables 3-4 and 3-5. The third step is to estimate the other terms of the present value constraint explained in the previous section so as to derive the average net tax payment by future generations. The calculations are based on projections to 2200.

**Projection of taxes and transfers.**—The projection of average future taxes and transfers begins with the national totals of all Federal, State, and local taxes and transfers as reported by the national income and product accounts (NIPAs) for calendar year 1992. (All

years in this chapter are calendar years unless otherwise stated.) The relationship of the NIPA data to the Federal budget is described in Chapter 19 of this volume. Employee retirement and veterans benefits paid by government are considered a form of employee compensation and classified as the purchase of a service rather than a transfer payment.

The base year NIPA totals are distributed to all existing generations, as defined by age and sex, based on the corresponding distributions in cross-section survey data. These surveys include the Survey of Income and Program Participation by the Bureau of the Census, the Survey of Consumer Expenditures by the Bureau of Labor Statistics, the Survey of Consumer Expenditures by the Federal Reserve, and the Current Population Survey by the Bureau of the Census. Those taxes not directly paid by persons and so not appearing in these surveys, such as the corporation income tax, are allocated. Since generational accounting attributes taxes and transfers to individuals, household taxes and transfers are attributed to the individuals in the household. No special imputations are made to children, but the cross-section surveys impute some consumption to children and the taxes on that consumption would be attributed to the children. The attribution rules affect the values of the baseline accounts but are not likely to alter the generational implications of policy changes.

The distribution of average taxes and transfers by age and sex in the future is adjusted for growth and projected policy. In the case of Federal taxes and transfers for 1993–2004, the projected aggregate amounts are the estimates of outlays and receipts in the *Mid-Session Review of the 1994 Budget* (September 1993), extended beyond 1998 and updated for the actual fiscal year 1993 results. (Adjustments were made to remove the effects of OBRA93 for the base case.) These amounts are distributed by age and sex according to the age-sex relative profiles for these transfers and receipts based on the cross-section surveys cited above. In the case of State and local taxes and transfers for 1993–2004 (other than medicaid transfers), the aggregate amounts are based on the GDP projections in the *Mid-Session Review* and the assumption that the ratios of State and local tax and transfer aggregates to GDP remain constant at the 1992 levels. After 2004 the average Federal, State, and local taxes (except the social security payroll tax) and transfer payments (except social security, medicare, and medicaid) by age and sex are projected to increase at the assumed rate of productivity growth. Productivity (both labor and multi-factor productivity) is assumed to increase at 0.75 percent a year, which is close to the average annual rate of labor productivity growth since 1970.

Social security transfer payments and payroll tax receipts after 2004 are based on special calculations made by the Social Security Administration assuming a productivity growth rate of 0.75 percent. These calculations otherwise follow the social security intermediate alternative II assumptions. Except under the health care reform scenario, medicaid transfers from 1993 through

2030 and medicare transfers from 2005 through 2030 are projected using the medicaid and medicare growth rates in the Health Care Financing Administration middle scenario estimates published in 1991.<sup>8</sup> After 2030, health care transfers are assumed to stabilize as a percentage of GDP apart from the effect of changes in the composition of the population by age and sex.

The effects of health care reform on taxes and transfers were projected through 2000 using Administration estimates. Since estimates were not available after 2000, rough projections were made for subsequent years. Health care reform spending was increased by a one-time level adjustment in 2001 to take account of a scheduled expansion in the standard benefit package. After 2001, it was assumed to grow at the same rate as productivity apart from changes in the composition of the population by age and sex. Medicare and medicaid transfers after 2000 are not directly limited by the health care reform plan but were also projected to grow at the same rate as productivity apart from changes in the composition of the population by age and sex.

**Assumptions for present value.**—The appropriate discount rate for calculating the present value of future amounts depends on whether or not these amounts are known with certainty. Future government receipts and expenditures are risky, which suggests that they be discounted by a rate higher than the real rate of interest on government securities. On the other hand, government receipts and expenditures appear to be less volatile than the real return on capital, which suggests that they be discounted by a lower rate than that. The calculations assume a 6 percent real discount rate, which is intermediate between the average real return available in recent years on short-term Treasury securities and the real return available in recent years on capital.

The present values of future average taxes and transfers are also discounted for mortality probabilities in order to derive actuarial present values. The demographic probabilities through 2066 are those embedded in the social security trustees' intermediate projection in 1992 (alternative II) of the population by age and sex. The fertility, mortality, and immigration probabilities in 2066 were used for later years. Immigration is treated as equivalent to a change in mortality.

**Other projections.**—Federal purchases of goods and services through 2004, like Federal taxes and transfers, are from the latest *Mid-Session Review* extended beyond 1998 and updated for the actual fiscal year 1993 results. State and local purchases through 2004 are kept at the same ratio to GDP as in 1992. Federal, State, and local purchases after 2004 were divided between (1) those made on behalf of specific age groups—the young, middle aged, and elderly—such as educational expenditures; and (2) those that are more near-

<sup>8</sup>This scenario is discussed in Sally Sonnenfeld and others, "Projections of National Health Expenditures through the Year 2000," *Health Care Financing Review* (vol. 13, Fall 1991).

## 3. GENERATIONAL ACCOUNTING

ly pure public goods, such as defense and public safety. Purchases per person in each of the three age groups, and purchases of public goods per capita, all increase at the assumed rate of productivity growth.

The economic value of the government's assets that yield income, less the government debt, was estimated to be the cumulative amount of the NIPA deficit since 1900 converted to constant dollars by the GDP deflator. No account was taken of the government's land and mineral rights.

The average growth-adjusted net tax payment to be made by future generations was determined using the aggregate present value of the net tax payment (as derived through the present value budget constraint), the assumed productivity growth, and the projected size of future generations. The size of future generations was estimated using the social security alternative II projection through 2066 and the demographic assumptions for 2066 applied to later years.

**Historical lifetime net tax rates.**—Lifetime net tax rates for generations born between 1900 and 1992 were calculated by dividing the generational account of each generation at birth by its human wealth—the present value at birth of its future labor earnings. The calculation of a generation's human wealth requires knowing its average labor earnings in each future year. The average labor earnings received by particular generations in particular years was determined by distributing aggregate labor income by age and sex using cross-section distributions of labor income found in cross-section survey data. The lifetime generational accounts for generations born between 1900 and 1992 are based on actual taxes and transfers from 1900 through 1992 and projected taxes and transfers in years after 1992.

Aggregate labor earnings, taxes, and transfers were obtained from the national income and product accounts for 1929 and later years. Pre-1929 aggregate labor earnings were from series in *Historical Statistics of the United States, Colonial Times to 1970*. Pre-1929 taxes

and transfers were from the 1982 Census of Governments, *Historical Statistics on Government Finances and Employment*. Various cross-section surveys were used to distribute aggregate labor earnings, taxes, and transfers by age and sex. Cross-section surveys prior to the early 1960s were not available for this study, so surveys from years after 1960 were used for earlier years. The Current Population Surveys were used to distribute aggregate labor earnings and taxes on labor earnings in 1964 and later years, and the 1964 survey was used for earlier years.

**Differences in projections from January 1993 Budget Baselines.**—The imbalance in the lifetime net tax rate between future generations and the generations born in 1992 is estimated to be 165 percent in the baseline before taking account of OBRA93 and health care reform. This is much higher than the 111 percent imbalance estimated a year ago between future generations and the generations born in 1991. Half of this difference is due to incorporating the Health Care Financing Administration's projection of medicaid transfers through 2004 instead of assuming that these transfers remained constant relative to GDP at the last actual ratio. If last year's method had been used this year, the reported imbalance this year would have been 145 percent. Part of the increase from 111 percent to 145 percent is because one more generation, those born in 1992, does not make the higher lifetime net tax payments required of future generations. As a result, the generations born after 1992 have still larger bills to pay. This effect accounts for about 8 percentage points of the increase. Of the remaining increase, a little less than half reflects the use of actual 1992 aggregate taxes, transfers, and purchases instead of projections; and the rest is due to improvements in the cross-section profiles used to distribute taxes and transfers by age and sex and to interactions among the various factors.

## 1. ECONOMIC ASSUMPTIONS

### **Recent Developments**

The economic expansion that began in April 1991 is nearly four years old yet shows no signs of fatigue. Although the recovery was weak by historical standards in the initial two years, its pace subsequently quickened, adding jobs and pushing the economy toward full employment.

Economic activity was especially strong over the four quarters of 1994 with real GDP growth of almost 4 percent. This was well above last January's consensus forecast of 2.8 percent, and the 1995 budget forecast of 3.1 percent.<sup>1</sup> Not only did business fixed investment grow at double-digit rates last year, but consumer demand also increased briskly as households were willing to spend the income generated by the rapid employment gains.

- More than 3.5 million new jobs were created during 1994, almost all of them in the private sector. The unemployment rate, which stood at 6.7 percent in January 1994, fell to 5.4 percent by December.
- A strong economy was also evident in the rate of capacity utilization in manufacturing that climbed to 85 percent in December 1994, the highest level in almost six years.

The current rates of unemployment and capacity utilization are near the thresholds at which labor shortages and material bottlenecks have often occurred in previous expansions. To head off potential inflation pressures, the Federal Reserve tightened monetary policy significantly in 1994. The Fed raised its target for the Federal funds rate six times for a cumulative increase of 2½ percentage points. Both short- and long-term rates rose by that amount. The yields on 30-year Treasury bonds, however, eased to under 8 percent late in the year after peaking at 8.3 percent in early November.

To date, it is hard to discern much impact of Federal Reserve tightening in the economic data. Although housing starts are down from their peak and sales of motor vehicles and other consumer durables have

slowed from their earlier hectic pace, the economy has remained strong judging by the strength of growth in the final quarter of 1994. This should not be surprising because the lags between rising interest rates and their effects on the economy are widely believed to be long.

In acting to restrain inflation when it did, the Federal Reserve moved in advance of any evidence that inflation was actually rising. Indeed, a basic feature of last year's economy was the absence of price pressures, despite strong output growth. Incoming price data have been more favorable than most analysts had expected. Over the 12-month period ending in December 1994, the Consumer Price Index (CPI) rose only 2.7 percent while the Producer Price Index (PPI) advanced 1.7 percent. The increases remain modest after excluding volatile food and energy prices—a rise of 2.6 percent for the "core" CPI and 1.6 percent for the "core" PPI for finished goods. In fact, inflation has not been a problem throughout the current expansion, with the core CPI increasing at an average annual rate of only 3.2 percent. This is its lowest rate of increase over such a sustained period since the 1960s.

### **Economic Projections**

**Key Assumptions:** The Administration's economic projections, summarized in Table 1-1, are based on several key assumptions.

- *Fiscal policy* will continue to uphold the principle embedded in current law that spending reductions must offset any proposed tax cuts so that the Federal budget deficit does not widen.
- The 91-day Treasury bill rate is assumed to rise to 6 percent in early 1995, reflecting the current rapid pace of economic activity. The rate is projected to ease to 5½ percent by 1996.
- *Oil prices* are assumed to rise at the rate of inflation, as measured by the GDP implicit price deflator. The spot price for West Texas Intermediate crude oil dropped to around \$17 a barrel in late 1994, near its average for the year. Although some price recovery is envisaged by next spring, crude oil prices are not expected to contribute to inflation over the long haul.

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<sup>1</sup>This estimate is higher than the 3.6 percent shown in Table 1-1. The economic assumptions, which were completed in early December, did not fully reflect the economic strength that became apparent later in December and in early 1995.

TABLE 1-1. ECONOMIC ASSUMPTIONS<sup>1</sup>

(Calendar years; dollar amounts in billions)

	Actual 1993	Projections					
		1994	1995	1996	1997	1998	1999
<b>Gross Domestic Product (GDP):</b>							
Levels, dollar amounts in billions:							
Current dollars .....	6,343	6,735	7,117	7,507	7,921	8,361	8,823
Constant (1987) dollars .....	5,135	5,337	5,488	5,622	5,762	5,906	6,053
Implicit price deflator (1987 = 100), annual average .....	123.5	126.2	129.7	133.5	137.5	141.6	145.8
Percent change, fourth quarter over fourth quarter:							
Current dollars .....	5.0	6.3	5.4	5.5	5.6	5.5	5.5
Constant (1987) dollars .....	3.1	3.6	2.4	2.5	2.5	2.5	2.5
Implicit price deflator (1987 = 100) .....	1.8	2.6	2.9	2.9	3.0	3.0	3.0
Percent change, year over year:							
Current dollars .....	5.4	6.2	5.7	5.5	5.5	5.5	5.5
Constant (1987) dollars .....	3.1	3.9	2.8	2.5	2.5	2.5	2.5
Implicit price deflator (1987 = 100) .....	2.2	2.1	2.8	3.0	3.0	3.0	3.0
<b>Incomes, billions of current dollars:</b>							
Personal income .....	5,375	5,691	6,026	6,366	6,732	7,130	7,551
Wages and salaries .....	3,081	3,273	3,429	3,610	3,801	4,006	4,221
Corporate profits before tax .....	462	522	544	572	603	629	662
<b>Consumer Price Index (all urban):<sup>2</sup></b>							
Level (1982-84 = 100), annual average .....	144.5	148.3	152.9	157.8	162.8	168.1	173.4
Percent change, fourth quarter over fourth quarter .....	2.7	2.8	3.2	3.2	3.2	3.2	3.1
Percent change, year over year .....	3.0	2.6	3.1	3.2	3.2	3.2	3.1
<b>Unemployment rate, civilian, percent:<sup>3</sup></b>							
Fourth quarter level .....	6.4	5.8	6.0	5.8	5.8	5.8	5.8
Annual average .....	6.7	6.1	5.8	5.9	5.8	5.8	5.8
<b>Federal pay raises, January, percent:</b>							
Military .....	4.2	2.2	2.6	2.4	3.1	3.1	3.1
Civilian <sup>4</sup> .....	4.2	3.7	2.0	2.4	2.1	2.1	2.1
<b>Interest rates, percent:</b>							
91-day Treasury bills <sup>5</sup> .....	3.0	4.2	5.9	5.5	5.5	5.5	5.5
10-year Treasury notes .....	5.9	7.1	7.9	7.2	7.0	7.0	7.0

<sup>1</sup> Based on information available as of December 1994.<sup>2</sup> CPI for all urban consumers. Two versions of the CPI are now published. The index shown here is that currently used, as required by law, in calculating automatic adjustments to individual income tax brackets.<sup>3</sup> Because of a January 1994 change in survey methodology, the 1993 figure is not directly comparable to those for subsequent years.<sup>4</sup> Percentages exclude locality pay adjustments.<sup>5</sup> Average rate (bank discount basis) on new issues within period.

**Economic Outlook for 1995-2000:** The current surge in activity should provide some momentum to the economy in early 1995. The pace of activity is projected to slow considerably during the second and third quarters of the year, however, reflecting the lagged effects of the earlier increases in interest rates on private spending.

For 1995 as a whole, **real GDP growth** is expected to average 2.4 percent, well below the 3.6 percent rate assumed for the previous year. The economy is then projected to settle in on the potential rate of real output growth of 2½ percent in 1996 and beyond.

As real GDP growth slows during 1995, the **unemployment rate** is forecast to edge up from its low current level, allowing monetary policy to ease somewhat. The jobless rate is projected to average 5.8 percent during 1996-2000.

**Inflation** is projected to rise slightly, with the CPI increasing 3.2 percent during 1995. This pickup reflects current labor and capacity constraints and the expectation that past and prospective increases in crude materials prices will be passed through more fully into finished goods prices in the coming months. No further acceleration in consumer prices is assumed for 1996

and the outyears as economic growth slows to a more sustainable 2½ percent pace.

**Three-month Treasury bill rate** is assumed to rise to about 6 percent in early 1995, and then ease back to 5½ percent in 1996 as economic growth slows. The yields on ten-year Treasury notes are expected to stay near its current level of about 7¾ percent in 1995, and then decline gradually to 7.0 percent. These assumptions imply a narrowing of the spread between short- and long-term rates, which is consistent with previous experience for this stage of a business expansion. Adjusting for inflation, both short- and long-term real rates are currently above their historical averages, but are projected to return to the upper end of the historical range.

### Economy's Productive Capacity

The budget assumes that the rate of growth in potential output of the economy is 2.5 percent a year. This corresponds to a somewhat faster rate of growth in output for the nonfarm business sector, 2.8 percent per year.

The long-term growth trend for nonfarm business output can be decomposed into two parts—one reflect-

**TABLE 1-2. AVERAGE ANNUAL GROWTH RATES IN PERCENT**  
(Fiscal years; in billions of dollars)

	1959-73	1973-90	1990-95	1995-2000
Real GDP .....	3.8	2.4	2.3	2.5
Nonfarm Business Output .....	4.0	2.5	2.6	2.8
Hours Worked .....	1.6	1.7	1.2	1.4
Productivity .....	2.4	0.7	1.4	1.4

ing the increase in productivity (that is, output per hour worked), and the other the expected growth of total hours worked (Table 1-2).

- **Productivity** is assumed to grow at an annual rate of 1.4 percent over the projection period. This continues the trend of the early 1990s, which has seen a modest pick up in productivity growth relative to the sluggish performance from 1973–1990. Although it is still too early to be certain that the recent productivity gains are more than a cyclical phenomenon, there is reason for optimism in view of the massive business restructurings and the information revolution, and because faster productivity growth has continued well into the current expansion.
- **Hours** worked in the nonfarm business sector are projected to increase at an annual rate of 1.4 percent a year. This is slower than during the 1960s and 1970s when the baby-boom generation first entered the labor force, but higher than the rate experienced during the early 1990s when the job market was weak during the 1990–91 recession and the early phase of the current recovery.

### Omnibus Trade and Competitiveness Act of 1988

As required by the Omnibus Trade and Competitiveness Act of 1988, Table 1-3 shows estimates for economic variables related to saving, investment, and foreign trade consistent with the economic assumptions. The merchandise trade and current account balances deteriorated in fiscal year 1994 as growth in U.S. exports was exceeded by growth in imports. The continued faster rate of growth in the United States than our major trading partners is the major factor behind the larger deficits. As the growth differential narrows over the next several years, the deficits will level off and begin to decline.

Net private investment in the United States has expanded rapidly in the past year, and it is expected to continue to increase as the economy expands. The sources of finance for the increased private investment

are the decline in the Federal deficit and higher private saving, plus a larger inflow of foreign capital.

The Act requires information on the amount of borrowing by the Federal Government in private credit markets. This is presented in Chapter 13, "Federal Borrowing and Debt."

It is difficult to gauge with precision the effect of Federal Government borrowing from the public on interest rates and exchange rates, as required by the Act. Both are influenced by many factors besides Government borrowing in a complicated process involving supply and demand for credit and perceptions of fiscal and monetary policy here and abroad.

### Impact of Changes in the Economic Assumptions

Last year's budget economic assumptions understated the surge in economic activity and job growth that actually occurred during 1994. They also did not fully anticipate the much larger increases in interest rates resulting from the strength of the economy and the Fed's monetary tightening actions. This is clearly shown in Table 1-4, which compares this year's economic assumptions with those of the 1995 budget.

The divergences between actual economic performance and the economic assumptions for 1994–1999 have significant effects on the budget deficit. On balance, the deficit narrows by \$12.2 billion in 1995 and widens by \$25.6 billion in 1999 (Table 1-5). The main reason for the increased deficit in the outyears is higher interest rates, offset in part by higher receipts and lower costs for unemployment-sensitive programs. Increased receipts projections are partly the result of the larger volume of trade stimulated by GATT.

### Structural vs. Cyclical Deficit

When there is excessive slack in the economy, receipts are lower than they would be otherwise, and outlays for unemployment-sensitive programs (such as unemployment compensation and food stamps) are

**TABLE 1-3. SAVING, INVESTMENT, AND TRADE BALANCE**  
(Fiscal years; in billions of dollars)

	1994 actual	1996 estimate
Current account balance .....	-142	-205 to -165
Merchandise trade balance .....	-156	-205 to -165
Net foreign investment .....	-131	-190 to -150
Net domestic saving (excluding Federal saving) <sup>1</sup> .....	358	360 to 400
Net private domestic investment .....	290	370 to 410

<sup>1</sup> Defined for purposes of Public Law 100-418 as the sum of private saving and the surpluses of State and local governments. All series are based on National Income and Product Accounts except for the current account balance.

**TABLE 1-4. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 1995 AND 1996 BUDGETS**  
(Calendar years; dollar amounts in billions)

	1994	1995	1996	1997	1998	1999
Nominal GDP:						
1995 budget assumptions <sup>1</sup>	6,698	7,079	7,481	7,906	8,353	8,821
1996 budget assumptions	6,735	7,117	7,507	7,921	8,361	8,823
Real GDP (percent change): <sup>2</sup>						
1995 budget assumptions	3.0	2.7	2.7	2.6	2.6	2.5
1996 budget assumptions	3.6	2.4	2.5	2.5	2.5	2.5
GDP deflator (percent change): <sup>2</sup>						
1995 budget assumptions	2.7	2.8	2.9	3.0	3.0	3.0
1996 budget assumptions	2.6	2.9	2.9	3.0	3.0	3.0
Civilian unemployment rate (percent): <sup>3</sup>						
1995 budget assumptions	7.0	6.6	6.4	6.2	6.0	6.0
1996 budget assumptions	6.1	5.8	5.9	5.8	5.8	5.8
91-day Treasury bill rate (percent): <sup>3</sup>						
1995 budget assumptions	3.4	3.8	4.1	4.4	4.4	4.4
1996 budget assumptions	4.2	5.9	5.5	5.5	5.5	5.5
10-year Treasury note rate (percent): <sup>3</sup>						
1995 budget assumptions	5.8	5.8	5.8	5.8	5.8	5.8
1996 budget assumptions	7.1	7.9	7.2	7.0	7.0	7.0

<sup>1</sup>Adjusted for July 1994 revisions.<sup>2</sup>Fourth quarter-to-fourth quarter.<sup>3</sup>Calendar year average.

**TABLE 1-5. EFFECTS ON THE BUDGET OF CHANGES IN ECONOMIC ASSUMPTIONS SINCE LAST YEAR**  
(In billions of dollars)

	1995	1996	1997	1998	1999
Budget totals under 1995 budget economic assumptions and 1996 budget policies:					
Receipts .....	1,327.5	1,398.9	1,459.4	1,539.1	1,613.4
Outlays .....	1,532.1	1,586.7	1,657.1	1,712.3	1,785.2
Deficit (-) .....	-204.7	-187.8	-197.7	-173.2	-171.9
Changes due to economic assumptions:					
Receipts .....	19.0	16.5	12.2	9.7	11.4
Outlays:					
Inflation .....	-0.6	-1.3	-2.0	-1.8	-3.7
Unemployment .....	-8.0	-3.7	-5.0	-2.9	-2.2
Interest rates .....	16.5	31.7	35.2	37.4	41.4
Interest on changes in borrowing .....	-1.1	-1.2	-0.7	0.3	1.5
Total, outlays .....	6.8	25.4	27.6	32.9	36.9
Decrease in deficit (+) .....	12.2	-8.9	-15.4	-23.2	-25.6
Budget totals under 1996 budget economic assumptions and policies:					
Receipts .....	1,346.4	1,415.5	1,471.6	1,548.8	1,624.7
Outlays .....	1,538.9	1,612.1	1,684.7	1,745.2	1,822.2
Deficit (-) .....	-192.5	-196.7	-213.1	-196.4	-197.4

higher. As a result, the deficit is also higher than it would be at full employment. The portion of the deficit that can be traced to such factors is called the cyclical deficit. The remainder is called the structural deficit.<sup>2</sup>

Changes in the structural deficit give a better picture of the impact of budget policy on the economy than the unadjusted deficit affords. During a recession and in the early stage of a recovery, the structural deficit also gives a clearer picture of the long-run deficit problem that fiscal policy must address, since this part of

the deficit will persist even when the economy has fully recovered, unless policy changes.

In the early 1990's, outlays for deposit insurance added substantially to actual deficits, although they had little current impact on economic performance. It therefore became customary to remove deposit insurance outlays as well as the cyclical component of the deficit from the actual deficit to compute the adjusted structural deficit. This is shown in Table 1-6.

Over the current forecast horizon, the cyclical component of the deficit is small. Deposit insurance outlays are relatively small and do not change greatly from year to year. Thus, somewhat atypically, the adjusted

<sup>2</sup>For purposes of this presentation, an unemployment rate in excess of 5.8 percent is considered excessive slack.

## 1. ECONOMIC ASSUMPTIONS

**TABLE 1-6. ADJUSTED STRUCTURAL DEFICIT**  
(In billions of dollars)

	1992	1993	1994	1995	1996	1997	1989	1999	2000
Actual deficit (unadjusted) .....	290.4	255.1	203.2	192.5	196.7	213.1	196.4	197.4	194.4
Cyclical component .....	60.2	47.2	15.4	-3.1	.....	.....	.....	.....	.....
Structural deficit .....	230.2	207.9	187.8	195.6	196.7	213.1	196.4	197.4	194.4
Deposit insurance <sup>1</sup> .....	2.4	28.0	7.6	12.3	6.3	1.4	-1.2	1.3	3.5
Adjusted structural deficit .....	232.6	235.9	195.3	207.8	203.0	214.5	195.2	198.7	197.9

<sup>1</sup>In 1992, includes \$4.9 billion in allied contributions for Desert Storm.

structural deficits in this budget display much the same pattern of year-to-year changes as the actual deficits.

### Sensitivity of the Budget to Economic Assumptions

Both receipts and outlays are affected by changes in economic conditions. This sensitivity seriously complicates budget planning, because errors in economic assumptions lead to errors in the budget projections. It is therefore useful to examine the implications of alternative economic assumptions.

Many of the budgetary effects of changes in economic assumptions are fairly predictable, and a set of rules of thumb embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the deficit.

Economic variables that affect the budget do not usually change independently of one another. Output and employment tend to move together in the short run: a higher rate of real GDP growth is generally associated with a declining rate of unemployment, while weak or negative growth is usually accompanied by rising unemployment. In the long run, however, changes in the average rate of growth of real GDP are mainly due to changes in the rates of growth of productivity and labor supply, and are not necessarily associated with changes in the average rate of unemployment.

Inflation and interest rates are also closely interrelated: a higher expected rate of inflation increases interest rates, while lower expected inflation reduces rates.

Changes in real GDP growth or inflation have a much greater cumulative effect on the budget over time if they are sustained for several years than if they last for only one year.

Highlights of the rules of thumb are shown in Table 1-7:

If real GDP growth is lower by one percentage point in calendar 1995 only and the unemployment rate rises by one-half percentage point, the 1995 deficit would increase by \$8.2 billion; receipts in 1995 would be lower by about \$7.0 billion, and outlays would be higher by about \$1.2 billion, primarily for unemployment-sensitive programs. In 1996, the receipts shortfall would grow further to about \$15.2 billion, and outlays would be increased by about \$5.8 billion relative to the base, even though the growth rate in calendar 1996 follows the path originally assumed. This is because the level of real (and nominal) GDP and taxable incomes would

be permanently lower and unemployment higher. The budget effects (including growing interest costs associated with the higher deficits) would continue to grow slightly in later years.

- The budget effects are much larger if the real growth rate is assumed to be one percentage point less in each year (1995–2000) and the unemployment rate rises one-half percentage point in each year. With these assumptions, the levels of real and nominal GDP would be below the base case by a growing percentage. The deficit would be \$153.2 billion higher than under the base case by 2000.
- The effects of slower productivity growth are shown in a third example, where real growth is one percentage point lower per year while the unemployment rate is unchanged. In this case, the estimated budget effects mount steadily over the years, but more slowly, reaching a \$126.7 billion deficit add-on by 2000.

*Joint changes in interest rates and inflation have a smaller effect on the deficit than equal percentage point changes in real GDP growth because their effects on receipts and outlays are substantially offsetting.* An example is the effect of a one percentage point higher rate of inflation and one percentage point higher interest rates during calendar year 1995 only. In subsequent years, the price level and nominal GDP would be one percent higher than in the base case, but interest rates are assumed to return to their base levels. Outlays for 1995 rise by \$5.9 billion<sup>3</sup> and receipts by \$7.7 billion, for a decrease of \$1.7 billion in the 1995 deficit. In 1996, outlays would be above the base by \$13.9 billion, due in part to lagged cost-of-living adjustments; receipts would rise \$16.0 billion above the base, however, resulting in a \$2.1 billion decrease in the deficit. In subsequent years, the amounts added to receipts would be larger than the additions to outlays.

If the rate of inflation and the level of interest rates are higher by one percentage point in all years, the price level and nominal GDP would rise by a cumulatively growing percentage above their base levels. In this case, the effects on receipts and outlays mount steadily in successive years, adding \$71.1 billion to outlays and \$96.3 billion to receipts in 2000, for a net reduction in the deficit of \$25.2 billion.

<sup>3</sup>This excludes any adjustment to discretionary programs which are capped in nominal terms.

The table also shows the interest rate and the inflation effects separately, and rules of thumb for the added interest cost associated with higher or lower deficits (increased or reduced borrowing).

*The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table.* The impact of a one percentage point lower rate of inflation or higher real growth

would have about the same magnitude as the effects shown in the table, but with the opposite sign.

These rules of thumb are computed while holding the income share composition of GDP constant. Because different income components are subject to different taxes and tax rates, estimates of total receipts can be affected significantly by changing income shares. These relationships, however, have proved too complex to be reduced to simple rules.

TABLE 1-7. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS  
(In billions of dollars)

Budget effect	1995	1996	1997	1998	1999	2000
<b>Real Growth and Employment</b>						
Effects of 1 percent lower real GDP growth in calendar year 1995 only, including higher unemployment: <sup>1</sup>						
Receipts .....	-7.0	-15.2	-17.4	-17.6	-18.1	-18.7
Outlays .....	1.2	5.8	7.7	9.6	11.6	13.8
Deficit increase (+) .....	8.2	21.0	25.1	27.2	29.7	32.5
Effects of a sustained 1 percent lower annual real GDP growth rate during 1995–2000, including higher unemployment: <sup>1</sup>						
Receipts .....	-7.0	-22.4	-40.6	-59.6	-79.9	-101.4
Outlays .....	1.2	7.0	15.1	25.0	38.3	51.8
Deficit increase (+) .....	8.2	29.4	55.6	84.6	118.2	153.2
Effects of a sustained 1 percent lower annual real GDP growth rate during 1995–2000, with no change in unemployment:						
Receipts .....	-7.0	-22.7	-41.6	-61.9	-83.8	-107.3
Outlays .....	0.3	1.3	3.5	7.1	12.3	19.4
Deficit increase (+) .....	7.3	24.0	45.1	69.0	96.2	126.7
<b>Inflation and Interest Rates</b>						
Effects of 1 percentage point higher rate of inflation and interest rates during calendar year 1995 only:						
Receipts .....	7.7	16.0	16.4	15.4	15.8	16.2
Outlays .....	5.9	13.9	10.9	9.1	7.6	7.1
Deficit increase (+) .....	-1.7	-2.1	-5.5	-6.3	-8.1	-9.2
Effects of a sustained 1 percentage point higher rate of inflation and interest rates during 1995–2000:						
Receipts .....	7.7	24.0	41.5	58.7	77.0	96.3
Outlays .....	5.9	20.4	33.8	46.2	58.8	71.1
Deficit increase (+) .....	-1.7	-3.7	-7.7	-12.6	-18.3	-25.2
Effects of a sustained 1 percentage point higher interest rate during 1995–2000 (no inflation change):						
Receipts .....	0.7	1.8	2.4	2.7	2.9	3.3
Outlays .....	5.5	16.8	24.9	31.7	38.3	44.8
Deficit increase (+) .....	4.9	14.9	22.5	28.9	35.3	41.5
Effects of a sustained 1 percentage point higher rate of inflation during 1995–2000 (no interest rate change):						
Receipts .....	7.0	22.2	39.1	56.0	74.1	93.0
Outlays .....	0.4	3.6	8.9	14.5	20.5	26.3
Deficit increase (+) .....	-6.6	-18.6	-30.2	-41.5	-53.6	-66.7
<b>Interest Cost of Higher Federal Borrowing</b>						
Effect of \$100 billion additional borrowing during 1995 .....	3.6	7.0	7.3	7.6	8.0	8.5

<sup>1</sup> The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

### Introduction

This chapter presents a framework for describing the financial condition of the Federal Government and its performance as a steward of publicly owned assets. Although the tables presented below are similar in some ways to a business's balance sheet, they are not the same. The Government's sovereign powers have no counterparts in the business world, and its resources and responsibilities are broader than the assets and liabilities found on a conventional balance sheet. For this reason, it is not possible to judge how well the Government is discharging its stewardship obligations simply from an examination of its own books. A review of the Government's contribution to national welfare and security is also needed.

Differences between Government and business accounting, and the serious limitations in the available data, argue for caution in interpreting the material presented below. Conclusions based on this presentation are necessarily tentative and subject to future revision as the estimating methods are improved and better data become available. The presentation consists of three components:

- The first, summarized in Table 2-1, shows what the Federal Government owns and what it owes. In this table, these assets and liabilities are strictly defined. Assets are limited to the Government's physical and financial possessions. Liabilities are the result of past Government actions that have resulted in binding commitments to make future payments.
- The second component consists of Federal budget projections indicating possible future paths for the balance between Federal resources and responsibilities.<sup>1</sup>
- The final component is intended to present ways in which Federal activities contribute to social and economic well-being. Table 2-3 shows how Federal investments have contributed to national wealth. Table 2-4 offers a set of economic and social indicators that are affected to a greater or lesser degree by Government actions. In the future other tables showing Government-wide performance measures could be added.

The Federal Government does not have a single bottom line that would reveal its financial status in a glance, but the tables and charts shown here can contribute to a balanced view of that condition and the Government's stewardship of its resources. Currently, the Government's liabilities arising from its past activities exceed the value of the assets in its possession.

The gap has widened markedly over the last decade or more. While the Federal Government's financial position has declined, the Nation's wealth has continued to rise, and the Government's net liabilities amount to only about 6 percent of total wealth. Furthermore, according to current budget projections, Federal debt, the main contributor to the rise in net liabilities, will expand less rapidly over the next few years than it has over the past decade or more. The real level of Federal debt is projected to rise at a rate of about 2 percent per year compared with an 8 percent rate of increase from 1980 to 1994.

### Relationship with FASAB Objectives

The framework presented here meets one of the four objectives<sup>2</sup> of Federal financial reporting recommended by the Federal Accounting Standards Advisory Board and adopted for use by the Federal Government in September 1993. This Stewardship objective says:

Federal financial reporting should assist report users in assessing the impact on the country of the Government's operations and investments for the period and how, as a result, the Government's and the Nation's financial conditions have changed and may change in the future. Federal financial reporting should provide information that helps the reader to determine:

- 3a. Whether the Government's financial position improved or deteriorated over the period.
- 3b. Whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due.
- 3c. Whether Government operations have contributed to the Nation's current and future well-being.

The Board is in the process of developing guidance as to the specific displays that would meet this Objective and the accounting standards for use in such statements and schedules. This experimental presentation explores one possible approach for meeting the Objective at the Government-wide level.

### What Can Be Learned from a Balance Sheet Approach

The budget is an essential tool for allocating resources within the Federal Government, but the standard budget presentation, with its focus on annual outlays, receipts, and the deficit, does not provide sufficient information for a full analysis of the Government's financial and investment decisions. Additional information about the stocks of Federal assets and liabilities can be useful as well. It is also important to examine the effects of Government financial decisions on the private sector and State and local governments. This is especially true for Federal investments which often

<sup>1</sup> In this section, Table 2-2 also shows the actuarial balances for the major social insurance programs and how they have changed in the past year.

<sup>2</sup> *Objectives of Federal Financial Reporting*, Statement of Federal Financial Accounting Concepts Number 1, Spetember 2, 1993. The other three objectives relate to budgetary integrity, operating performance, and systems and controls.

## Chart 2-1. A BALANCE SHEET PRESENTATION FOR THE FEDERAL GOVERNMENT

ASSETS / RESOURCES		LIABILITIES / RESPONSIBILITIES
<p style="text-align: center;"><b>Federal Assets</b></p> <p>Financial Assets</p> <ul style="list-style-type: none"> <li>Gold and Foreign Exchange</li> <li>Other Monetary Assets</li> <li>Mortgages and Other Loans</li> <li>    Less Expected Loan Losses</li> <li>Other Financial Assets</li> </ul> <p>Physical Assets</p> <ul style="list-style-type: none"> <li>Fixed Reproducible Capital</li> <li>    Defense</li> <li>    Nondefense</li> <li>Inventories</li> <li>Non-reproducible Capital</li> <li>    Land</li> <li>    Mineral Rights</li> </ul>	<p><b>Federal Governmental Assets and Liabilities (Table 2.1)</b></p>	<p style="text-align: center;"><b>Federal Liabilities</b></p> <p>Financial Liabilities</p> <ul style="list-style-type: none"> <li>Currency and Bank Reserves</li> <li>Debt Held by the Public</li> <li>Miscellaneous</li> <li>Guarantees and Insurance Liabilities</li> <li>    Deposit Insurance</li> <li>    Pension Benefit Guarantees</li> <li>    Loan Guarantees</li> <li>    Other Insurance</li> <li>Federal Pension Liabilities</li> </ul> <p>Net Balance</p>
<p style="text-align: center;"><b>Resources / Receipts</b></p> <p>Projected Receipts</p> <p>Addendum: Real GDP Projections</p>	<p><b>Long-Run Federal Budget Projections</b></p>	<p style="text-align: center;"><b>Responsibilities / Outlays</b></p> <p>Discretionary Outlays</p> <p>Mandatory Outlays</p> <ul style="list-style-type: none"> <li>Social Security</li> <li>Health Programs</li> <li>Other Programs</li> </ul> <p>Net Interest</p> <p>Deficit</p>
<p style="text-align: center;"><b>National Assets / Resources</b></p> <p>Federally Owned Physical Assets</p> <p>State &amp; Local Physical Assets</p> <ul style="list-style-type: none"> <li>Federal Contribution</li> </ul> <p>Privately Owned Physical Assets</p> <p>Education Capital</p> <ul style="list-style-type: none"> <li>Federal Contribution</li> </ul> <p>R &amp; D Capital</p> <ul style="list-style-type: none"> <li>Federal Contribution</li> </ul>	<p><b>National Wealth (Table 2.3)</b></p>	<p style="text-align: center;"><b>National Needs / Conditions</b></p> <p>Indicators of economic, social, educational, and environmental conditions to be used as a guide to Government investment and management.</p>

generate returns that flow mainly to households, private businesses or other levels of government rather than back to the Federal Treasury. Measurements that correct for inflation are also essential to provide a clear picture of the current value of Government assets and liabilities and to permit meaningful comparisons over time. The framework presented here is a first step toward filling some of these needs.

The Government's sovereign powers to tax, regulate commerce, and set monetary policy give it resources that no private enterprise possesses. Although these resources are not assets in a conventional sense, they need to be considered in any complete review of the Government's financial condition. On the liabilities side, while there are some Government obligations, such as Treasury notes, that have clear counterparts in the business world, other Government obligations have no obvious analogues in business accounting. For example, the Government's obligation to promote the general welfare has led in the twentieth century to the establishment of a broad array of social welfare programs. These programs are in the midst of an intense review with the dual objectives of improving effectiveness and considering the need for realigning Federal, State, and local responsibilities. Even so it is reasonable to expect that they will continue in some form in the future, and that they will require future Federal funding. Such obligations, however, are not legally binding liabilities, and they would not be included on a business balance sheet.

Furthermore, almost all of the broader Federal resources and responsibilities are subject to change through the political process, and future decisions by Congress and the President are likely to alter their value. In a financial sense, the discounted present value of such obligations is much more uncertain than is the current value of the official Government debt, or even the value of Government-owned assets. This is another reason for keeping such political and moral obligations

separate from the Government's liabilities strictly defined.

The best way to see how future resources line up with future responsibilities is to project the Federal budget forward in time. The budget offers a comprehensive picture of Federal receipts and spending, and by projecting it forward one can discover the implications of current and past policy decisions. But the budget does not show whether the public is receiving value for its tax dollars. Knowing that would require performance measures for government programs, and broad statistical information about those conditions in our economy and society for which government is wholly or partly responsible. Some of these data are currently available but much more could be developed.

The presentation that follows consists of a series of tables and charts. No one of these is "the Government balance sheet," but all of them together can serve some of the functions of a balance sheet. The schematic diagram, Figure 2.1, shows how they fit together. The tables and charts should be viewed as an ensemble, the main elements of which can be grouped together in two broad categories—assets/resources and liabilities/responsibilities.

- Reading down the left-hand side of the diagram shows the range of Federal resources, including assets the Government owns, tax receipts it can expect to collect, and national wealth that provides the base for Government revenues.
- Reading down the right-hand side reveals the full range of Federal obligations and responsibilities, beginning with Government's acknowledged liabilities based on past actions, such as the debt held by the public, and going on to include future budget outlays. This column includes a preliminary set of indicators of the Nation's well-being. These might indicate areas where Government activity might require adjustment either through new investment or through reductions or reallocations of existing resources.

## THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2-1 summarizes what the Government owes as a result of its past operations along with the value of what it owns, for a number of years beginning in 1960. The values of assets and liabilities are measured in terms of constant FY 1994 dollars. For all of this period, Government liabilities have exceeded the value of assets, but until the early 1980s the disparity was relatively small, and for many years it deteriorated only gradually.

In the late 1970s, a speculative run-up in the prices of oil, gold, and other real assets temporarily boosted Federal asset values, but since then they have declined.<sup>3</sup> Currently, the total value of Federal assets is

estimated to be only 14 percent greater in real terms than it was in 1960. Meanwhile, Federal liabilities have increased by 154 percent in real terms. The sharp decline in the Federal net asset position that began in the 1980s was due to the large Federal budget deficits that began at that time along with the drop in asset values. Currently, the net excess of liabilities over assets is about \$2,900 billion or \$11,000 per capita.

### Assets

The assets in Table 2-1 reflect a complete listing of physical resources owned by the Federal Government. They correspond to items that would appear on a normal balance sheet, but they do not constitute an exhaustive catalogue of Federal resources. The Govern-

<sup>3</sup>This temporary improvement highlights the importance of the other tables in this presentation. What was good for the Federal Government as an asset holder was not necessarily favorable to the economy. The decline in inflation in the early 1980s reversed the speculative runup in gold and other commodity prices. This reduced the balance of Federal net assets,

but it was good for the economy.

TABLE 2-1. GOVERNMENT ASSETS AND LIABILITIES \*

(As of the end of the fiscal year, in billions of 1994 dollars)

	1960	1965	1970	1975	1980	1985	1990	1992	1993	1994
<b>ASSETS</b>										
Financial assets:										
Gold and foreign exchange .....	103	72	60	132	323	156	197	176	175	175
Other monetary assets .....	39	55	32	15	37	23	30	38	38	30
Mortgages and other loans .....	128	161	205	203	274	332	267	250	224	203
Less expected loan losses .....	-1	-3	-4	-9	-16	-16	-17	-21	-23	-25
Other financial assets .....	61	80	65	65	83	106	161	218	197	185
Subtotal .....	329	365	358	405	702	603	638	661	611	567
Fixed reproducible capital:										
Defense .....	867	870	853	685	548	630	708	743	755	744
Nondefense .....	154	181	192	217	207	234	235	237	238	239
Inventories .....	264	225	206	181	217	246	213	187	174	163
Nonreproducible capital:										
Land .....	85	117	147	227	289	310	305	249	234	226
Mineral rights .....	307	283	234	325	591	665	443	396	379	351
Subtotal .....	1,677	1,676	1,631	1,636	1,851	2,086	1,904	1,811	1,780	1,723
<b>Total assets .....</b>	<b>2,006</b>	<b>2,041</b>	<b>1,989</b>	<b>2,041</b>	<b>2,554</b>	<b>2,689</b>	<b>2,541</b>	<b>2,472</b>	<b>2,391</b>	<b>2,290</b>
<b>LIABILITIES</b>										
Financial liabilities:										
Currency and bank reserves .....	230	249	272	274	275	289	347	367	394	419
Debt held by the public .....	1,001	972	813	790	1,005	1,764	2,407	2,835	2,994	3,076
Miscellaneous .....	60	61	58	53	59	67	93	70	69	67
Subtotal .....	1,292	1,282	1,143	1,117	1,339	2,120	2,847	3,272	3,457	3,562
Insurance liabilities:										
Deposit insurance .....	.....	.....	.....	.....	2	8	64	3	-29	-8
Pension benefit guarantees .....	.....	.....	.....	41	29	40	39	47	61	30
Loan guarantees .....	.....	.....	2	6	12	10	14	25	28	30
Other insurance .....	31	28	22	19	25	16	18	18	24	26
Subtotal .....	31	28	24	67	68	74	135	92	84	78
Federal pension liabilities .....	751	938	1,096	1,226	1,683	1,651	1,575	1,574	1,523	1,532
<b>Total liabilities .....</b>	<b>2,075</b>	<b>2,249</b>	<b>2,262</b>	<b>2,410</b>	<b>3,091</b>	<b>3,845</b>	<b>4,557</b>	<b>4,939</b>	<b>5,064</b>	<b>5,172</b>
Balance .....	-68	-208	-273	-369	-537	-1,157	-2,016	-2,467	-2,674	-2,882
Per capita (in 1994 dollars) .....	-379	-1,070	-1,333	-1,710	-2,352	-4,837	-8,042	-9,628	-10,323	-11,015
Ratio to GDP (in percent) .....	-2.7	-6.6	-7.5	-9.0	-11.2	-21.1	-32.5	-38.7	-40.7	-42.1

\* This table shows assets and liabilities for the Government as a whole, including the Federal Reserve System. Therefore, it does not break out separately the assets held in certain Government accounts, such as social security, that are the obligation of specific Government agencies. Estimates for 1994 are extrapolated in some cases.

ment's most important financial resource, its ability to tax, is not reflected.

**Financial Assets:** At the end of 1994, the Federal Government's holdings of financial assets amounted to about \$570 billion. Government-held mortgages and other loans (measured in constant dollars) reached a peak in the mid-1980s. Since then, Federal loans have declined. The holdings of mortgages, in particular, have declined sharply as the holdings acquired from failed Savings and Loan institutions have been liquidated.

The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future losses on these loans is about \$25 billion as of 1994. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Over time, variations in the price of gold have accounted for major swings in this category. Since 1980, gold prices have fallen by 40 percent and the real value

of U.S. gold and foreign exchange holdings have dropped by 46 percent.

**Fixed Reproducible Capital:** The Federal Government is a major investor in physical capital. Government-owned stocks of fixed reproducible capital amounted to almost \$1.0 trillion in 1994. About three-quarters of this capital is in the form of military equipment and structures. From 1960 to 1981, the net stock of defense capital fell as a share of GDP, but since 1981 until the last two years, the ratio held steady at around 12 percent. In the last two years, the reduction in defense purchases following the end of the Cold War has caused a decline in the ratio of these stocks to GDP of about 1 percentage point.

**Inventories:** The effect of the slowdown in defense purchases has been more noticeable for inventories. Data on Federal inventories are maintained by the Bureau of Economic Analysis (BEA), Department of Commerce. Since 1990, Federal inventories have declined

by more than 20 percent in real terms, accounted for entirely by a drop in military stocks.

*Non-reproducible Capital:* The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings. Researchers in the private sector have estimated what they are worth and these estimates are extrapolated in Table 2-1. Since the late 1980s, private land values have fallen, and it is assumed here that federal lands have shared in this decline. Oil prices have fluctuated but are lower now than four years ago. These shifts have pulled down the value of Federal mineral deposits.

*Total Assets:* The total real value of Government assets has declined somewhat over the last 10 years, principally because of declines in the real prices of gold, land, and minerals. At the end of 1994, the Government's holdings of all assets were worth about \$2.3 trillion.

### Liabilities

The liabilities shown in Table 2-1 are analogous to a business corporation's liabilities and include public debt, trade credit, and pension obligations owed to Federal workers. Other potential claims on Federal financial resources are not reflected.

*Financial Liabilities:* These amounted to about \$3.6 trillion at the end of 1994. The largest component was the Federal debt held by the public, amounting to almost \$3.1 trillion. This measure of Federal debt is net of the holdings of the Federal Reserve System, which exceeded \$350 billion in 1994. Although an independent agency, the Federal Reserve is part of the Federal Government, and its assets and liabilities are included here in the Federal totals.

In addition to debt held by the public, the Government's financial liabilities include \$420 billion in currency and bank reserves, which are mainly obligations of the Federal Reserve System, and about \$70 billion in miscellaneous liabilities.

## THE BALANCE OF RESOURCES AND RESPONSIBILITIES

The data summarized in Table 2-1 are useful in showing some of the consequences of the Government's past policies, but the Government's continuing commitments to provide public services are not reflected in this table, nor can the Government's broader resources be displayed in a table limited to assets that it owns. A better way to examine the balance between future Government obligations and resources is by projecting the budget.

The 1993 Omnibus Budget Reconciliation Act reduced the Federal deficit on a cumulative basis by over \$500 billion. This is a significant improvement. As a result, the deficit preserves a relatively stable ratio to GDP declining from around 2.7 percent in 1995 to 2.1 percent

*Guarantees and Insurance Liabilities:* The Federal Government has contingent liabilities arising from loan guarantees and insurance programs. When the Government guarantees a loan or offers insurance, the initial outlays may be small or, if a fee is charged, they may even be negative, but the risk of future outlays associated with such commitments can be huge. The deposit insurance programs, for example, have experienced very large losses recently following many years in which these programs had no budgetary cost in excess of premiums.

In the past, the cost of such risks was not recognized until after a loss was realized. In the last few years, however, techniques have been developed which permit estimates to be made of the accruing cost from commitments that risk future outlays. These estimates are reported in Table 2-1. They amounted to about \$78 billion in 1994. The resolution of the many failures in the Savings and Loan and banking industries have helped to reduce the accumulated losses in this category.

*Federal Pension Liabilities:* The Federal Government owes pension benefits to its retired workers and to current employees who will eventually retire. The amount of these liabilities is large. As of 1994, the discounted present value of the benefits is estimated to have been around \$1.5 trillion.<sup>4</sup>

### The Balance of Net Liabilities

The balance between Federal liabilities and Federal assets has deteriorated over the past decade at a rapid rate. In 1980, the negative balance was less than 11 percent of GDP. Currently, it is estimated to be over 40 percent. Although the Government need not maintain a positive balance, because the range of Government resources extends beyond the conventional assets shown in Table 2-1, continuation of this trend would be worrisome.

in 2000, and below 2 percent in the following decade. For the period beyond the year 2000, however, the budget outlook is highly uncertain. Demographic trends that will begin to assert themselves early in the next century promise to raise the Federal cost of social security and other benefits for the elderly.

Some future claims on budgetary resources deserve special emphasis because of their importance in individual retirement planning. These claims are highlighted in Table 2-2. The Social Security Trustees present an annual report on the balance in the Old Age Survivors Insurance and Disability Insurance (OASI and DI) Trust Funds based on a 75-year projection of future costs and benefits. Table 2-2 shows how these projec-

<sup>4</sup>These pension liabilities are expressed as the actuarial present value of benefits accrued-to-date based on past and projected salaries. The expected costs of retiree health benefits are not included. The 1994 liability is extrapolated from recent trends.

**TABLE 2-2. CHANGE IN 75-YEAR ACTUARIAL BALANCE FOR OASDI AND HI TRUST FUNDS  
(INTERMEDIATE ASSUMPTIONS)**

(As a percent of taxable payroll)

	OASI	DI	OASDI	HI
Actuarial balance in 1993 report .....	-0.97	-0.49	-1.46	-5.11
Changes in balance due to changes in:				
Valuation period .....	-0.05	-0.00	-0.05	-0.13
Economic and demographic assumptions .....	-0.17	-0.02	-0.18	-0.02
Disability assumptions .....	0.00	-0.11	-0.11	0.00
Legislation .....	0.00	0.00	0.00	1.31
Methods .....	-0.27	-0.04	-0.31	0.00
Other .....	0.00	0.00	0.00	-0.19
Total changes .....	-0.49	-0.17	-0.66	0.97
Actuarial balance in 1993 report .....	-1.46	-0.66	-2.13	-4.14

tions changed between 1993 and 1994. The table also reports similar projections for Medicare's hospital insurance (HI) trust fund.

It is estimated that the balance in the combined OASDI fund worsened by an estimated 0.66 percent of payroll in 1994. These changes were mainly the result of adjustments to the estimating assumptions and technical corrections. The balance in the HI trust fund improved by 0.97 percent of payroll as the result of legislative changes that increased the expected receipts from the HI portion of the payroll tax. Even with this improvement, the HI trust fund is expected to run out

of resources within the next decade, and the trust fund remains in deficit on a 75-year basis.

Over the past decade, the outlook for both the OASDI and the HI trust funds has deteriorated markedly. At the time of the 1983 social security reforms, the system was temporarily restored to actuarial balance. Since then, downward adjustments in the economic outlook and technical revisions have brought about a deterioration in the projected balances. Currently, the mid-range projections of the actuaries imply that social security will reach a point in the next century after which outgo permanently exceeds income. Medicare reaches a similar point even sooner.

## NATIONAL WEALTH AND FEDERAL INVESTMENTS

Unlike a private corporation, the Federal Government routinely invests in ways that do not add directly to its assets. For example, Federal grants are frequently used to fund capital projects that involve investment at the State or local level of government for highways and other purposes. Such investments can be valuable nationally, but they are not owned by the Federal Government.

The Federal Government also invests in education and research and development (R&D). These outlays contribute to future productivity and are in that sense analogous to an investment in physical capital. Indeed, economists have computed stocks of human and knowledge capital to reflect the accumulation of such investments. Nonetheless, these capital stocks are not owned by the Federal Government, nor would they appear on a business balance sheet.

Table 2-3 presents a national balance sheet. It includes estimates of total national wealth classified in three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories, and these contributions are also shown in the table.

Data in this table are especially uncertain, because of the assumptions needed to prepare the estimates. Overall, the Federal contribution to the current level of national wealth is about 8 percent. Figure 2.3 illus-

trates the relative contribution of different categories of wealth to the national total.

### Physical Assets

These include factories machinery, office buildings, residential structures, land, and government's physical assets such as military hardware and highways. Automobiles and consumer appliances are also included in this category. The total amount of such capital is vast, amounting to around \$24 trillion in 1994. By comparison, GDP was less than \$7 trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus \$0.5 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed about one-fifth of the physical capital held by other levels of government.

### Education Capital

Economists have developed the concept of human capital to reflect the notion that individuals and society invest in people as well as in physical assets. Investment in education is a good example of how human capital is accumulated.

For this table an estimate has been made of the stock of capital represented by the Nation's investment in education. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over. The idea is to measure

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

TABLE 2-3. NATIONAL WEALTH

(As of the end of the fiscal year, in trillions of 1994 dollars)

	1960	1965	1970	1975	1980	1985	1990	1992	1993	1994
<b>ASSETS</b>										
Publicly owned physical assets:										
Structures and equipment .....	2.1	2.4	2.9	3.4	3.7	3.6	3.8	3.8	3.9	3.9
Federally owned or financed .....	1.1	1.2	1.3	1.3	1.2	1.4	1.5	1.5	1.5	1.5
Federally owned .....	1.0	1.1	1.0	0.9	0.8	0.9	0.9	1.0	1.0	1.0
Grants to state and local governments .....	0.1	0.2	0.2	0.4	0.4	0.5	0.5	0.5	0.5	0.5
Funded by state and local governments .....	1.0	1.2	1.6	2.1	2.4	2.2	2.2	2.2	2.3	2.4
Other Federal assets .....	0.8	0.7	0.6	0.9	1.4	1.4	1.1	1.0	0.9	0.9
Subtotal .....	2.8	3.1	3.5	4.3	5.0	4.9	4.8	4.7	4.7	4.8
Privately owned physical assets:										
Reproducible assets .....	5.7	6.4	8.0	10.2	12.8	13.2	14.6	14.6	14.9	15.3
Residential structures .....	2.0	2.3	2.8	3.6	4.8	4.8	5.3	5.4	5.6	5.7
Nonresidential plant and equipment .....	2.0	2.3	3.0	4.0	5.0	5.4	5.8	5.8	5.9	6.0
Inventories .....	0.7	0.8	0.9	1.1	1.3	1.2	1.2	1.2	1.1	1.2
Consumer durables .....	0.9	1.0	1.3	1.5	1.7	1.8	2.2	2.3	2.4	2.5
Land .....	2.0	2.4	2.7	3.4	5.1	5.7	5.7	4.7	4.4	4.3
Subtotal .....	7.7	8.8	10.6	13.6	17.9	19.0	20.3	19.3	19.3	19.6
Education capital:										
Federally financed .....	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.7	0.8	0.8
Financed from other sources .....	6.4	8.2	10.6	12.0	14.7	17.6	22.4	23.8	24.8	25.5
Subtotal .....	6.4	8.3	10.9	12.3	15.2	18.1	23.0	24.6	25.6	26.3
Research and development capital:										
Federally financed R&D .....	0.2	0.3	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.8
R&D Financed from other sources .....	0.1	0.2	0.3	0.4	0.4	0.6	0.8	0.9	0.9	1.0
Subtotal .....	0.3	0.5	0.8	0.9	1.0	1.2	1.5	1.6	1.7	1.8
Total assets .....	17.3	20.7	25.8	31.1	39.1	43.2	49.6	50.2	51.4	52.4
<b>LIABILITIES:</b>										
Net claims of foreigners on U.S. .....	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	0.3	0.5	0.6	0.8
Balance .....	17.5	20.9	26.0	31.3	39.5	43.4	49.4	49.7	50.7	51.6
Per capita (thousands of 1994 dollars) .....	96.6	107.7	127.0	144.8	173.1	181.7	196.9	194.0	195.9	197.2
<b>ADDENDA:</b>										
Total Federally funded capital .....	2.1	2.4	2.6	3.0	3.6	3.9	4.0	4.0	4.0	4.0
Percent of national wealth .....	12.2	11.2	10.1	9.5	9.0	8.9	8.1	8.0	7.9	7.7

how much it would cost to reeducate the U.S. workforce at today's prices.

This is a crude measure, but it can provide a rough order of magnitude. According to this measure, the stock of education capital amounted to \$26 trillion in 1994, of which about 3 percent was financed by the Federal Government. The total exceeds the Nation's stock of physical capital. The main investors in education capital have been State and local governments, parents, and the students themselves who forego earning opportunities in order to acquire education.

### Research and Development Capital

Research and development can also be thought of as an investment, because R&D represents a current expenditure for which there is a prospect of future returns. After adjusting for depreciation, the flow of R&D investment can be added up to provide an estimate of the current R&D stock.<sup>5</sup> That stock is estimated to have been about \$1.8 trillion in 1994. Although this

is a large amount of research, it is a relatively small portion of total National wealth. About half of this stock was funded by the Federal Government.

### Liabilities

When considering the debts of the Nation as a whole, the debts that Americans owe to one another cancel out, and the only debts that remain are those owed to foreigners. This point is often overlooked in discussions of debt. While debt is a burden for the borrower, it is a source of income for the lender. In the case of debt owed to foreigners, there is a net obligation and the interest paid on that debt is a net subtraction from our national income. America's foreign debt has been increasing rapidly in recent years, as a consequence of the U.S. trade deficit, but the size of this debt is small compared with America's total stock of assets. It amounted to about 1½ percent of the total in 1994.

Most of the Federal debt held by the public is owned by Americans, so it does not appear in Table 2-3. Only that portion of the Federal debt held by foreigners is

<sup>5</sup>R&D depreciates in the sense that the economic value of applied research tends to decline with the passage of time and movement in the technological frontier.

included. Even so, it is of interest to compare the imbalance between Federal assets and liabilities with national wealth. The government will have to service the debt or repay it, and its ability to do so without disrupting the economy will depend in part on the wealth of the private sector. Currently, the Federal net asset imbalance, as estimated in Table 2-1, amounts to about 6 percent of total national wealth.

### Trends in National Wealth

The net stock of wealth in the United States at the end of 1994 was about \$52 trillion. Since 1980 it has increased in real terms at an annual rate of 1.9 percent per year—about half the 4.2 percent rate it averaged from 1960 to 1980. (All comparisons are in terms of constant 1994 dollars.)

Public capital formation slowed down markedly between the two periods. The real value of the net stock of publicly owned physical capital was actually lower in 1994 than in 1980—\$4.8 trillion versus \$5.0 trillion in the earlier year. Since 1980, Federal grants to State and local governments for capital projects have increased at an average rate of 1.5 percent per year compared with 7.0 percent in the 1960s and 1970s.

Private capital formation in physical assets has also grown more slowly since 1980. The net stock of nonresidential plant and equipment grew 1.3 percent per year from 1980 to 1994 compared with 4.6 percent in the 1960s and 1970s, and the stock of business inventories actually declined. Overall, the stock of privately owned physical capital grew at an average rate of just 0.7 percent per year between 1980 and 1994.

The accumulation of education capital, as measured here, also slowed down in the 1980s, but not nearly as much. It grew at an average rate of 4.4 percent per year in the 1960s and 1970s, about the same as the average rate of growth in private physical capital during the same period. Since 1980, education capital has grown at a 4.0 percent annual rate. This reflects the extra resources devoted to schooling in this period, and the fact that such resources were rising in relative value. R&D stocks grew faster than both physical and education capital in the 1980s, but at a slower rate than in earlier decades.

### Other Federal Influences on Economic Growth

Many Federal policies contributed to the slowdown in capital formation that occurred after 1980. Federal investment policies obviously were important, but the Federal Government also contributes to wealth indirectly. Monetary and fiscal policies affect the rate and direction of capital formation. Regulatory and tax policies affect how capital is invested, as do the Federal Government's credit assistance policies.

One important channel of influence is the Federal budget deficit, which determines the size of the Federal Government's borrowing requirement. Smaller deficits in the 1980s would have resulted in a smaller gap between Federal liabilities and assets than is shown in Table 2-1. It is also likely that, had the increase

in Federal debt since 1980 been avoided, a significant share of these funds would have gone into private investment. National wealth might have been 2 to 4 percent larger in 1994 had fiscal policy avoided the buildup in the debt.

### Government Performance Measures and Indicators of Well-Being

Unlike private business, Government typically lacks a direct measure of the value of its services. As a result, the costs of Government are reported while the benefits often are not. For this reason, it can be difficult to evaluate how well Government agencies are performing their functions. With passage of the Government Performance and Results Act of 1993, Federal agencies will be selecting performance measures with which to monitor outputs and outcomes of their activities.<sup>6</sup>

Examples of performance measures for agency outputs would include:

- Numbers of loans extended for Federal credit programs.
- The timeliness with which social security checks are issued.
- Number of health inspections by the Public Health Service.

Measures of outcomes show how such outputs affect people's lives. Examples might include:

- The number of households lifted out of poverty by social security.
- Lives saved or losses prevented through inspection and control measures.

As appropriate performance measures are developed, it should be possible to integrate them with reports on the cost of Government activities to create a system of financial reporting that would be more analogous to private sector accounting statements.

*Indicators of Well-Being:* There are certain broad objectives for which the Government is partly or fully responsible. Especially important are the Government's role in fostering healthy economic conditions, promoting health and social welfare, protecting the environment and maintaining national security. Table 2-4 offers a rough idea of information that would be useful in assessing how well the Federal Government has been doing in promoting some of these general objectives.

The indicators shown here are only a limited subset drawn from the vast array of data available on economic and social conditions in the United States. In choosing indicators for this table, priority was given to measures that were consistently available over an extended period. Such indicators make it easier to draw valid comparisons and evaluate trends. In some cases, this meant, however, choosing indicators with significant limitations. In the case of national security no indicators were chosen. We expect to improve the selection of indicators and to add to it in future years.

<sup>6</sup>Performance measures for Government agencies were given a strong endorsement in the report of the National Performance Review, *Creating a Government that Works Better & Costs Less*. (September 1993).

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

**TABLE 2-4. ECONOMIC AND SOCIAL INDICATORS**  
(Calendar year)

General Categories	Specific Measures	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	
<b>Economic:</b> Living Standards	Real GDP per person (1987 dollars)	10,951	12,766	14,089	14,952	16,620	17,988	19,636	19,306	19,521	19,908	
	Median Household Income (1993 dollars)											
	All Households	22,698	26,455	30,558	30,340	31,095	31,717	33,105	31,962	31,553	31,241	
	Married Couple Households	26,263	30,587	36,663	38,091	40,486	41,617	43,951	43,340	43,170	43,005	
	Female Householder, No Husband Present	12,933	14,490	17,302	17,087	17,744	17,812	18,177	17,195	17,222	17,443	
	Income Share of Middle Three Quintiles (%)	.....	.....	52.7	52.1	51.6	53.9	49.5	49.7	49.4	48.2	
	Poverty Rate (%) <sup>1</sup>	22.2	17.3	12.6	12.3	13.0	14.0	13.5	14.2	14.8	15.1	
	Misery Index (Inflation + Unemployment)	7.2	6.1	10.6	17.6	20.6	10.8	10.9	10.9	10.4	9.8	
	Civilian Unemployment (%)	5.5	4.5	4.9	8.5	7.1	7.2	5.5	6.7	7.4	6.8	
	CPI-U (% Change)	1.7	1.6	5.7	9.1	13.5	3.6	5.4	4.2	3.0	3.0	
Employment Prospects	Increase in Total Payroll Employment (mil)	-0.5	2.9	-0.5	0.4	0.2	2.5	0.3	-0.9	1.2	2.3	
	Managerial or Professional Jobs (% of total)	.....	.....	.....	.....	.....	24.1	26.0	26.5	26.5	27.1	
	Net National Saving Rate (% of NNP)	8.2	10.4	7.2	5.3	6.3	4.3	2.4	2.4	1.2	2.1	
Wealth Creation	Patents Issued to U.S. Residents (thousands)	42.0	53.6	50.1	51.4	40.8	43.4	53.0	57.8	58.7	60.9	
	Multifactor Productivity (1987=100)	70.9	83.0	87.4	92.8	96.2	98.9	100.0	98.9	100.8	.....	
<b>Social:</b> Safe Communities	Violent Crime Rate (per 100,000 population) <sup>2</sup>	160	199	364	482	597	557	732	758	758	746	
	Murder Rate (per 100,000 population)	5.1	5.1	7.8	9.6	10.2	7.9	9.4	9.8	9.3	9.5	
	Health and Illness	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Infant Mortality (per 1000 Live Births)	26.0	24.7	20.0	16.1	12.6	10.6	9.2	8.9	8.5	.....	
	Low Birthweight [less than 2,500 gms] Babies (%)	7.7	8.3	7.9	7.4	6.8	6.8	7.0	7.1	.....	.....	
	Life Expectancy at birth (years)	69.7	70.2	70.8	72.6	73.7	74.7	75.4	75.5	75.7	.....	
	Cigarette Smokers (% of population 18 and older)	.....	42.4	39.5	36.4	33.2	30.1	25.5	25.6	.....	.....	
	Bed Disability Days (average per person)	6.0	6.2	6.1	6.6	7.0	6.1	6.2	6.5	6.3	.....	
	Learning	High School Graduates (% of population 25 and older)	44.6	49.0	55.2	62.5	68.6	73.9	77.6	78.4	79.4	80.2
	College Graduates (% of population 25 and older)	8.4	9.4	11.0	13.9	17.0	19.4	21.3	21.4	21.4	21.9	
Participation	National Assessment of Educational Progress <sup>3</sup>	.....	.....	.....	304	298	302	305	.....	307	.....	
	Mathematics	.....	.....	305	296	283	288	290	.....	294	.....	
	Science	.....	.....	.....	52.6	.....	.....	.....	.....	55.2	.....	
Environment: Air Quality	Voting for President (% eligible population)	62.8	.....	.....	.....	52.6	.....	.....	.....	.....	.....	
	Individual Charitable Giving per capital (1994 dollars)	194	233	280	296	323	340	414	412	422	.....	
	Population Living in Counties with Ozone Levels Exceeding the Standard (millions)	.....	.....	.....	.....	.....	76	63	70	43	.....	
Water Quality	Population Served by Secondary Treatment or Better (millions)	.....	.....	.....	.....	.....	134	154	157	159	161	

<sup>1</sup>The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.<sup>2</sup>Not all crimes are reported, and the fraction that go unreported may have varied over time.<sup>3</sup>Dates shown in table for national educational attainment are approximate.

The individual measures in this table are influenced in varying degrees by many Government policies and programs, as well as by external factors beyond the Government's control. In general, they are not outcome

indicators, because they do not measure the results of Government activities, but they do provide a quantitative measure of the progress or lack of progress

in reaching some of the ultimate values that government policy is intended to promote.

Such a table can serve two functions. First, it highlights areas where the Federal Government might need to modify its current practices or consider new approaches when there are clear signs of deteriorating conditions. Second, the table provides a context for evaluating other data on Government activities. For example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective.

An example of this occurs during economic recessions when reductions in tax collections lead to increased Government borrowing. This deterioration in the Federal balance sheet provides an automatic stabilizer for the private sector. State government, local government and private budgets are strengthened by allowing the Federal budget to go deeper into deficit. More stringent Federal budgetary controls could be used to hold down Federal borrowing during such periods but at the risk of aggravating the downturn.

## TECHNICAL NOTE: SOURCES OF DATA AND METHOD OF ESTIMATING

### Federally Owned Assets and Liabilities

#### *Assets*

*Financial Assets:* The source of data is the Federal Reserve Board's Flow-of-Funds Accounts. Two adjustments were made to this data. First, U.S. Government holdings of financial assets were consolidated with the holdings of the monetary authority, i.e., the Federal Reserve System. Second, the gold stock, which is valued in the Flow-of-Funds at a constant historical price, is revalued using the market value for gold.

#### *Physical Assets*

*Fixed Reproducible Capital:* Estimates were developed from the OMB historical data base for physical capital outlays. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. The source data are in current dollars. To estimate investment flows in constant dollars, it is necessary to deflate the nominal investment series. This was done using BEA price deflators for Federal purchases of durables and structures. These price deflators are available going back as far as 1940. For earlier years, deflators were based on Census Bureau historical statistics for constant price public capital formation. The capital stock series were adjusted for depreciation on a straight-line basis, assuming useful lives of 46 years for water and power projects; 40 years for other direct Federal construction; and 16 years for major nondefense equipment and for defense procurement.

*Fixed Nonreproducible Capital:* Historical estimates for 1960–1985 were based on estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, "Government Saving, Capital Formation and Wealth in the United States, 1947–1985," published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University

The Government cannot avoid making trade-offs because of its size and the broad ranging effects of its actions. Monitoring these effects and incorporating them in the Government's policy making is a major challenge.

### An Interactive Analytical Framework

No single framework can encompass all of the factors that affect the financial condition of the Federal Government. Nor can any framework serve as a substitute for actual analysis. Nevertheless, the framework presented above offers a useful way to examine the financial aspects of Federal policies. Increased Federal support for investment, the reduction in Federal absorption of saving through deficit reduction, and other Administration policies to enhance economic growth are expected to promote national wealth and improve the future financial condition of the Federal Government. As that occurs, the efforts will be clearly revealed in these tables.

of Chicago Press, 1989). Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and in the Producer Price Index for Crude Energy Materials. The Bureau of Economic Analysis is in the process of preparing satellite accounts to accompany the National Income and Product Accounts that will report on changes in mineral deposits for the Nation as a whole, but this work is not yet completed.

#### *Liabilities*

*Financial Liabilities:* The principal source of data is the Federal Reserve's Flow-of-Funds Accounts.

*Contingent Liabilities:* Sources of data are the OMB Deposit Insurance Model and the OMB Pension Guarantee Model. Historical data on contingent liabilities for deposit insurance were also drawn from the Congressional Budget Office's study, *The Economic Effects of the Savings and Loan Crisis*, issued January 1992.

*Pension Liabilities:* For 1979–1993, the estimates are the actuarial accrued liabilities as reported in the annual reports for the Civil Service Retirement System, the Federal Employees Retirement System, and the Military Retirement System (adjusted for inflation). Estimates for the years before 1979 are not actuarial; they are extrapolations. The estimate for 1994 is a projection.

#### *National Balance Sheet Data*

*Publicly Owned Physical Assets:* Basic sources of data for the federally owned or financed stocks of capital are the investment flows described elsewhere in the budget. Federal grants for State and local government capital were added together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local government capital come from the capital stock data prepared by the BEA.

*Privately Owned Physical Assets:* Data are from the Flow-of-Funds national balance sheet. Preliminary estimates for 1994 were prepared based on net investment from the National Income and Product Accounts.

*Education Capital:* The stock of education capital is computed by valuing the cost of replacing the total years of education embodied in the U.S. population 16 years of age and older at the current cost of providing schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' foregone earnings, i.e., it reflects the opportunity cost of education.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions and for research and development conducted at colleges and universities because these outlays are classified elsewhere as investment in physical capital and investment in R&D capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate education spending in HHS, Defense and Agriculture; and most outlays for vocational training.

Data on investment in education financed from other sources come from educational institution reports on the sources of their funds, published in U.S. Department of Education, *Digest of Education Statistics*. Nominal expenditures were deflated by the implicit price deflator for GDP to convert them to constant dollar values. Education capital is assumed not to depreciate, but to be retired when a person dies. An education capital stock computed using this method with different source data can be found in Walter McMahon, "Relative Returns To Human and Physical Capital in the U.S. and Efficient Investment Strategies," *Economics of Education Review*, Vol. 10, No. 4, 1991. The method is described in detail in Walter McMahon, *Investment in Higher Education*, 1974.

*Research and Development Capital:* The stock of R&D capital financed by the Federal Government was developed from a data base that measures the conduct of R&D. The data exclude Federal outlays for physical

capital used in R&D because such outlays are classified elsewhere as investment in federally financed physical capital. Nominal outlays were deflated using the GDP deflator to convert them to constant dollar values.

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent on the outstanding balance for applied research and development. Basic research is assumed not to depreciate. The 1993 Budget contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and nondefense components (see Budget for Fiscal Year 1993, January 1992, Part Three, pages 39-40).

A similar method was used to estimate the stock of R&D capital financed from sources other than the Federal Government. The component financed by universities, colleges, and other nonprofit organizations is based on data from the National Science Foundation, *Surveys of Science Resources*. The industry-financed R&D stock component is from that source and from the U.S. Department of Labor, *The Impact of Research and Development on Productivity Growth*, Bulletin 2331, September 1989.

Experimental estimates of R&D capital stocks have recently been prepared by BEA. The results are described in "A Satellite Account for Research and Development," *Survey of Current Business*, November 1994. These BEA estimates are lower than those presented here primarily because BEA assumes that the stock of basic research depreciates, while the estimates in Table 2-3 assume that basic research does not depreciate. BEA also assumes a slightly higher rate of depreciation for applied research and development, 11 percent, compared with the 10 percent rate used here.

#### *Social Indicators*

The main sources for the data in this table are the Government statistical agencies. The data are publicly available in the President's annual *Economic Report* and the *Statistical Abstract of the United States*. Other sources include: *Educational Attainment in the United States March 1993 and 1992*, *Health United States 1993*, and *NAEP 1992 Trends in Academic Progress*.

## 1. ECONOMIC ASSUMPTIONS

### **Introduction**

The economic expansion is about to enter its sixth year. Too often in the past when expansions have reached this point, or even sooner, the economy has begun to overheat, pushing up inflation and interest rates, and ultimately bringing on a recession. In contrast, the policy decisions of the last three years have enabled this expansion to attain an elusive goal—a “soft landing” in which economic growth has slowed to a sustainable rate without triggering an increase in unemployment.

The “soft landing” of 1995 is the culmination of three years of very successful macroeconomic policy. Over this period, jobs have increased and unemployment has fallen, while at the same time, inflation has been low and relatively stable. Interest rates have fluctuated, but long-term rates are as low as at any time in recent memory. Looking ahead, the Administration expects economic growth to continue at a moderate rate for the foreseeable future.<sup>1</sup> Employment is projected to expand sufficiently to absorb new workers, keeping the rate of unemployment stable. Meanwhile, the Administration expects inflation to continue at a low, relatively constant rate, and interest rates to decline further as the budget is brought into balance.

The Omnibus Budget Reconciliation Act of 1993 put the Federal budget deficit on a downward track that helped to reduce long-term interest rates, which in turn helped spark the revival in the economy. The Administration's current budget proposals would build on that success and cap it with a balanced budget. The Federal Reserve has helped to support these needed fiscal actions by pursuing a policy to control inflation, while also showing that it is willing to reduce interest rates when that is appropriate.

This chapter begins with a review of recent economic and policy developments. With this as background, it then presents the Administration's economic assumptions. The assumptions call for a continuation of trends already evident in the economy for most of the major economic variables. They offer a reasonable and prudent basis for making budget projections.

Two important changes in the statistics on which this forecast is based are also described in this chapter. First, real gross domestic product (GDP) is now measured on a chain-weighted basis in the National Income and Product Accounts. This is reflected in the budget projections of real GDP and the aggregate measure of inflation. Second, anticipated changes in the calculation

of the Consumer Price Index (CPI) will slow its growth, and that of related measures of price inflation.

The chapter compares the Administration's economic assumptions with those of the Congressional Budget Office (CBO) prepared at about the same time (December 1995). Although there are some differences in the underlying policy assumptions on which the two forecasts are based, they are quite similar, and the differences between them are well within the normal range of forecasting error.

The chapter also includes an analysis of the impact of changes in the economic assumptions since last year's budget on the projected deficit, and it concludes with estimates of the sensitivity of the budget to changes in economic assumptions.

### **Recent Developments**

**1993—Enacting a Responsible Fiscal Policy:** The passage of the Omnibus Budget Reconciliation Act of 1993 (OBRA93) put fiscal policy on a sounder footing and created the preconditions for a healthy expansion. The 1992 deficit was \$290 billion. Since then, the deficit has fallen for three straight years, bringing it down to \$164 billion in 1995. That is just 2.3 percent of GDP, less than half the level in 1992. The improvement in the deficit is traceable to both improvement in the economy and to policy changes, of which the President's economic program was far and away the most important. The Administration estimated that OBRA93 would reduce the deficit during the five years 1994–98 by a cumulative total of \$505 billion. During the first two years alone, it cut deficits by about \$130 billion. The economic program has also contributed indirectly to the reduction in the deficit by strengthening the pace of the economic recovery.

**Stabilizing Inflation:** Most previous postwar expansions have ended because inflation accelerated, forcing a policy correction. The best way to avoid the need for such measures is to act before inflation becomes a problem. That is just what monetary policy did during 1994. Entering that year, inflation was under control; the CPI had only increased 2.7 percent over the preceding 12 months. However, 1993 had seen unemployment fall by almost a full percentage point as real economic growth accelerated, and the economy's momentum was clearly pointing towards further large gains in 1994. Those gains were realized, as 1994 became one of the best years for overall economic performance since the end of World War II. During 1994, 3.5 million new jobs were created, and the unemployment rate was pulled down by another full percentage point. These were welcome developments; but if the economy had continued to expand at that rate, shortages of labor

<sup>1</sup> Beyond the next year or two, the Administration does not attempt to project the economy's cyclical patterns. The longer term economic projections used for the Budget and summarized here are best thought of as forecasts of average experience expected to be achieved over a period of several years.

and plant capacity would have been sure to emerge, carrying with them a high risk of accelerating price increase.

To avoid that risk, the Federal Reserve raised short-term interest rates in several stages during 1994. The intention was to slow growth and stabilize unemployment at its new lower levels to avoid the inflation risks that faster growth would generate. While the Fed was acting to raise short-term rates, investors in the financial markets were pushing up long-term rates, anticipating future inflation and the possibility of further Fed tightening to choke it off.

The effect of these developments was seen in 1995. The higher interest rates cooled off demand in the economy's interest-sensitive sectors, such as housing and consumer durables. In 1995, real GDP rose 1.4 percent, down from a growth rate of 3.5 percent during the previous year.<sup>2</sup> Although growth slowed, the economy continued to generate new jobs at a healthy rate, albeit less rapidly than in 1994; and the unemployment rate did not increase. Payroll employment rose by 1.7 million in 1995 and the unemployment rate averaged 5.6 percent for the year, which was its lowest level since 1990.

The slower growth of economic activity and employment was accompanied by continued moderation in wages and prices, exactly what the Fed had been hoping to achieve when it tightened policy in 1994. The most meaningful measure of overall labor compensation, the Employment Cost Index, rose 2.9 percent in 1995—virtually the same increase as in the previous year.

Compensation costs were also held down by a significant deceleration in employee benefit costs. Health insurance premiums, which had been rising at double-digit rates earlier in the decade, were brought firmly under control. The spread of innovations in health care delivery helped to bring about this moderation. Although slower growth of employee health care costs shows up in the aggregate statistics as a decline in the rate of increase in compensation, the long-run effect is likely to be an increase in workers' take-home pay. Most studies reveal that employee benefits are paid for by workers through lower cash wages. A reversal of the trend towards increased benefit costs should strengthen cash wages in the long run.

Moderation in labor markets was mirrored in the product markets. At the beginning of 1995, the capacity utilization rate in manufacturing had reached nearly 85 percent, a level that in the past had initiated an acceleration of price increases. By spring, slower growth caused the operating rate to return to a range of around 82 percent, a level associated in the past with stable price inflation.

Reflecting this moderation, the CPI rose only 2.5 percent over the 12 months of 1995, slightly less even than in 1994. The underlying rate of inflation, the CPI excluding food and energy, was also well-behaved, ris-

ing 3.0 percent during 1995. The inflation rate over the three years 1993–1995 was the best since the mid-1960s.

**Sustaining the Momentum of the Expansion:** As it became clear that inflation was under control and likely to remain so for some time, the Federal Reserve gradually relaxed its previous tightening. Having achieved the desired "soft landing", the Federal Reserve took steps to make sure the economy would not stall out. It reduced the Federal funds rate by one-quarter percentage point in July and in December of 1995, and again in January of 1996. Judging from the futures market, the financial community anticipates a further reduction of about one-quarter percentage point by this summer.

While the Federal Reserve was lowering short-term rates last year, the financial markets were lowering long-term rates even more. The inflation fears that had troubled the markets in 1994 were succeeded in 1995 by the expectation that inflation would remain subdued. Moreover, bipartisan agreement that the budget should be balanced in the coming years helped further reduce long-term interest rates. From the end of 1993 to the beginning of 1996, long-term interest rates fell more than two full percentage points. Except for a few months in 1993, the last time long-term interest rates were this low was in the 1960s. The drop in rates last year is expected to set the stage for a pickup in economic activity in 1996.

Lower interest rates and a healthy economic outlook propelled the stock market to record levels. Last year, the Dow-Jones industrial average rose 36 percent, and other major indexes were up by similarly impressive amounts. In the opening months of this year, stock markets set a series of new highs. Financial markets fluctuate, and these gains will not continue unabated; but the rise in the stock market last year will contribute to the forward momentum in the economy in 1996 by lowering the cost of capital to business, which should stimulate investment, and by raising household wealth, which will boost consumer spending.

## Economic Projections

**Key assumptions:** The economic projections underlying this budget are summarized in Table 1-1. They are based on several key assumptions. First and foremost, the projections assume that the Administration's budget will be adopted. The budget proposals are intended to reduce the deficit progressively and achieve a small surplus in 2002, according to Congressional Budget Office assumptions, and in 2001 according to Administration estimates. Such a policy would foster a continuation of the favorable macroeconomic trends that have emerged since 1992. Deficit restraint moderates inflationary pressures by restraining demand. It enables the Federal Reserve to continue its recent policy of easing short-term interest rates. The combination of easier monetary policy and fiscal restraint provides an environment in which financial markets can keep

<sup>2</sup>These rates are based on the new chain-weighted definition of real GDP which is explained more fully below.

## 1. ECONOMIC ASSUMPTIONS

Table 1-1. ECONOMIC ASSUMPTIONS<sup>1</sup>

(Calendar years; dollar amounts in billions)

	Actual 1994	Projections							
		1995	1996	1997	1998	1999	2000	2001	2002
<b>Gross Domestic Product (GDP):</b>									
Levels, dollar amounts in billions:									
Current dollars .....	6,931	7,254	7,621	8,008	8,417	8,848	9,295	9,772	10,268
Real, chained (1992) dollars .....	6,604	6,742	6,888	7,047	7,212	7,380	7,553	7,730	7,911
Chained price index (1992 = 100), annual average .....	105.0	107.6	110.6	113.6	116.7	119.9	123.1	126.4	129.8
Percent change, fourth quarter over fourth quarter:									
Current dollars .....	5.9	4.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Real, chained (1992) dollars .....	3.5	1.5	2.2	2.3	2.3	2.3	2.3	2.3	2.3
Chained price index (1992 = 100), annual average .....	2.3	2.5	2.8	2.7	2.7	2.7	2.7	2.7	2.7
Percent change, year over year:									
Current dollars .....	5.8	4.7	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Real, chained (1992) dollars .....	3.5	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3
Chained price index (1992 = 100), annual average .....	2.3	2.5	2.8	2.7	2.7	2.7	2.7	2.7	2.7
Incomes, billions of current dollars:									
Personal income .....	5,750	6,104	6,416	6,716	7,025	7,337	7,664	8,031	8,434
Wages and salaries .....	3,241	3,420	3,607	3,801	3,995	4,193	4,403	4,629	4,864
Corporate profits before tax .....	528	602	650	702	753	800	843	882	917
<b>Consumer Price Index (all urban):<sup>2</sup></b>									
Level (1982-84 = 100), annual average .....	148.2	152.4	156.6	161.3	165.9	170.5	175.3	180.2	185.2
Percent change, fourth quarter over fourth quarter .....	2.6	2.7	3.1	2.9	2.8	2.8	2.8	2.8	2.8
Percent change, year over year .....	2.6	2.8	2.8	3.0	2.8	2.8	2.8	2.8	2.8
<b>Unemployment rate, civilian, percent:</b>									
Fourth quarter level .....	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Annual average .....	6.1	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7
<b>Federal pay raises, January, percent:</b>									
Military .....	2.2	2.2	2.6	3.0	3.1	3.1	3.1	3.1	3.1
Civilian <sup>3</sup> .....	.....	2.0	2.0	3.0	NA	NA	NA	NA	NA
<b>Interest rates, percent:</b>									
91-day Treasury bills <sup>4</sup> .....	4.3	5.5	4.9	4.5	4.3	4.2	4.0	4.0	4.0
10-year Treasury notes .....	7.1	6.6	5.6	5.3	5.0	5.0	5.0	5.0	5.0
<b>Addendum: GDP and incomes, pre-revision basis:<sup>5</sup></b>									
<b>Gross Domestic Product (GDP), current dollars:</b>									
Levels, dollar amounts in billions .....	6,738	7,078	7,428	7,805	8,203	8,623	9,058	9,523	10,005
Percent change, fourth quarter over fourth quarter .....	6.5	4.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Percent change, year over year .....	6.2	5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.1
<b>Incomes, billions of current dollars:</b>									
Personal income .....	5,702	6,054	6,357	6,654	6,960	7,270	7,595	7,958	8,358
Wages and salaries .....	3,279	3,450	3,631	3,826	4,020	4,220	4,431	4,658	4,895
Corporate profits before tax .....	525	572	608	657	706	749	790	826	859

NA=Not Available.

<sup>1</sup>Based on information available as of mid-January 1996.<sup>2</sup>CPI for all urban consumers. Two versions of the CPI are published. The index shown here is that currently used, as required by law, in calculating automatic adjustments to individual income tax brackets. Projections reflect scheduled changes in methodology.<sup>3</sup>Percentages for 1994-1996 exclude locality pay adjustments. Percentages to be proposed for years after 1997 have not yet been determined.<sup>4</sup>Average rate (bank discount basis) on new issues within period.<sup>5</sup>Because the comprehensive revision to the National Income and Product Accounts (which include GDP and incomes) was delayed due to furloughs of Government employees, some budget estimates are based, at least in part, on GDP and incomes data on the pre-revision basis shown in this addendum.

long-term interest rates on a downward path. A policy to balance the budget would thus encourage investment, and thereby raise the level of productivity and potential output in the long run.

**Real GDP:** Economic growth was temporarily restrained in the fourth quarter of last year by two shutdowns of the Federal Government, and in the first quarter of this year by a record-breaking blizzard. According to preliminary estimates, real GDP grew at a 0.9 percent annual rate in the fourth quarter; based on partial information, first quarter growth may also be relatively weak.

Growth is expected to pick up as the negative impact of the recent disruptions fades. Interest-sensitive sectors, such as consumer durables and business equipment spending, are likely to be at the leading edge of the acceleration in response to the fall in long-term interest rates during 1995 and the surge in the stock market. On average, real GDP is forecast to increase 2.2 percent over the four quarters of 1996.

During 1997-2002, real GDP is projected to rise 2.3 percent annually (the Administration's estimate of the economy's potential growth rate). Lower interest rates and smaller deficits are projected to increase investment and raise the trend growth in output per hour. Productivity in the nonfarm business sector had been

growing at 1.1 percent per year on average since 1973, but it is projected to increase 1.2 percent annually over the next six years.

Potential GDP growth is also determined by growth of the labor force. Labor force participation trends of recent years are assumed to continue. The rise in the female participation rate is expected to be much less than during the 1970s and 1980s, while the male rate is expected to continue to decline. On balance, there is likely to be little overall change in labor force participation. During 1997–2002, the labor force is projected to grow 1.1 percent per year, about the same pace as during the past six years, but noticeably slower than the 1.7 percent rate during the 1980s when female participation rates rose rapidly.

**Unemployment rate:** The civilian unemployment rate, which averaged 5.6 percent during the fourth quarter of 1995, is expected to average 5.7 percent this year and hold at that level through the end of the projection period. With real GDP projected to rise at the rate of growth of potential output, the unemployment rate would remain stable.

**Inflation:** The chain-weighted GDP price index is projected to rise 2.7 percent a year over the projection horizon. That is just slightly faster than the 2.5 percent estimated for 1995. The Consumer Price Index is expected to rise 3.1 percent during 1996, about the same as the 3.0 percent rise last year in the CPI excluding food and energy. The CPI is expected to rise 2.9 percent in 1997 and 2.8 percent per year during 1998–2002. The deceleration is due to scheduled improvements in the methods used to calculate the CPI. These improvements are discussed later in this chapter.

**Interest rates:** Short- and long-term rates are projected to fall as a result of the reduced borrowing needs of the government that result from the Administration's budget proposals. The 91-day Treasury bill rate is expected to fall to 4.0 percent by 2000 and hold at that level through 2002; in the fourth quarter of 1995, the rate was 5.3 percent. The yield on the 10-year Treasury note is projected to decline to 5.0 percent by 1998 and hold at that level; in the fourth quarter of last year, the yield was 5.9 percent. These projections, in combination with a forecast of stable inflation, imply a reduction in real interest rates to levels that prevailed when the Federal budget was close to balance. The sharper fall in short rates will cause the yield curve to steepen, which is a more typical pattern for an expansionary period.

**Incomes:** As a result of the drop in interest rates, the share of nominal GDP accounted for by personal interest income, a component of personal income, is expected to decline. On the other hand, the corporate sector is a net borrower, so the profits share and the share of dividend income are likely to grow because of the reduction in interest costs. The projected share of wages and salaries in GDP is expected to remain

about unchanged over the projection horizon. After adjustment for inflation, real wages and salaries are projected to increase 14 percent from 1996 to 2002.

### Statistical Improvements

The economic assumptions incorporate two important changes in the way economic activity is measured.

**Fixing Biases in Real GDP:** For fifty years, the featured measure of real GDP was based on a fixed-weight price system, with an update every five to ten years to account for shifts in spending patterns. While convenient and familiar, that system introduced a "substitution bias" into the estimate of real GDP and the GDP implicit price deflator. The bias was significant whenever relative prices changed rapidly—as for example in the 1970s, when oil prices jumped sharply. Until the recent revision, 1987 was the base year for the fixed-weight price system. The large drop in the quality-adjusted price of computers since 1987 caused a growing upward bias in the measurement of real GDP growth.

To remove these biases, the Bureau of Economic Analysis changed to a chain-weighted system for estimating real GDP in January of 1996. The weights are now based on nearly contemporaneous spending patterns. Real GDP growth for 1993, for example, is calculated using average expenditure weights for 1992–1993, and the growth rate for 1994 is computed using an average of 1993–1994 spending. Thus, the weights are linked year-to-year, hence the term "chain weights."

The substitution bias in the former fixed-weight system distorted the picture of real growth and aggregate inflation. The shift to chain weights lowered the measured rate of real GDP growth in 1993–94 by about  $\frac{1}{2}$  percentage point yearly compared with the previous estimate, and raised the estimate of aggregate inflation by a similar amount. While converting to chain weights provides a more accurate measure of the Nation's economic performance, it does have one inconvenience. Real GDP no longer exactly equals the sum of real spending by households, businesses and governments—the familiar rule that  $GDP = C+I+G+\text{net exports}$ . Now there is a difference, known as "the residual," that needs to be added to the components to sum to real GDP.

**Changing the CPI:** The CPI is one of the most important statistics produced by the Federal Government. It is widely used to measure changes in the cost of living.<sup>3</sup> The CPI's effect on the budget is pervasive; it is linked by formula to spending for social security, Federal pensions, and many smaller programs, and to the tax brackets and exemptions in the individual income tax. It is estimated that a reduction of 0.1 percentage point in the average yearly rate of change in

<sup>3</sup>This is done even though the CPI is explicitly not a cost-of-living index. Rather, it measures changes in the average cost of a fixed market basket of goods and services. By design, the CPI does not allow for those changes in consumption patterns that people make routinely to maintain their standard of living when prices are changing.

## 1. ECONOMIC ASSUMPTIONS

the CPI would reduce the budget deficit by a total of about \$20 billion over the next seven years.

Given its importance, it is not surprising that the CPI has often been criticized. There is no perfect price index, but the Bureau of Labor Statistics (BLS), which computes the CPI, strives to eliminate potential biases from the index. Over the years, the BLS has been receptive to suggestions for improvements. BLS is the main source of the technical analysis needed to make such improvements, and it is often the first to highlight potential problems.

Much recent criticism has suggested that the CPI may overstate inflation. Various possible causes have been examined. One major problem is how to separate quality changes from price increases for goods and services. For example, if the price of a visit to the doctor goes up, how much of this is due to better service due to improved diagnostic equipment and new testing procedures, and how much is a pure price increase? Such questions are hard to answer, but critics believe BLS too often treats quality improvements as price rises. Another problem area is the exclusion of new products or new outlets from the sample used to determine the CPI. There are good practical reasons why it takes time to incorporate new items into that sample, but the effect may be to miss some important price declines that occur as new products and services enter the market.

Finally, there are some technical issues concerning how the CPI is measured and put together. BLS has announced that it will introduce two methodological improvements in the CPI over the next three years that should make the index more accurate. These changes are expected to reduce the annual rate of growth of the index by about 0.3 percentage points.

The announced improvements (along with recent revisions to GDP) will also narrow the wedge between the rates of change in the CPI, on the one hand, and the price indexes for consumer expenditures and for GDP in the National Income and Product Accounts on the other. During 1998–2002, the annual growth in the CPI is assumed to be 2.8 percent, almost the same as the 2.7 percent assumed for the chain-weighted price index for GDP.

By January 1997, BLS plans to institute new estimation procedures to correct what has sometimes been called “formula bias,” but which might be more accurately described as “sample rotation bias.” These new procedures are estimated to reduce the growth of the CPI by about 0.2 percentage point per year. The bias arises because of the need to update the sample of items entering the CPI. New brands and varieties of goods are continually being introduced in the marketplace, and if the CPI is to remain current, it must be based on the current brands of cereals, toothpaste, automobiles, et cetera. When new goods are introduced, however, the usual BLS procedures can generate inappropriate weights for those that are temporarily selling at either abnormally low or abnormally high prices. The problem is greatest for items with prices that fluctuate around a trend, such as fruits and vegetables.

Recognizing this, BLS instituted a correction for some components of the index in January 1995. One possible course is to apply the same type of correction throughout the index.

Correcting the sample rotation bias in the CPI will also reduce the rate of change in the price indexes used to determine real personal consumption expenditures in the national income and product accounts, which are based on detailed data from the CPI. The effect of a slower rise in consumer prices is expected to hold down the growth of the overall GDP price index by about 0.1 percentage point yearly. Consumer expenditures account for about two-thirds of GDP, and the rest is not affected by the change. Measured real GDP growth will, of course, increase by a similar magnitude (because total nominal spending growth is a datum that is not affected by this change).

The second scheduled improvement in the CPI is an updating of the fixed market basket that is expected to occur in January 1998. Currently, the CPI market basket is based on 1982–1984 consumption patterns; in 1998, the market basket will be updated to reflect 1993–1995 spending patterns. This “rebasing” of the index occurs about every 10 years. Rebasing tends to reduce the measured inflation rate in subsequent years by reducing the substitution bias that builds up over time as the economy moves away from the base period prices. The new weights tend to give more emphasis in the index to goods whose prices have been rising relatively less rapidly (because consumers tend to shift their consumption toward those items). The budget assumes that the change in the CPI market basket will slow the growth of the CPI by about 0.1 percentage point per year beginning in 1998. This improvement will not affect real GDP or the price indexes associated with it.

These improvements in the CPI will go some way towards correcting its apparent tendency to overstate inflation. The largest potential biases—quality measurement and adjustments for new goods—will not be addressed by these changes. Continued research in these areas by BLS and outside experts is needed to improve this vital economic statistic.

### Comparison with CBO

The Congressional Budget Office (CBO) prepares forecasts of the economy that are used by Congress in formulating budget policy. Thus, it performs a similar function to that of OMB, the Council of Economic Advisers and Treasury for the Executive Branch. While outside observers have often compared the CBO forecast with that of the Administration, the budget is usually prepared well before the current CBO forecast is made public, so a timely forecast comparison is generally impossible.

Over the past year, however, there has been heightened interest in the economic assumptions used for the budget and in the differences between Administration and CBO forecasts. That is because the fiscal policy

objective is now to achieve a balanced budget, rather than a specific amount of deficit reduction. Even small differences in economic assumptions can matter for the size of policy changes needed to achieve budget balance. When the goal is a specific amount of deficit reduction, differences in economic assumptions usually have little bearing on the size of policy changes needed to achieve a specific amount of budgetary savings.

**Post-Policy vs Pre-Policy:** One important difference between CBO and the Administration concerns the policy assumptions on which the forecast is based. The Administration projections always assume that the President's budget proposals will be enacted as proposed; the economic projections are "post-policy." CBO normally assumes that current law will continue; it is a "pre-policy" projection.

This difference often is immaterial in determining the major macroeconomic variables. Important as budget policy is, especially in the long run, even large dollar changes in programs will often have only a modest effect on real GDP or inflation. Therefore, a specific budget proposal may make little difference to the macroeconomic outlook. Thus, comparisons of CBO and Administration economic projections can be meaningful even when the policy assumptions are not identical. Sometimes the difference is crucial, however, and that was the case in 1995.

**The Fiscal Bonus:** The Administration's policy is to balance the budget over the next seven years. The decision to seek a balanced budget has major implications for the economic outlook. Such a significant change in policy, if enacted, would be likely to cause noticeable changes in several macroeconomic variables, especially interest rates and income shares. However, CBO's initial forecast for the 1996 budget (and the Administration's) assumed that the deficit would not be eliminated over this time period.

In April, CBO presented its estimates of the fiscal bonus that would result from balancing the budget following the policies in the congressional budget resolution. This bonus took account of the more favorable interest rate outlook that would result from a balanced budget. It did not, however, reflect the likely shifts in income among sectors of the economy that would follow from the lower interest rates generated by a balanced budget. This was corrected in December, when a revised CBO forecast was prepared that took into account the full range of macroeconomic effects that a balanced budget would produce.

**The Treatment of Statistical Biases:** The statistical biases in the measurement of real GDP and inflation described above posed problems for forecasters. Neither CBO nor the Administration was completely consistent in dealing with these issues. In some cases, projected economic variables reflected the bias that was built into their measurement; in other cases, the projections assumed that the bias would be corrected somehow during the course of the forecast. In any case,

the revisions to GDP that were made in January and the planned modifications to the CPI go a long way toward removing this source of past difference in the forecasts.

**Projection Comparison:** The main outlines of the Administration's current forecast were determined in December at about the time that CBO made public its economic projections. A comparison of the two forecasts (including the CBO fiscal bonus to put them on the same policy basis) reveals a convergence of views summarized in Table 1-7.

- *Real GDP:* The projections of real GDP, on the new chain-weighted basis, are identical.
- *Inflation:* The Administration assumes that there will be no further reduction in the rate of inflation as the expansion continues except for statistical corrections to the CPI. CBO's inflation forecast is similar, but its projection of the chain-weighted GDP price index is slightly lower than that of the Administration.
- *Unemployment:* CBO is projecting an increase in unemployment that would raise it above recent levels. The Administration believes that unemployment will remain closer to its 1995 average, which is believed to be consistent with continued stability of inflation and economic growth.
- *Interest Rates:* The largest difference in economic assumptions is for long-term interest rates. Of all the macroeconomic variables, these may be the hardest to anticipate. It is widely accepted that changes in budget policy affect interest rates, but it is hard to estimate the quantitative effect that policy changes will have. In presenting its fiscal bonus calculations, CBO has taken two views of the matter. The December projection shown here is the more conservative: long-term interest rates show little further decline from their levels at the end of last year. CBO had projected a much larger effect on interest rates last April. The Administration's interest rate projections are very close to CBO's larger April bonus estimate, with changes in the early years based on recent experience.
- *Profits and Other Incomes:* The projections of future receipts depend not only on the overall level of economic activity but also on the distribution of income among profits, wages, and other incomes. Both the Administration and CBO expect that the lower interest rates associated with a balanced budget will shift income from interest to profits, leaving the share of wages roughly stable.

Although the differences in economic assumptions are not large—indeed, they are much less than differences that commonly prevailed under previous Administrations—the effect of the differences on the deficit is significant. The Administration's budget is balanced on the December CBO assumptions, but the surplus estimated for 2002 is smaller, and it is not possible to extend the Administration's proposed tax reduction per-

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Table 1-2. COMPARISON OF ECONOMIC ASSUMPTIONS

(Calendar years)

	Projections						
	1996	1997	1998	1999	2000	2001	2002
<b>Real GDP (chain-weighted):<sup>1</sup></b>							
CBO December .....	2.2	2.3	2.3	2.3	2.3	2.3	2.3
1997 Budget .....	2.2	2.3	2.3	2.3	2.3	2.3	2.3
<b>Chain-weighted GDP Price Index:<sup>1</sup></b>							
CBO December .....	2.7	2.6	2.6	2.6	2.6	2.6	2.6
1997 Budget .....	2.8	2.7	2.7	2.7	2.7	2.7	2.7
<b>Consumer Price Index (all-urban):<sup>1</sup></b>							
CBO December .....	3.2	3.1	3.0	2.9	2.9	2.9	3.0
1997 Budget .....	3.1	2.9	2.8	2.8	2.8	2.8	2.8
<b>Unemployment rate:<sup>2</sup></b>							
CBO December .....	5.9	6.0	6.0	6.0	6.0	6.0	6.0
1997 Budget .....	5.7	5.7	5.7	5.7	5.7	5.7	5.7
<b>Interest rates:<sup>2</sup></b>							
<b>91-day Treasury bills:</b>							
CBO December .....	5.3	5.0	4.7	4.2	3.9	3.9	3.9
1997 Budget .....	4.9	4.5	4.3	4.2	4.0	4.0	4.0
<b>10-year Treasury notes:</b>							
CBO December .....	5.8	5.6	5.5	5.5	5.5	5.5	5.5
1997 Budget .....	5.6	5.3	5.0	5.0	5.0	5.0	5.0

<sup>1</sup> Percent change, fourth quarter over fourth quarter.<sup>2</sup> Annual averages, percent.

manently. Over seven years, CBO's economic assumptions would increase deficits by a cumulative total of about \$300 billion relative to the Administration's assumptions, necessitating substantially greater savings to achieve balance by 2002.<sup>4</sup>

Although the budgetary consequences are large, there is very little scientific basis on which to choose between the two projections. Economic forecasting is difficult and the average errors that forecasters make are far larger than the differences in the major economic variables discussed here. If past experience is a guide, neither projection will prove completely accurate. The important question is whether a particular economic projection provides a sound and prudent basis upon which to plan the Nation's budget. The Administration believes that its assumptions, which are well within the range of historical experience, fulfill that function.

### Omnibus Trade and Competitiveness Act of 1988

As required by the Omnibus Trade and Competitiveness Act of 1988, Table 1-3 shows estimates for eco-

nomic variables related to saving, investment, and foreign trade consistent with the economic assumptions.

The merchandise trade and current account deficits deteriorated in fiscal year 1995 as growth in U.S. exports was exceeded by growth in imports. There was improvement in the trade deficit near the end of fiscal year 1995 and the first quarter of fiscal year 1996. Net private investment in the United States has expanded rapidly during this Administration, and it is expected to continue to increase as the economy expands. The sources for the increased private investment are the decline in the Federal deficit and higher private saving, plus a larger inflow of foreign capital.

The Act requires information on the amount of borrowing by the Federal Government in private credit markets. This is presented in Chapter 11, "Federal Borrowing and Debt."

It is difficult to gauge with precision the effect of Federal Government borrowing from the public on interest rates and exchange rates, as required by the Act. Both are influenced by many factors besides Government borrowing in a complicated process involving supply and demand for credit and perceptions of fiscal and monetary policy here and abroad.

Table 1-3. SAVING, INVESTMENT, AND TRADE BALANCE

(Fiscal years; in billions of dollars)

	1995 actual	1997 estimate
Current account .....	-165	-185 to -145
Merchandise trade balance .....	-180	-210 to -170
Net foreign investment .....	-169	-185 to -145
Net domestic saving (excluding Federal saving) <sup>1</sup> .....	397	410 to 450
Net private domestic investment .....	361	385 to 415

<sup>1</sup> Defined for purposes of Public Law 100-418 as the sum of private saving and the surpluses of State and local governments. All series are based on National Income and Product Accounts (NIPA) except for the current account balance. The (NIPA) figures, both actual and projected, are on a pre-benchmark revisions basis.

### Impact of Changes in the Economic Assumptions

The economic assumptions underlying last year's budget were predicated on little projected change in the level of the budget deficit over the ensuing five years. The assumptions underlying this year's budget reflect a change in fiscal policy that puts the deficit on a declining path toward budget balance by the year 2002. This change in fiscal policy alters the economic outlook; in particular it reduces the levels of expected future interest rates. As noted above, lower interest rates imply a shift of income out of interest income and into corporate profits—and, to a lesser extent, into dividend income—resulting in higher projected receipts due to the higher tax rates involved. The outlook for long-term real economic growth (on a comparable basis of measurement) has not been raised to reflect the change in fiscal policy. However, other changes in the economic outlook summarized in Table 1-4 (in particular a reduction in the expected annual rate of inflation measured by the CPI) will be affected by the technical improvements to reduce the overstatement of inflation discussed above. Also, the equilibrium unemployment rate on a noninflationary growth path has been reduced 0.1 percentage point based on the experience of 1995.

The effects on the budget of the changes in the economic outlook are shown in Table 1-5. For example, in the last column, the year 2000 deficit is reduced by \$99 billion as a result of changes in economic assumptions in the 1997 budget compared to those in the 1996 budget—from \$127 billion under 1996 budget economics with 1997 budget policies, to less than \$28 billion with 1997 budget economics and policies. The

effect of reducing the projected rate of inflation is to reduce the projected levels of both receipts and outlays. (This effect is discussed more fully in the last section of this chapter.) The reduction in the equilibrium unemployment rate causes a modest reduction in outlays. The largest budget effect, however, is major reductions in interest costs resulting both from the decline in projected interest rates and from the fact that interest costs are incurred on a reduced amount of debt. (The debt service savings shown are only the portion of total debt service cost reduction resulting from changes in the economic outlook, not the total effect of moving toward a balanced budget by the year 2002.)

### Structural vs. Cyclical Deficit

When there is slack in the economy, receipts are lower than they would be if resources were fully employed, and outlays for unemployment-sensitive programs (such as unemployment compensation and food stamps) are higher. As a result, the deficit is higher than it would be at full employment. The portion of the deficit that can be traced to such factors is called the cyclical deficit. The remainder, the portion that would remain at full employment (consistent with a 5.7 percent unemployment rate), is called the structural deficit.

Changes in the structural deficit give a better picture of the impact of budget policy on the economy than does the unadjusted deficit. During a recession or the recovery from one, the structural deficit also gives a clearer picture of the deficit problem that fiscal policy must address, because this part of the deficit will persist even when the economy has fully recovered, unless policy changes.

Table 1-4. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 1996 AND 1997 BUDGETS

(Calendar years)

	1995	1996	1997	1998	1999	2000
Nominal GDP (percent change): <sup>1</sup>						
1996 budget assumptions <sup>2</sup> .....	5.4	5.5	5.6	5.5	5.5	5.5
1997 budget assumptions .....	4.2	5.1	5.1	5.1	5.1	5.1
Real GDP (percent change): <sup>1</sup>						
1996 budget assumptions <sup>2</sup> .....	2.2	2.3	2.3	2.3	2.3	2.3
1997 budget assumptions .....	1.5	2.2	2.3	2.3	2.3	2.3
GDP price index (percent change): <sup>1</sup>						
1996 budget assumptions <sup>2</sup> .....	3.1	3.1	3.2	3.2	3.2	3.1
1997 budget assumptions .....	2.5	2.8	2.7	2.7	2.7	2.7
CPI-U (percent change): <sup>1</sup>						
1996 budget assumptions .....	3.2	3.2	3.2	3.2	3.1	3.1
1997 budget assumptions .....	2.7	3.1	2.9	2.8	2.8	2.8
Civilian unemployment rate (percent): <sup>3</sup>						
1996 budget assumptions .....	5.8	5.9	5.8	5.8	5.8	5.8
1997 budget assumptions .....	5.6	5.7	5.7	5.7	5.7	5.7
91-day Treasury bill rate (percent): <sup>3</sup>						
1996 budget assumptions .....	5.9	5.5	5.5	5.5	5.5	5.5
1997 budget assumptions .....	5.5	4.9	4.5	4.3	4.2	4.0
10-year Treasury note rate (percent): <sup>3</sup>						
1996 budget assumptions .....	7.9	7.2	7.0	7.0	7.0	7.0
1997 budget assumptions .....	6.6	5.6	5.3	5.0	5.0	5.0

<sup>1</sup>Fourth quarter-to-fourth quarter.

<sup>2</sup>Adjusted to reflect January 1996 comprehensive revisions.

<sup>3</sup>Calendar year average.

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Table 1-5. EFFECTS ON THE BUDGET OF CHANGES IN ECONOMIC ASSUMPTIONS SINCE LAST YEAR

(In billions of dollars)

	1996	1997	1998	1999	2000
<b>Budget totals under 1996 budget economic assumptions and 1997 budget policies:</b>					
Receipts .....	1,407.8	1,472.5	1,556.0	1,635.1	1,724.9
Outlays .....	1,595.3	1,673.5	1,731.6	1,789.6	1,851.5
Deficit (-) .....	-187.5	-201.0	-175.6	-154.5	-126.6
<b>Changes due to changes in economic assumptions:</b>					
Receipts .....	19.0	22.7	21.9	17.4	8.9
Outlays:					
Inflation .....	-3.8	-7.3	-9.8	-13.1	-16.9
Unemployment .....	-2.9	-1.0	-1.1	-1.1	-1.1
Interest rates .....	-13.9	-24.6	-35.6	-44.2	-52.5
Interest on changes in borrowing .....	-2.3	-5.3	-9.3	-14.3	-19.7
Total, outlays .....	-22.9	-38.2	-55.8	-72.7	-90.2
Decrease in deficit (+) .....	41.9	60.9	77.7	90.1	99.1
<b>Budget totals under 1997 budget economic assumptions and policies:</b>					
Receipts .....	1,426.8	1,495.2	1,577.9	1,652.5	1,733.8
Outlays .....	1,572.4	1,635.3	1,675.9	1,716.9	1,761.4
Deficit (-) .....	-145.6	-140.1	-98.0	-64.4	-27.5

In the early 1990's, large swings in net outlays for deposit insurance (the S&L bailouts) had substantial impacts on deficits, but had little impact on economic performance. It therefore became customary to remove deposit insurance outlays as well as the cyclical component of the deficit from the actual deficit to compute the adjusted structural deficit. This is shown in Table 1-6.

Since the economy is projected to be quite close to full employment over the forecast horizon, the cyclical component of deficits are small. Deposit insurance net outlays are relatively small and do not change greatly from year to year. Thus, rather unusually, the adjusted structural deficits in this budget display much the same pattern of year-to-year changes as the actual deficits. The most significant point illustrated by this table, therefore, is the fact that of the \$145 billion reduction in the actual budget deficit between 1992 and 1996 (from \$290 billion to \$146 billion), nearly 45 percent (\$65 billion) resulted from cyclical improvement in the economy. The rest of the reduction stemmed primarily from policy actions—mainly those in OBRA93 which reversed a projected steep rise in the deficit.

### Sensitivity of the Budget to Economic Assumptions

Both receipts and outlays are affected by changes in economic conditions. This sensitivity seriously complicates budget planning, because errors in economic assumptions lead to errors in the budget projections. It is therefore useful to examine the implications of alternative economic assumptions.

Many of the budgetary effects of changes in economic assumptions are fairly predictable, and a set of rules of thumb embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the deficit.

Economic variables that affect the budget do not usually change independently of one another. Output and employment tend to move together in the short run: a higher rate of real GDP growth is generally associated with a declining rate of unemployment, while weak or negative growth is usually accompanied by rising unemployment. In the long run, however, changes in the average rate of growth of real GDP are mainly due to changes in the rates of growth of productivity and labor supply, and are not necessarily associated with changes in the average rate of unemployment. Inflation and interest rates are also closely interrelated:

Table 1-6. ADJUSTED STRUCTURAL DEFICIT

(In billions of dollars)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Unadjusted surplus/deficit .....	290.4	255.1	203.2	163.9	145.6	140.1	98.0	64.4	27.5	-8.3	-43.9
Cyclical component .....	63.6	51.1	19.2	-3.2	-1.1	.....	.....	.....	.....	.....	.....
Structural surplus/deficit .....	226.8	204.0	184.0	167.1	146.7	140.1	98.0	64.4	27.5	-8.3	-43.9
Deposit insurance outlays <sup>1</sup> .....	-2.4	-28.0	-7.6	-17.9	-13.5	-4.3	-2.0	-0.5	-2.2	-1.6	-1.8
Adjusted structural surplus/deficit .....	229.2	232.0	191.5	185.0	160.2	144.4	99.9	64.9	29.7	-6.7	-42.1

<sup>1</sup>In 1992, includes \$4.9 billion in allied contributions for Desert Storm.

a higher expected rate of inflation increases interest rates, while lower expected inflation reduces rates.

Changes in real GDP growth or inflation have a much greater cumulative effect on the budget over time if they are sustained for several years than if they last for only one year.

Highlights of the budget effects of the above rules of thumb are shown in Table 1-7.

If real GDP growth is lower by one percentage point in calendar 1996 only and the unemployment rate rises by one-half percentage point, the 1996 deficit would increase by \$8.0 billion; receipts in 1996 would be lower by about \$6.8 billion, and outlays would be higher by about \$1.2 billion, primarily for unemployment-sensitive programs. In 1997, the receipts shortfall would grow further to about \$14.7 billion, and outlays would be increased by about \$6.0 billion relative to the base, even though the growth rate in calendar 1997 follows the path originally assumed. This is because the level of real (and nominal) GDP and taxable incomes would be permanently lower and unemployment higher. The budget effects (including growing interest costs associated with the higher deficits) would continue to grow slightly in later years.

The budget effects are much larger if the real growth rate is assumed to be one percentage point less in each year (1996–2002) and the unemployment rate to rise one-half percentage point in each year. With these assumptions, the levels of real and nominal GDP would be below the base case by a growing percentage. The deficit would be \$177.2 billion higher than under the base case by 2002.

The effects of slower productivity growth are shown in a third example, where real growth is one percentage point lower per year while the unemployment rate is unchanged. In this case, the estimated budget effects mount steadily over the years, but more slowly, reaching a \$145.8 billion deficit add-on by 2002.

Joint changes in interest rates and inflation have a smaller effect on the deficit than equal percentage point changes in real GDP growth because their effects on receipts and outlays are substantially offsetting. An

example is the effect of a one percentage point higher rate of inflation and one percentage point higher interest rates during calendar year 1996 only. In subsequent years, the price level and nominal GDP would be one percent higher than in the base case, but interest rates are assumed to return to their base levels. Outlays for 1996 rise by \$6.5 billion<sup>5</sup> and receipts by \$7.9 billion, for a decrease of \$1.4 billion in the 1996 deficit. In 1997, outlays would be above the base by \$15.1 billion, due in part to lagged cost-of-living adjustments; receipts would rise \$15.9 billion above the base, however, resulting in a \$0.8 billion decrease in the deficit. In subsequent years, the amounts added to receipts would continue to be larger than the additions to outlays.

If the rate of inflation and the level of interest rates are higher by one percentage point in all years, the price level and nominal GDP would rise by a cumulatively growing percentage above their base levels. In this case, the effects on receipts and outlays mount steadily in successive years, adding \$81.3 billion to outlays and \$114.6 billion to receipts in 2002, for a net reduction in the deficit of \$33.3 billion.

The table also shows the interest rate and the inflation effects separately, and rules of thumb for the added interest cost associated with higher or lower deficits (increased or reduced borrowing).

The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table. The impact of a one percentage point lower rate of inflation or higher real growth would have about the same magnitude as the effects shown in the table, but with the opposite sign.

These rules of thumb are computed while holding the income share composition of GDP constant. Because different income components are subject to different taxes and tax rates, estimates of total receipts can be affected significantly by changing income shares. These relationships, however, have proved too complex to be reduced to simple rules.

<sup>5</sup>This excludes any adjustment to discretionary programs, which are capped in nominal terms.

## 1. ECONOMIC ASSUMPTIONS

Table 1-7. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS

(In billions of dollars)

Budget effect	1996	1997	1998	1999	2000	2001	2002
<b>Real Growth and Employment</b>							
<b>Budgetary effects of 1 percent lower real GDP growth:</b>							
For calendar year 1996 only: <sup>1</sup>							
Receipts .....	-6.8	-14.7	-16.9	-17.1	-17.5	-18.1	-18.8
Outlays .....	1.2	6.0	7.1	8.4	9.6	10.9	12.4
Deficit increase (+) .....	8.0	20.6	24.0	25.5	27.1	29.0	31.2
Sustained during 1996–2002: <sup>1</sup>							
Receipts .....	-6.8	-21.7	-39.2	-57.6	-77.1	-97.7	-119.8
Outlays .....	1.2	8.2	14.3	23.9	32.5	45.1	57.4
Deficit increase (+) .....	8.0	29.9	53.5	81.5	109.6	142.8	177.2
Sustained during 1996–2002, with no change in unemployment:							
Receipts .....	-6.8	-22.0	-40.2	-60.0	-81.1	-103.8	-128.2
Outlays .....	0.2	0.9	2.4	4.8	7.8	12.1	17.6
Deficit increase (+) .....	7.0	22.9	42.6	64.7	88.9	115.9	145.8
<b>Inflation and Interest Rates</b>							
<b>Budgetary effects of 1 percentage point higher rate of:</b>							
Inflation and interest rates during calendar year 1996 only:							
Receipts .....	7.9	15.9	15.5	14.1	14.6	15.3	16.0
Outlays .....	6.5	15.1	11.8	10.1	9.6	9.2	8.2
Deficit increase (+) .....	-1.4	-0.8	-3.7	-4.1	-5.0	-6.1	-7.8
Inflation and interest rates, sustained during 1996–2002:							
Receipts .....	7.9	24.2	40.8	57.1	74.7	93.8	114.6
Outlays .....	6.5	22.0	35.2	47.4	59.4	70.6	81.3
Deficit increase (+) .....	-1.4	-2.2	-5.6	-9.7	-15.3	-23.2	-33.3
Interest rates only, sustained during 1996–2002:							
Receipts .....	1.0	2.7	3.4	3.7	4.0	4.2	4.5
Outlays .....	6.0	17.7	24.9	30.3	34.8	38.8	41.2
Deficit increase (+) .....	5.0	15.0	21.5	26.6	30.9	34.5	36.7
Inflation only, sustained during 1996–2002:							
Receipts .....	6.9	21.5	37.4	53.4	70.7	89.6	110.1
Outlays .....	0.5	4.3	10.3	17.1	24.6	31.8	40.1
Deficit increase (+) .....	-6.4	-17.2	-27.1	-36.3	-46.2	-57.7	-70.0
<b>Interest Cost of Higher Federal Borrowing</b>							
Effect of \$100 billion additional borrowing during 1996 .....	2.8	5.1	5.0	5.2	5.2	5.3	5.5

<sup>1</sup>The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.

1997

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

### Introduction

This chapter presents a framework for describing the financial condition of the Federal Government and its performance as a steward of publicly owned assets. Although parts of the presentation are similar in appearance to a business balance sheet, they are not the same. The Government's sovereign powers have no counterparts in the business world, and its resources and responsibilities are broader than the assets and liabilities found on a typical balance sheet. For this reason, it is not possible to judge how well the Government is discharging its stewardship obligations simply from an examination of its formal assets and liabilities. A review of how national welfare and security are faring in light of Government policy is also needed.

Because of the differences between Government and business, and the serious limitations that exist in the available data, the material presented below must be interpreted cautiously. The conclusions are necessarily tentative and subject to future revision as the estimating methods are improved and better data become available.

The presentation consists of three parts:

- The first part is summarized in Table 2-1, which shows what the Federal Government owns and what it owes. This table is closest in appearance to a business balance sheet. The assets and liabilities shown here are strictly defined. The assets are only those owned by the Government, while the liabilities result from past Government actions that have created binding commitments to make future payments. Government assets and liabilities could be defined more broadly than this, but if they were, they would no longer correspond to the assets and liabilities that appear on a balance sheet.
- The second part is summarized in Table 2-2, which presents possible paths for the Federal budget extending into the distant future. The section shows how the deficit is affected in the long run by changes in policy and by changes in economic or demographic behavior. This is the best context in which to examine the balance between Federal resources and responsibilities, and it is the clearest way to indicate the long-run financial burdens that the Government faces. Some future claims deserve special emphasis because of their importance in individual retirement planning. Table 2-3 summarizes the condition of the social security and Medicare trust funds under current law and how and why that condition has changed since 1994.

- The final part of the presentation is intended to show some of the ways in which Federal activities contribute to social and economic well-being. Table 2-4 indicates how Federal investments have contributed to national wealth. Table 2-5 offers a set of economic and social indicators. The measures of well- or ill-being in this table are all affected to a greater or lesser degree by Government actions.

The Federal Government does not have a single bottom line that would reveal its financial status at a glance, but this presentation offers a balanced view of the condition of the Government's finances and its stewardship of resources.

The Government's formal liabilities exceed the value of assets in its possession, and the gap has widened markedly over the last 15 years. Even so, national wealth has continued to rise, partly as a result of investments the Government has made or sponsored in physical and human capital. The Government's net liabilities are very large but they amount to only about 6 percent of total national wealth. Furthermore, if the President's 1997 budget is enacted, Federal debt in the hands of the public—the main category of Federal liabilities—will expand much less rapidly in the future than it did prior to 1993. By the year 2002 the deficit would be eliminated, and for several years after that Federal debt held by the public would actually decline. Eventually, a deficit is likely to reemerge if action is not taken to confront the demographic transition caused by the retirement of the baby boom, but that problem will be much easier to deal with because of actions taken by this Administration.

### Relationship with FASAB Objectives

The framework presented here meets one of the four objectives<sup>1</sup> of Federal financial reporting recommended by the Federal Accounting Standards Advisory Board and adopted for use by the Federal Government in September 1993. This Stewardship objective says:

Federal financial reporting should assist report users in assessing the impact on the country of the Government's operations and investments for the period and how, as a result, the Government's and the Nation's financial conditions have changed and may change in the future. Federal financial reporting should provide information that helps the reader to determine:

3a. Whether the Government's financial position improved or deteriorated over the period.

3b. Whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due.

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<sup>1</sup> *Objectives of Federal Financial Reporting*, Statement of Federal Financial Accounting Concepts Number 1, September 2, 1993. The other three objectives relate to budgetary integrity, operating performance, and systems and controls.

3c. Whether Government operations have contributed to the Nation's current and future well-being.

The Board is in the process of developing recommendations as to the specific accounting standards that would meet this objective. This experimental presentation explores one possible approach for meeting the objective at the Government-wide level.

### **What Can Be Learned from a Balance Sheet Approach**

The budget is an essential tool for allotting resources within the Federal Government and between public and private sectors, but the standard budget presentation, with its focus on annual outlays, receipts, and the deficit, does not provide sufficient information for a full analysis of the Government's financial and investment decisions. It is useful to project the deficit forward to see how current decisions will affect the future balance of Federal resources and responsibilities. The information about the stocks of Federal assets and liabilities can be useful as well. It is also important to examine the effects of Government financial decisions on the private sector and State and local Governments. This is especially true for Federal investments, which often generate returns that flow mainly to households, private businesses or other levels of Government, rather than back to the Federal Treasury. The framework presented here is a first step toward filling some of these needs.

The Government's sovereign powers to tax, regulate commerce, and set monetary policy give it resources that no private individual or business possesses. Although these resources are not assets in any conventional sense, they need to be considered in a comprehensive review of the Government's financial condition. Formal Government obligations such as Treasury notes clearly belong on the other side of the ledger. These debts have obvious counterparts in the business world.

There are other Government obligations, however, which have no obvious analogues in business accounting. For example, the Government's obligation to promote the general welfare has led in the twentieth century to the establishment of a number of social policy programs. These programs are at the center of the debate over how best to discharge the Federal Government's responsibilities. Although changes in these programs are inevitable and even desirable, it is very likely that many of them will remain as Federal obligations for the foreseeable future. Programs such as Medicare may be changed, but they are unlikely to be eliminated. In its budget planning, it would be prudent for the Federal Government to assume that there will be a

continuing need to fund such programs. They are not legally binding liabilities, however, and they would not be included on a business balance sheet.

Almost all of the broader Federal resources and responsibilities are subject to change through the political process, and future decisions by Congress and the President are likely to alter them. In a financial sense, the discounted present value of such obligations is much more uncertain than is the current value of the official Government debt, or even the value of Government-owned assets. This is another reason for keeping such constitutional and moral obligations separate from the Government's liabilities strictly defined.

The best way to see how future resources line up with future responsibilities is to project the Federal budget forward in time. The budget offers a comprehensive picture of Federal receipts and spending, and by projecting it forward it is possible to learn the implications of current and past policy decisions. Some projections of this sort are presented below. The budget does not show, however, whether the public is receiving value for its tax dollars. Knowing that would require comprehensive performance measures for Government programs, and broad statistical information about conditions in the U.S. economy and society for which Government is wholly or partly responsible. Some of these data are currently available but much more would need to be developed to obtain a full picture.

The presentation that follows consists of a series of tables and charts. No one of these is a "Government balance sheet," but all of them together serve many of the functions of a balance sheet. The schematic diagram, Chart 2-1, shows how they fit together. The tables and charts should be viewed as an ensemble, the main elements of which can be grouped together in two broad categories—assets/resources and liabilities/responsibilities.

- Reading down the left-hand side of the diagram shows the range of Federal resources, including assets the Government owns, tax receipts it can expect to collect, and national wealth that provides the base for Government revenues.
- Reading down the right-hand side reveals the full range of Federal obligations and responsibilities, beginning with Government's acknowledged liabilities (such as the debt held by the public) based on past actions, and going on to include future budget outlays. This column potentially would include a set of indicators highlighting areas where Government activity might require adjustment, either through new investment or through reductions or reallocations of existing resources.

## CHART 2-1. A BALANCE SHEET PRESENTATION FOR THE FEDERAL GOVERNMENT

<b>ASSETS/RESOURCES</b>	<b>LIABILITIES/RESPONSIBILITIES</b>
<p style="text-align: center;"><b>Federal Assets</b></p> <p>Financial Assets</p> <ul style="list-style-type: none"> <li>Gold and Foreign Exchange</li> <li>Other Monetary Assets</li> <li>Mortgages and Other Loans</li> <li>Less Expected Loan Losses</li> <li>Other Financial Assets</li> </ul> <p>Physical Assets</p> <ul style="list-style-type: none"> <li>Fixed Reproducible Capital           <ul style="list-style-type: none"> <li>Defense</li> <li>Nondefense</li> </ul> </li> <li>Inventories</li> <li>Non-reproducible Capital           <ul style="list-style-type: none"> <li>Land</li> <li>Mineral Rights</li> </ul> </li> </ul> <p style="text-align: center;"><b>Resources/Receipts</b></p> <p>Projected Receipts</p>	<p style="text-align: center;"><b>Federal Liabilities</b></p> <p>Financial Liabilities</p> <ul style="list-style-type: none"> <li>Currency and Bank Reserves</li> <li>Debt Held by the Public</li> <li>Miscellaneous</li> <li>Guarantees and Insurance Liabilities</li> <li>Deposit Insurance</li> <li>Pension Benefit Guarantees</li> <li>Loan Guarantees</li> <li>Other Insurance</li> <li>Federal Pension Liabilities</li> </ul> <p>Net Balance</p> <p style="text-align: center;"><b>Responsibilities/Outlays</b></p> <p>Discretionary Outlays</p> <p>Mandatory Outlays</p> <ul style="list-style-type: none"> <li>Social Security</li> <li>Health Programs</li> <li>Other Programs</li> </ul> <p>Net Interest</p> <p>Deficit</p>
<p style="text-align: center;"><b>National Assets/Resources</b></p> <p>Federally Owned Physical Assets</p> <p>State &amp; Local Physical Assets</p> <ul style="list-style-type: none"> <li>Federal Contribution</li> </ul> <p>Privately Owned Physical Assets</p> <p>Education Capital</p> <ul style="list-style-type: none"> <li>Federal Contribution</li> </ul> <p>R&amp;D Capital</p> <ul style="list-style-type: none"> <li>Federal Contribution</li> </ul>	<p style="text-align: center;"><b>National Needs/Conditions</b></p> <p>National Wealth (Table 2-4)</p> <p>Indicators of economic, social, educational, and environmental conditions to be used as a guide to Government investment and management.</p>

Table 2-1. GOVERNMENT ASSETS AND LIABILITIES\*

(As of the end of the fiscal year, in billions of 1995 dollars)

	1960	1965	1970	1975	1980	1985	1990	1993	1994	1995
<b>ASSETS</b>										
Financial assets:										
Gold and Foreign Exchange .....	98	69	58	130	322	154	194	171	171	183
Other Monetary Assets .....	37	53	32	15	38	24	31	39	31	34
Mortgages and Other Loans .....	122	156	202	202	278	341	276	230	218	193
Less Expected Loan Losses .....	-1	-2	-4	-9	-16	-16	-18	-24	-26	-22
Other Financial Assets .....	58	77	64	64	84	108	166	202	190	188
Subtotal .....	314	353	351	403	706	611	648	618	584	576
Physical Assets:										
Fixed Reproducible Capital:										
Defense .....	826	842	839	683	586	694	771	782	780	744
Nondefense .....	146	175	189	216	248	249	254	251	256	255
Inventories .....	252	218	203	181	220	252	219	179	170	168
Nonreproducible Capital:										
Land .....	87	121	151	234	296	318	315	241	237	235
Mineral Rights .....	314	291	241	334	607	683	457	388	360	335
Subtotal .....	1,626	1,646	1,622	1,647	1,958	2,197	2,016	1,841	1,803	1,737
<b>Total assets .....</b>	<b>1,940</b>	<b>2,000</b>	<b>1,972</b>	<b>2,050</b>	<b>2,664</b>	<b>2,808</b>	<b>2,664</b>	<b>2,459</b>	<b>2,387</b>	<b>2,313</b>
<b>LIABILITIES</b>										
Financial liabilities:										
Currency and Bank Reserves .....	220	241	267	272	273	290	348	396	422	437
Debt held by the Public .....	954	941	800	787	1,019	1,809	2,483	3,072	3,158	3,219
Miscellaneous .....	28	29	31	33	44	55	82	59	60	61
Subtotal .....	1,202	1,211	1,097	1,092	1,336	2,153	2,913	3,527	3,640	3,717
Insurance Liabilities:										
Deposit Insurance .....	0	0	0	0	2	9	67	13	8	4
Pension Benefit Guarantee Corp .....	0	0	0	41	30	41	40	63	31	19
Loan Guarantees .....	0	0	2	6	12	10	14	28	30	27
Other Insurance .....	30	27	21	19	26	16	19	18	17	16
Subtotal .....	30	27	23	67	69	76	140	122	86	66
Federal Pension Liabilities .....	734	930	1,104	1,256	1,707	1,693	1,625	1,563	1,541	1,513
<b>Total liabilities .....</b>	<b>1,966</b>	<b>2,168</b>	<b>2,225</b>	<b>2,414</b>	<b>3,112</b>	<b>3,922</b>	<b>4,678</b>	<b>5,212</b>	<b>5,267</b>	<b>5,296</b>
Balance .....	-26	-169	-252	-364	-448	-1,114	-2,014	-2,753	-2,880	-2,983
Per capita (in 1995 dollars) .....	-146	-867	-1,231	-1,686	-1,961	-4,658	-8,034	-10,635	-11,018	-11,312
Ratio to GDP (in percent) .....	-1.1	-5.4	-6.9	-8.7	-9.0	-19.1	-30.4	-39.5	-39.9	-40.7

\*This table shows assets and liabilities for the Government as a whole, including the Federal Reserve System. Therefore, it does not break out separately the assets held in Government accounts, such as social security, that are the obligation of specific Government agencies. Estimates for 1995 are extrapolated in some cases.

## THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2-1 summarizes what the Government owes as a result of its past operations, along with the value of what it owns, for a number of years beginning in 1960. The values of assets and liabilities are measured in terms of constant 1995 dollars. For all of this period, Government liabilities have exceeded the value of assets, but until the early 1980s the disparity was relatively small, and for many years it deteriorated only gradually.

In the late 1970s, a speculative run-up in the prices of oil, gold, and other real assets temporarily boosted Federal asset values, but since then they have declined.<sup>2</sup> Currently, the total real value of Federal assets

is estimated to be about 20 percent greater than it was in 1960. Meanwhile, Federal liabilities have increased by almost 170 percent in real terms. The sharp decline in the Federal net asset position that began in the 1980s was principally due to the large Federal budget deficits that began at that time along with the drop in asset values. Currently, the net excess of liabilities over assets is about \$3 trillion or over \$11,000 per capita.

### Assets

The assets in Table 2-1 reflect a comprehensive list of the financial and physical resources owned by the Federal Government. The list corresponds to items that

<sup>2</sup>This temporary improvement highlights the importance of the other tables in this presentation. What is good for the Federal Government as an asset holder is not necessarily favorable to the economy. The decline in inflation in the early 1980s reversed the speculative

runup in gold and other commodity prices. This reduced the balance of Federal net assets, but it was good for the economy.

would appear on a typical balance sheet, but it does not constitute an exhaustive catalogue of Federal resources. For example, the Government's most important financial resource, its ability to tax, is not reflected.

*Financial Assets:* At the end of 1995, the Federal Government's holdings of financial assets amounted to about \$570 billion. Government-held mortgages and other loans (measured in constant dollars) reached a peak in the mid-1980s. Since then, Federal loans have declined. The holdings of mortgages, in particular, have declined sharply over the last three years as the holdings acquired from failed Savings and Loan institutions have been liquidated.

The face value of mortgages and other loans overstates their economic value because of future losses and the interest subsidy on these loans. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Over time, variations in the price of gold have accounted for major swings in this category. Since 1980, gold prices have fallen, and the real value of U.S. gold and foreign exchange holdings have dropped by over 40 percent. Last year, for the first time in several years, these assets rose in value.

*Reproducible Capital:* The Federal Government is a major investor in physical capital. Government-owned stocks of fixed capital amounted to about \$1.0 trillion in 1995. About three-quarters of this capital took the form of defense equipment or structures. From 1960 to 1981, the net stock of defense capital fell as a share of GDP, but between 1982 and 1991, the ratio generally held steady. Since 1991, the reduction in defense purchases following the end of the Cold War has caused a decline in the ratio of these stocks to GDP of about 1½ percentage point.

*Non-reproducible Capital:* The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings. Researchers in the private sector have estimated what they are worth, and these estimates are extrapolated in Table 2-1. Private land values are about 20 percent lower than they were at the end of the 1980s, although they have risen somewhat since 1993. It is assumed here that Federal land has shared in this decline. Oil prices have fluctuated but are lower now than they were five years ago. These shifts are likely to have pulled down the value of Federal mineral deposits.

*Total Assets:* The total real value of Government assets has declined about 15 percent over the last 10 years, principally because of declines in the real prices of gold, land, and minerals. At the end of 1995, the Government's holdings of all assets were worth about \$2.3 trillion.

### ***Liabilities***

The liabilities listed in Table 2-1 are analogous to those of a business corporation. They include public debt, Federal trade credit, and Federal pension obligations owed to its workers. Other potential claims on Federal resources are not reflected.

*Financial Liabilities:* These amounted to about \$3.7 trillion at the end of 1995. The largest component was Federal debt held by the public, amounting to over \$3.2 trillion. This measure of Federal debt is net of the holdings of the Federal Reserve System. Those holdings exceeded \$380 billion in 1995. Although independent in its policy deliberations, the Federal Reserve is part of the Federal Government, and for that reason its assets and liabilities are included here in the Federal totals. In addition to debt held by the public, the Government's financial liabilities include \$440 billion in currency and bank reserves, which are mainly obligations of the Federal Reserve System, and about \$60 billion in miscellaneous liabilities.

*Guarantees and Insurance Liabilities:* The Federal Government has contingent liabilities arising from loan guarantees and insurance programs. When the Government offers insurance, the initial outlays may be small or, if a fee is charged, they may even be negative, but the risk of future outlays associated with such commitments can be huge. In the past, the cost of such risks was not recognized until after a loss was realized. In the last few years, however, techniques have been developed which permit estimates to be made of the accruing costs arising from these commitments. The estimates are reported in Table 2-1. The resolution of the many failures in the Savings and Loan and banking industries have helped to reduce the losses in this category by about half since 1990.

*Federal Pension Liabilities:* The Federal Government owes pension benefits to its retired workers and to current employees who will eventually retire. The amount of these liabilities is large. As of 1995, the discounted present value of the benefits is estimated to have been around \$1.5 trillion.<sup>3</sup>

### ***The Balance of Net Liabilities***

The balance between Federal liabilities and Federal assets has deteriorated over the past 15 years at a rapid rate. In 1980, the negative balance was less than 11 percent of GDP. Currently, it is estimated to be over 40 percent. The budget deficit has declined since 1992, however, and this has slowed the rate of decline in the net asset position. If the Administration's budget proposals were to be enacted, it is likely that the rate of decline in the net asset position would be halted and even reversed.

<sup>3</sup>These pension liabilities are expressed as the actuarial present value of benefits accrued-to-date based on past and projected salaries. The cost of retiree health benefits is not included. The 1995 liability is extrapolated from recent trends.

## THE BALANCE OF RESOURCES AND RESPONSIBILITIES

The data summarized in Table 2-1 are useful in showing the consequences of past Government policies, but Government's continuing commitments to provide public services are not reflected there, nor can the Government's broader resources be displayed in a table limited only to the assets that it owns. A better way to examine the balance between future Government obligations and resources is by projecting the overall budget. The budget offers the most comprehensive measure of the Government's financial burdens and its resources. By projecting total receipts and outlays, it is possible to examine whether there will be sufficient resources to support all of the Government's ongoing obligations.

The Federal Government's responsibilities extend well beyond the five-year window (or the expanded seven-year window) that has been the focus of recent budget analysis and debate. There is no time limit on Government's constitutional responsibilities, and programs like social security are clearly expected to continue indefinitely.

This part of the presentation shows some alternative long-run projections of the Federal budget that extend through the year 2050. Forecasting the economy and the budget over such a long period is highly uncertain. Future budget outcomes depend on a host of unknowns—constantly changing economic conditions, unforeseen international developments, unexpected demographic shifts, the unpredictable forces of technological advance, and unknown future political preferences. Those uncertainties increase the further projections are pushed into the future. Even so, long-run budget projections are needed to assess the full implications of current action or inaction.

It is evident even now that there will be mounting challenges to the budget after the turn of the century. The huge baby-boom generation born in the years after World War II is aging and will begin to retire in little more than a decade. By 2008, the first baby-boomers will become eligible for social security. In the years that follow there will be serious strains on the budget because of increased expenditures for both social security and Medicare. Long-range projections can offer a sense of the seriousness of these strains and what may be needed to withstand them.

***The Long-Range Outlook for the Budget.***—Since the Administration took office there have been major changes in the long-run budget outlook. In January 1993, the deficit was clearly on an unsustainable trajectory. Had current policies continued unchanged the deficit would have steadily mounted not only in dollar terms, but relative to the size of the economy.<sup>4</sup> The Omnibus Budget Reconciliation Act of 1993 (OBRA)

changed that. Not only did it produce a decline in the near-term deficit, but it also brought down the long-term budget deficit as well. The policies in OBRA were sufficient to maintain the deficit as a stable share of GDP into the next century. This was a marked improvement over the long-term outlook that the Administration inherited.

Despite this improvement, the long-run picture for the budget has remained threatening. A GAO study released in 1992 concluded that, "the economic and political reality is that the nation cannot continue on the current path" of increasing long-run deficits. More recently, the 1994 report of the Bipartisan Commission on Entitlement and Tax Reform found that there exists a "long-term imbalance between the Government's entitlement promises and the funds it will have available to pay for them." On a narrower front, the annual trustees' reports for both the social security and Medicare trust funds project a long-run actuarial deficiency for these programs, and have for some time.

***Economic and Demographic Projections.***—Long-run budget projections must be based on a long-run demographic and economic forecast. Otherwise, it is impossible to estimate either future resources or the potential claims on them. The forecast used here is an extension of the Administration's economic projections described in the first chapter of this volume. Inflation, unemployment and interest rates are assumed to hold stable at their values in the year 2006. The real rate of economic growth is determined by the expected growth of the labor force and labor productivity. Productivity is assumed to continue rising at the same rate as in the Administration's medium-term projections, approximately 1.2 percent per year.<sup>5</sup>

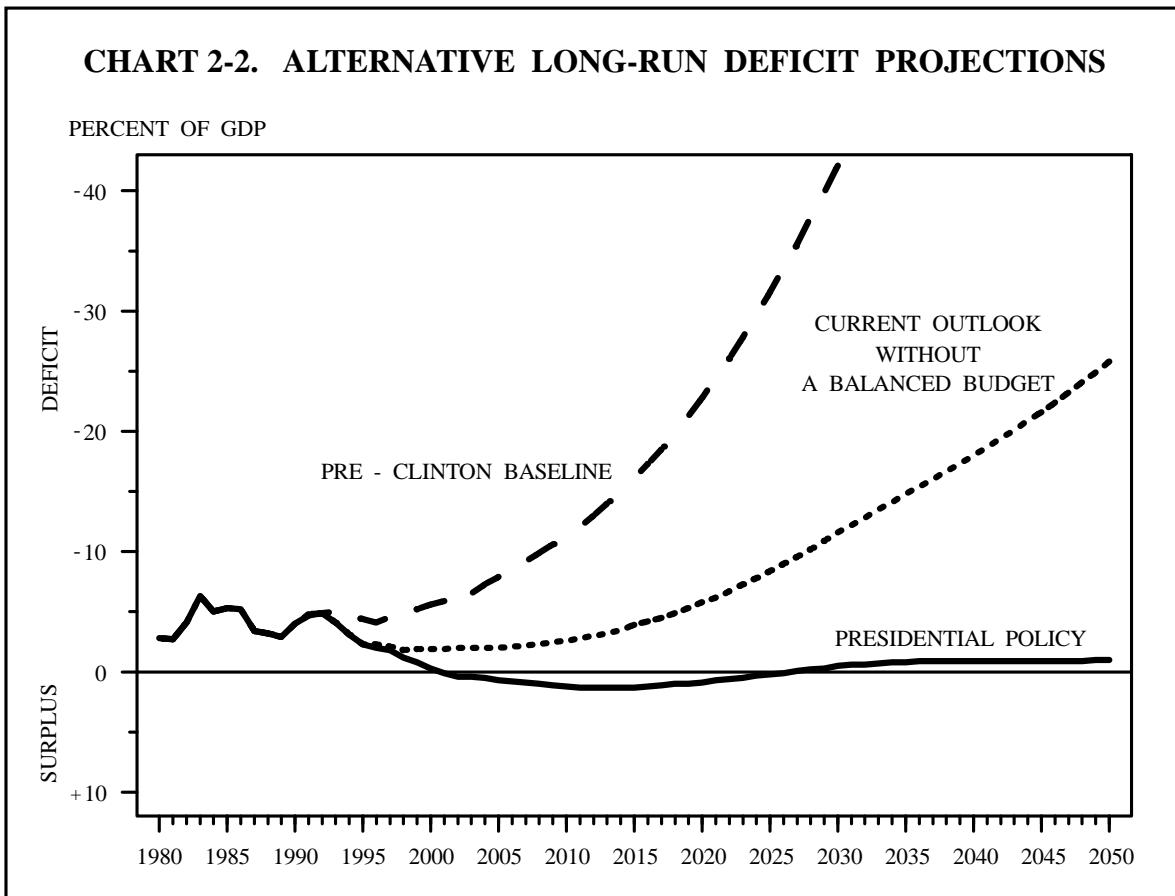
Population growth is expected to slow over the next several decades. This is consistent with recent trends in the birth rate and an expected decline in the proportion of women in their childbearing years. The slowdown is expected to lower the rate of population growth from over 1 percent per year to about half that rate by the year 2020.<sup>6</sup> Labor force participation is also expected to decline as the population ages. Together these trends imply a slowdown in real economic growth beginning around the year 2005. The rate of real GDP growth slows to less than 1.5 percent per year after 2020 because of these trends.

***The Deficit Outlook.***—Chart 2-2 shows three alternative deficit projections: a projection based on the policies in place prior to enactment of OBRA, the current outlook before incorporating the President's proposals to balance the budget, and a projection that shows the long-run outlook assuming those proposals are adopted.

<sup>4</sup> Over very long periods when the rate of inflation is positive, comparisons of dollar values are meaningless. Even the low rate of inflation assumed in this budget will reduce the value of a 1995 dollar by over 60 percent by 2030, and by almost 80 percent by the year 2050. For long-run comparisons, it is much more useful to examine the ratio of the deficit and other budget categories to the overall size of the economy as measured by GDP.

<sup>5</sup> This projection is stated in terms of the new chain-weighted measures for GDP introduced by the Bureau of Economic Analysis in January. On the unrevised basis, the projected growth rate is about one-half percentage point higher.

<sup>6</sup> The population growth assumptions in these projections are based on the intermediate assumptions in the 1995 social security trustees' report for the period after 2006.



The chart clearly illustrates the dramatic improvement in the deficit that has already been achieved and shows that more is possible, not only in the short run but also in the long run. If the budget were balanced by 2002, the task of achieving fiscal stability when the demographic bulge hits after 2005 would be substantially reduced.

Along the pre-OBRA baseline, the deficit reaches over 40 percent of GDP by the year 2030. OBRA reduced the deficit by extending the caps on discretionary outlays; reforming Medicare; changing the rules for other entitlement programs; and raising tax rates on upper-income taxpayers, among other measures. A strengthening of the economic outlook also improved the deficit projection following the enactment of OBRA. In the current context, it is notable that OBRA lowered the deficit in the long term as well as in the short term. This would require that the discretionary savings achieved in 1994–1998 be preserved by holding the level of real discretionary spending constant thereafter. A return to the prior spending trajectory would partially undo these savings. Similarly, the savings in Medicare and other entitlements would need to be preserved.

Despite the improvement in the outlook after the passage of OBRA, serious long-run problems remain. Beginning around the year 2010 and continuing throughout the next several decades, the deficit would rise, eventually reaching unsustainable levels. The initial increase is caused by the expected retirement of the baby-boom generation that puts new strains on social security and Medicare. By 2030, the deficit reaches 12 percent of GDP, and by 2050, it is 26 percent. Table 2-2 shows alternative long-range budget projections for the major spending categories. The table shows that the entitlement programs are the major driving force behind the rise in the deficit in the long run.

Social security benefits, driven by the retirement of the baby-boom generation, rise from around 5 percent of GDP in 2000 to over 7 percent in 2030. The rise in Federal health care is even greater. Without the President's policies, Medicare and Medicaid together would reach 4 percent of GDP in 2000 and then continue to rise to 11 percent by the year 2030. As entitlement spending rises, if no corrective action is taken, the deficit grows rapidly. Initially, the programmatic spending is responsible for the increase, but as time passes a vicious spiral takes hold in which more bor-

Table 2-2. ALTERNATIVE BUDGET PROJECTIONS

(Percent of GDP)

	1995	2000	2005	2010	2020	2030	2040	2050
<b>Current outlook without a balanced budget:</b>								
Receipts .....	19.3	19.3	19.2	19.2	19.2	19.4	19.4	19.5
Outlays .....	21.7	21.3	21.2	21.8	25.0	30.9	37.4	45.3
Discretionary .....	7.8	6.5	5.8	5.3	4.5	4.0	3.4	3.0
Mandatory .....	10.6	11.7	12.4	13.4	16.4	19.7	21.5	22.5
Social security .....	4.8	4.7	4.7	4.8	6.0	7.1	7.6	8.0
Medicare and Medicaid .....	3.5	4.3	5.2	6.2	8.3	10.7	12.3	13.0
Net interest .....	3.3	3.1	3.0	3.1	4.1	7.3	12.5	19.8
Deficit .....	-2.3	-1.9	-2.0	-2.6	-5.8	-11.6	-18.0	-25.8
Federal debt held by public .....	51.4	50.8	49.5	50.5	68.4	121.0	207.8	327.0
<b>Presidential policy (balanced budget):</b>								
Receipts .....	19.3	19.4	19.4	19.3	19.4	19.5	19.5	19.6
Outlays .....	21.7	19.7	18.7	18.1	18.5	20.0	20.5	20.6
Discretionary .....	7.8	6.0	5.4	4.9	4.2	3.7	3.2	2.8
Mandatory .....	10.6	11.1	11.4	12.0	14.0	16.1	16.8	17.1
Social security .....	4.8	4.7	4.7	4.8	6.0	7.1	7.6	8.0
Medicare and Medicaid .....	3.5	3.9	4.3	4.9	6.0	7.2	7.7	7.7
Net interest .....	3.3	2.6	1.9	1.2	0.3	0.2	0.4	0.7
Deficit .....	-2.3	-0.3	0.7	1.2	0.9	-0.5	-0.9	-1.0
Federal debt held by public .....	51.4	47.0	35.6	24.1	6.5	3.7	9.5	14.2

rowing leads to higher Federal interest payments on the growing debt, which is financed in turn by yet more borrowing. The spiral is unstable in that if it continued unchecked it would eventually drive the debt and the deficit to infinity. Long before that point, a financial crisis would surely be triggered that would force some type of action on the Federal Government—action that was certain to be drastic and painful.

The long-run deficit outlook would be much improved if the President's budget proposals were enacted. Balancing the budget would set it on a solid footing for several decades. There is no justification in these projections for the concern sometimes expressed that a balanced budget would be a transitory phenomenon, to be followed quickly by a return of large and growing deficits. Under the Administration's economic and demographic assumptions that would not happen. The additional savings projected for the entitlements and the further reduction in discretionary spending leave the budget in a much improved position compared with the outlook in the absence of these changes. The lower level of Federal debt and interest that result from a balanced budget also help to maintain a budget surplus in these projections in the period beyond 2006.

Even with the improvements caused by a balanced budget, a very long-run deficit problem would remain as a result of the expected strains on social security and the health programs in the period following the retirement of the baby-boom generation. Balancing the budget would enable the Government to run a surplus over the following decades without further major policy initiatives. Eventually, the surplus would dissipate to be followed by a reappearance of the unified budget deficit.<sup>7</sup> By the year 2050, however, the deficit would still be lower, as a percentage of GDP, than it was

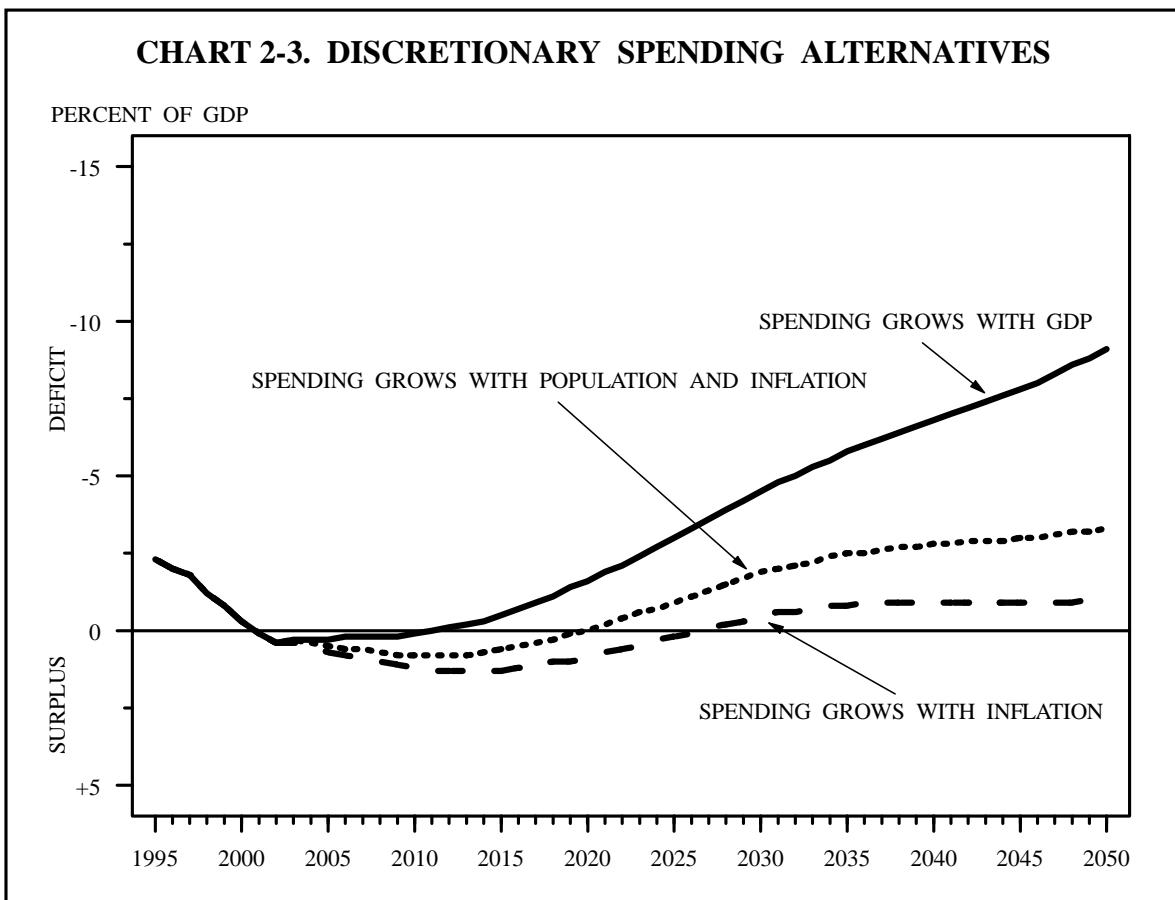
in 1992. To prevent the reemergence of a deficit, policies would have to be changed to reform social security and check the growth of Medicare and Medicaid.

**Alternative Scenarios.**—Budget projections are uncertain, and long-run projections are especially so. Therefore, it is essential to study how such projections can vary under reasonable variations in assumptions. A number of such alternative scenarios have been developed for these projections. Each alternative focuses on one of the key uncertainties in the outlook. Generally, the scenarios highlight negative possibilities rather than positive ones to show the risks in the outlook.

1. *Discretionary Spending.* The projections assume that discretionary spending is held constant in real terms once budget balance is reached. This is a strong assumption in a long-run context, although it is the usual assumption when current services projections are made, and currently discretionary spending is only half as large as a percent of GDP as it was 30 years ago. What makes it questionable is the fact that with real economic growth occurring and population rising, the public demand for Government services—more national parks, better transportation, additional Federal support for scientific research—might be expected to increase as well. It also assumes that the Nation's real defense needs will not vary from the proposed levels at the end of the current budget period. Alternative assumptions that allow for these programs to grow with population or overall economic activity are shown in Chart 2-3. These alternative assumptions worsen the deficit outlook.

2. *Health Spending.* The most volatile element of recent budgets has been Federal health spending. Expenditures for Medicare and Medicaid have grown faster than other entitlements, and even after the reforms

<sup>7</sup>These projections assume that any surplus is used to reduce the debt. This depends on political choices in future years.



in the President's budget, which go a long way toward reining in their growth, they continue to rise more rapidly. In the long-run projections, the growth of real per capita spending for Medicare, following the Medicare trustees' assumptions, is assumed to slow down gradually. Per capita Medicaid spending is constrained by the proposed cap on per capita spending. The beneficiary populations vary with the demographic assumptions. The alternative scenario shows what would happen instead if faster trends in spending for these programs resumed after 2006. Chart 2-4 shows the resulting deficit outlook from such assumptions.

3. *Productivity:* The slowdown in productivity growth in the U.S. economy that began in 1973 is responsible for much of the weaker performance of U.S. income growth since that time. Indeed, over the long run, productivity gains are the principal source of higher incomes, so slower growth of productivity necessarily means a slower rise in living standards. Productivity can be affected by changes in the budget deficit, but many other factors influence it as well. Educational achievement, R&D, energy prices, regulation, changes in business organization, and competition all affect productivity. The alternative scenarios illustrate what would happen to the budget deficit in the long run if productivity growth were higher or lower. A higher

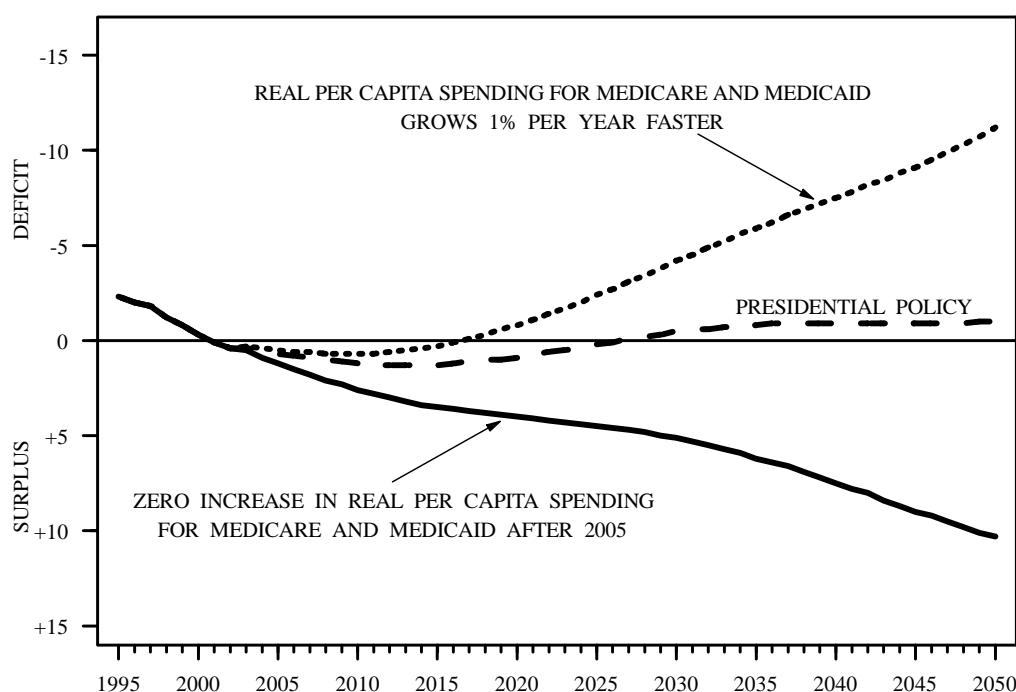
rate of growth would make the task of preserving a balanced budget much easier; a lower growth rate would have the opposite effect. Chart 2-5 shows how the deficit varies with changes of one-half percentage point of average productivity growth.

4. *Population:* In the long-run, demographics dominate the projections. Changes in population growth feed into real economic growth through the effect on labor supply and employment. Changes in demographics also affect spending under the entitlement programs. Much of the long-run problem that remains even with a balanced budget is due to expected demographic shifts. Chart 2-6 illustrates how important these are by showing what would happen to the deficit under the alternative demographic assumptions used by the social security trustees in their most recent report.

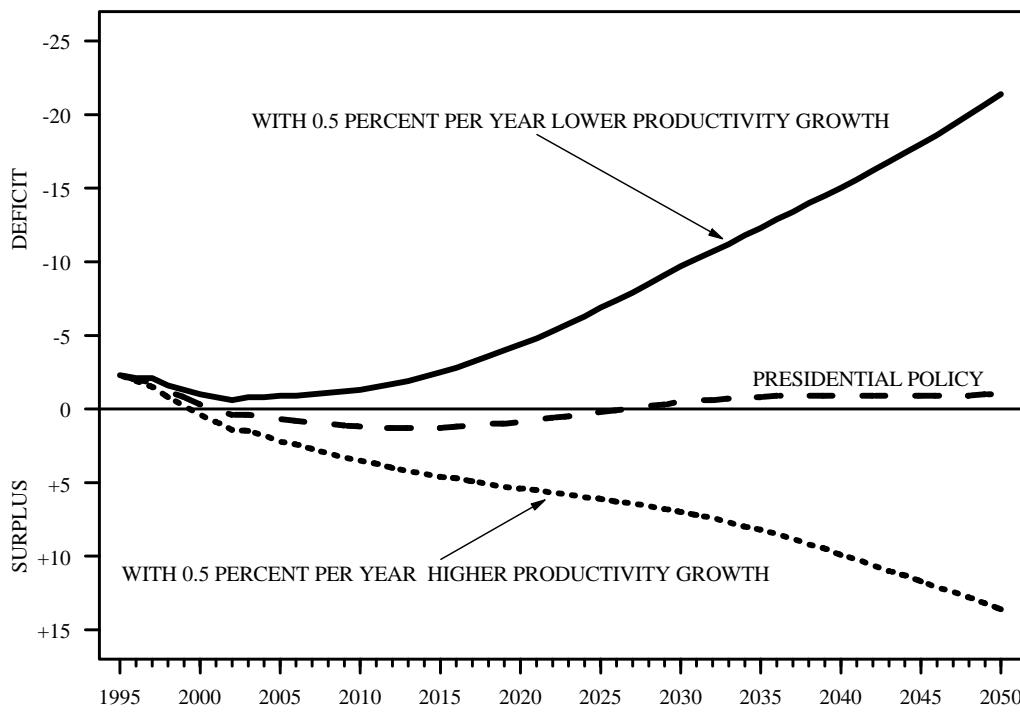
**Conclusion.**—OBRA improved the long-run deficit outlook dramatically, but even so the deficit is still projected to increase beginning around the year 2010, and to rise to unacceptable levels by mid-century. The President's current budget proposals would not only balance the budget, but go some distance toward resolving the long-run deficit problem as well. The long-run budget problem is not the result of irresponsible discretionary spending, and while it is necessary to control discretionary spending, and while it is necessary to con-

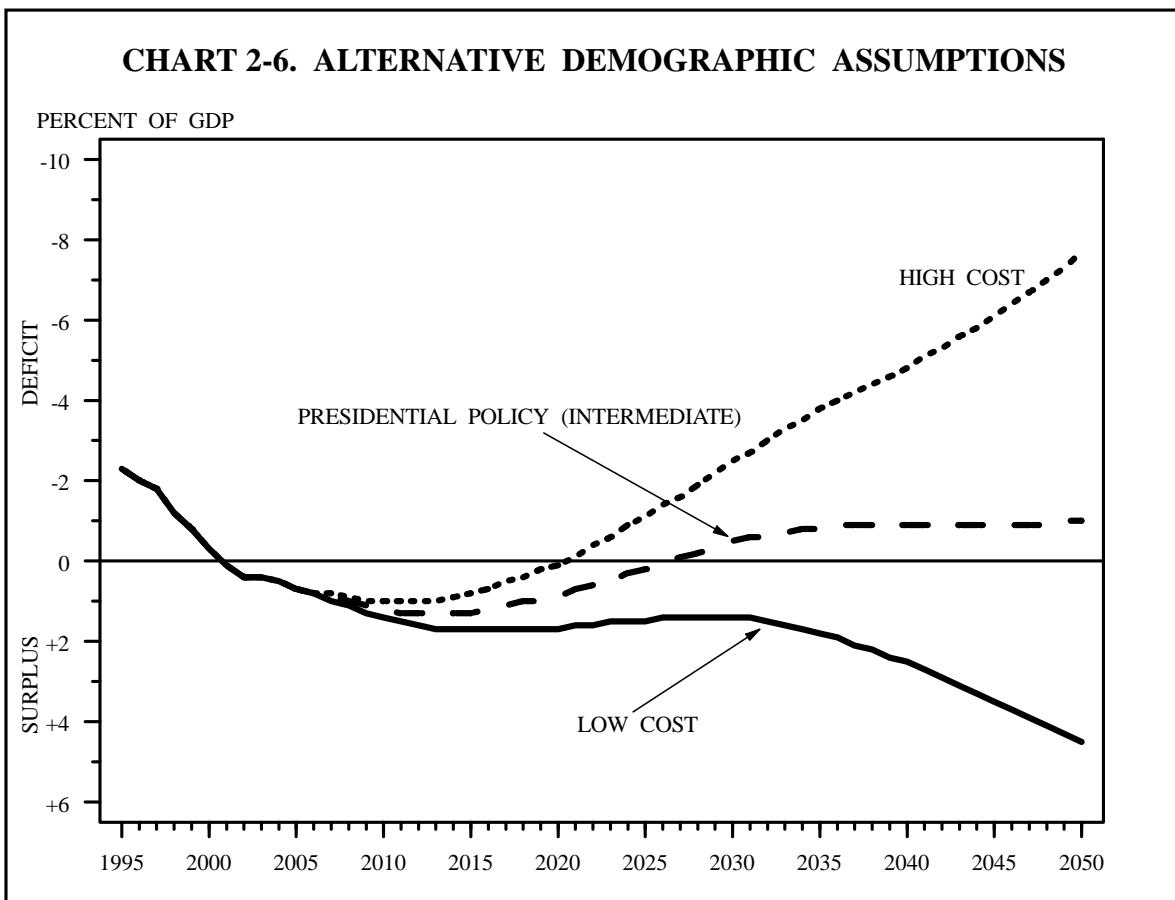
**CHART 2-4. ALTERNATIVE HEALTH SPENDING ASSUMPTIONS**

PERCENT OF GDP

**CHART 2-5. ALTERNATIVE PRODUCTIVITY ASSUMPTIONS**

PERCENT OF GDP





trol discretionary spending, doing this alone will not be enough to solve the long-run problem.

**Actuarial Balance in the Social Security and Medicare Trust Funds.**—Because of the critical role of the social security and Medicare programs to the long-range budget outlook, it is worthwhile to examine the status of these programs more closely. Table 2-3 shows the changes in the 75-year actuarial balances of the social security and Medicare Trust Funds since 1994. There was only a small change in the consolidated balance for the OASDI Trust Funds which combines the separate funds set up for retirement and disability insurance. Legislation to shift resources from the retirement fund to the disability fund prevented the latter from becoming insolvent. The combined OASDI fund is not projected to become depleted until 2030. In 1995, the trustees for the Hospital Insurance Trust Fund projected that under intermediate assumptions, the HI trust fund would be insolvent in 2002,

one year later than projected in 1994. More recent data has shown, however, that outlays exceeded income in 1995, sooner than was expected. In addition, baseline spending for HI has slightly increased from Mid-Session Review baseline estimates, primarily to reflect anticipated growth in home health spending. The trustees are expected to revise the projected exhaustion date for HI later this Spring in their 1996 Report. Because the trustees' analysis considers a wide range of factors, including additional experience in the current fiscal year, new analyses of the factors affecting HI benefit growth during fiscal years 1990-95, updated projections of HI payroll tax income and current interest rate expectations, it is not possible to accurately predict the exhaustion date until the Report is completed. Furthermore, the trustees' estimates do not take account of possible legislative changes, such as those proposed in this budget, that would postpone the date at which the fund is depleted.

TABLE 2-3. CHANGE IN 75-YEAR ACTUARIAL BALANCE FOR OASDI AND HI TRUST FUNDS (INTERMEDIATE ASSUMPTIONS)

(As a percent of taxable payroll)

	OASI	DI	OASDI	HI
Actuarial balance in 1994 report .....	-1.46	-0.66	-2.13	-4.14
Changes in balance due to changes in:				
Valuation period .....	-0.06	-0.01	-0.07	-0.10
Economic and demographic assumptions .....	0.13	0.01	0.14	0.01
Disability assumptions .....	0.00	-0.05	-0.05	0.00
Legislation .....	-0.40	0.40	0.00	0.00
Methods .....	-0.06	-0.01	-0.07	0.00
Hospital costs .....	0.00	0.00	0.00	0.64
Other .....	0.00	0.00	0.00	0.07
Total changes .....	-0.40	0.35	-0.05	0.62
Actuarial balance in 1995 report .....	-1.87	-0.31	-2.17	-3.52

## NATIONAL WEALTH AND WELFARE

Unlike a private corporation, the Federal Government routinely invests in ways that do not add directly to its own assets. For example, Federal grants are frequently used to fund capital projects by State or local Governments for highways and other purposes. Such investments are valuable to the public which pays for them with taxes, but they are not owned by the Federal Government.

The Federal Government also invests in education and research and development (R&D). These outlays contribute to future productivity and are in that sense analogous to investments in physical capital. Indeed, economists have computed stocks of human and knowledge capital to reflect the accumulation of such investments. Nonetheless, these capital stocks are not owned by the Federal Government, nor would they appear on a business balance sheet.

Table 2-4 presents a national balance sheet. It includes estimates of total national wealth classified in three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories, and these contributions are also shown in the table. Data in this table are especially uncertain because of the assumptions needed to prepare the estimates. Overall, the Federal contribution to the current level of national wealth is about 7½ percent, which is down from around 8 percent at the end of the 1980s, and from over 12 percent in 1960.

### Physical Assets

These include stocks of plant and equipment, office buildings, residential structures, land, and Government's physical assets such as military hardware, office buildings, and highways. Automobiles and consumer appliances are also included in this category. The total amount of such capital is vast, amounting to around \$26 trillion in 1995; by comparison, GDP was about \$7 trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus \$0.6 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed about one-quarter of the physical capital held by other levels of Government.

### Education Capital

Economists have developed the concept of human capital to reflect the notion that individuals and society invest in people as well as in physical assets. Investment in education is a good example of how human capital is accumulated.

For this table, an estimate has been made of the stock of capital represented by the Nation's investment in education. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over. The idea is to measure how much it would cost to reeducate the U.S. workforce at today's prices.

This is a crude measure, but it can provide a rough order of magnitude. According to this measure, the stock of education capital amounted to \$28 trillion in 1995, of which about 3 percent was financed by the Federal Government. The total exceeds the Nation's stock of physical capital. The main investors in education capital have been State and local Governments, parents, and the students themselves who forgo earning opportunities in order to acquire education.

Even broader concepts of human capital have been considered. Not all useful training occurs in school, or formal training programs at work. Much informal and yet invaluable learning occurs within families or on the job. Labor compensation amounts to about two-thirds of national income. Therefore, it is conceivable that the total value of human capital might be as large as three times the estimated value of physical capital. Thus, it can be seen that the estimates offered here are in a sense conservative, because they reflect only the costs of acquiring formal education.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

TABLE 2-4. NATIONAL WEALTH

(As of the end of the fiscal year, in trillions of 1995 dollars)

	1960	1965	1970	1975	1980	1985	1990	1993	1994	1995
<b>ASSETS</b>										
Publicly owned physical assets:										
Structures and Equipment .....	2.0	2.3	2.8	3.4	3.7	3.7	3.9	4.0	4.0	4.1
Federally owned or financed .....	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.6	1.6	1.6
Federally owned .....	1.0	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.0	1.0
Grants to State & Local .....	0.1	0.2	0.2	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Funded by State and local Governments .....	0.9	1.1	1.5	2.1	2.4	2.2	2.3	2.4	2.4	2.5
Other Federal assets .....	0.7	0.7	0.6	0.9	1.4	1.4	1.1	0.9	0.9	0.9
Subtotal .....	2.7	3.0	3.5	4.3	5.2	5.1	5.0	4.9	4.9	4.9
Privately Owned Physical Assets:										
Reproducible Assets .....	5.4	6.2	7.9	10.2	13.0	13.6	15.0	15.3	15.8	16.2
Residential Structures .....	1.9	2.2	2.7	3.6	4.9	4.9	5.4	5.7	5.9	6.1
Nonresidential Plant and equipment .....	1.9	2.3	3.0	4.0	5.0	5.6	6.0	6.1	6.1	6.3
Inventories .....	0.7	0.7	0.9	1.1	1.3	1.2	1.3	1.2	1.2	1.3
Consumer Durables .....	0.9	1.0	1.3	1.5	1.7	1.9	2.3	2.4	2.5	2.6
Land .....	1.9	2.3	2.6	3.4	5.1	5.9	5.9	4.5	4.5	4.4
Subtotal .....	7.3	8.5	10.5	13.6	18.1	19.4	20.9	19.8	20.3	20.7
Education Capital:										
Federally Financed .....	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.8	0.8	0.8
Financed from Other Sources .....	6.1	7.9	10.6	12.3	15.0	18.1	22.8	25.0	25.9	26.7
Subtotal .....	6.1	8.0	10.8	12.6	15.4	18.6	23.5	25.8	26.7	27.5
Research and Development Capital:										
Federally Financed R&D .....	0.2	0.3	0.5	0.5	0.6	0.7	0.8	0.8	0.8	0.9
R&D Financed from Other Sources .....	0.1	0.2	0.3	0.4	0.4	0.6	0.8	0.9	1.0	1.0
Subtotal .....	0.3	0.5	0.7	0.9	1.0	1.3	1.6	1.8	1.8	1.9
<b>Total assets .....</b>	<b>16.5</b>	<b>20.1</b>	<b>25.5</b>	<b>31.3</b>	<b>39.7</b>	<b>44.4</b>	<b>51.0</b>	<b>52.3</b>	<b>53.7</b>	<b>55.0</b>
<b>LIABILITIES:</b>										
Net Claims of Foreigners on U.S. .....	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(0.2)	0.3	0.6	0.7	0.9
<b>Balance .....</b>	<b>16.7</b>	<b>20.3</b>	<b>25.7</b>	<b>31.5</b>	<b>40.2</b>	<b>44.6</b>	<b>50.7</b>	<b>51.7</b>	<b>52.9</b>	<b>54.1</b>
Per capita (thousands of 1995 dollars) .....	92.2	104.4	125.5	145.8	176.1	186.5	202.1	199.7	202.6	205.1
<b>ADDENDA:</b>										
Total Federally funded capital .....	2.1	2.3	2.6	3.0	3.8	4.1	4.2	4.1	4.1	4.1
Percent of national wealth .....	12.3	11.3	10.2	9.5	9.4	9.1	8.2	8.0	7.8	7.6

**Research and Development Capital**

Research and Development can also be thought of as an investment, because R&D represents a current expenditure for which there is a prospect of future returns. After adjusting for depreciation, the flow of R&D investment can be added up to provide an estimate of the current R&D stock.<sup>8</sup> That stock is estimated to have been about \$1.9 trillion in 1995. Although this is a large amount of research, it is a relatively small portion of total National wealth. About half of this stock was funded by the Federal Government.

**Liabilities**

When considering the debts of the Nation as a whole, the debts that Americans owe to one another cancel out. This does not mean they are unimportant. The buildup in debt largely owed to other Americans was partly responsible for the sluggishness of the recovery

from the 1990–1991 recession in its early stages. Indeed, the debt explosion in the 1980s may have helped to bring on the recession in the first place.

However, these debts do not belong on the national balance sheet. If they were included, there would have to be offsetting entries. Only the net debt that is owed to foreigners belongs on the national balance sheet. America's foreign debt has been increasing rapidly in recent years, as a consequence of the U.S. trade deficit, but the size of this debt is small compared with the total stock of assets. It amounted to about 1½ percent of the total in 1995.

Most of the Federal debt held by the public is owned by Americans, so it does not appear in Table 2–4. Only that portion of the Federal debt held by foreigners is included. Even so, it is of interest to compare the imbalance between Federal assets and liabilities with national wealth. The Government will have to service the debt or repay it, and its ability to do so without disrupting the economy will depend in part on the wealth of the private sector. Currently, the Federal net asset

<sup>8</sup>R&D depreciates in the sense that the economic value of applied research and development tends to decline with the passage of time which leads to movement in the technological frontier.

imbalance, as estimated in Table 2-1, amounts to about 5½ percent of total U.S. wealth as shown in Table 2-4.

### Trends in National Wealth

The net stock of wealth in the United States at the end of 1995 was about \$55 trillion. Since 1980 it has increased in real terms at an annual rate of 2.2 percent per year—about half the 4.5 percent rate it averaged from 1960 to 1980. (All comparisons are in terms of constant 1995 dollars.) Public capital formation slowed down markedly between the two periods. The real value of the net stock of publicly owned physical capital was actually lower in 1995 than in 1980—\$4.9 trillion versus \$5.1 trillion in the earlier year. Since 1980, Federal grants to State and local governments for capital projects have grown less rapidly, while capital funded directly by State and local governments has grown at an average rate of only 0.1 percent per year.

Private capital formation in physical assets has also grown more slowly since 1980. The net stock of nonresidential plant and equipment grew 1.6 percent per year from 1980 to 1995 compared with 4.9 percent in the 1960s and 1970s, and the stock of business inventories actually declined. Overall, the stock of privately owned physical capital grew at an average rate of just 0.9 percent per year between 1980 and 1995.

The accumulation of education capital, as measured here, also slowed down in the 1980s, but not nearly as much. It grew at an average rate of 4.7 percent per year in the 1960s and 1970s, about the same as the average rate of growth in private physical capital during the same period. Since 1980, education capital has grown at a 4.4 percent annual rate. This reflects the extra resources devoted to schooling in this period, and the fact that such resources were rising in relative value. R&D stocks have grown at about the same rate as education capital since 1980.

### Other Federal Influences on Economic Growth

Many Federal policies have contributed to the slowdown in capital formation shown here. Federal investment policies obviously were important, but the Federal Government also contributes to wealth in ways that cannot be easily captured in a formal presentation. Monetary and fiscal policies affect the rate and direction of capital formation. Regulatory and tax policies affect how capital is invested, as do the Federal Government's credit assistance policies.

One important channel of influence is the Federal budget deficit, which determines the size of the Federal Government's borrowing requirements. Smaller deficits in the 1980s would have resulted in a smaller gap between Federal liabilities and assets than is shown in Table 2-1. It is also likely that, had the \$3 trillion in added Federal debt since 1980 been avoided, a significant share of these funds would have gone into private investment. National wealth might have been 2 to 4 percent larger in 1995 had fiscal policy avoided the buildup in the debt.

### Social Indicators

There are certain broad responsibilities that are unique to the Federal Government. Especially important are the Government's role in fostering healthy economic conditions, promoting health and social welfare, and protecting the environment. Table 2-5 offers a rough cut of information that can be useful in assessing how well the Federal Government has been doing in promoting these general objectives.

The indicators shown here are only a limited subset drawn from the vast array of data available on conditions in the United States. In choosing indicators for this table, priority was given to measures that were consistently available over an extended period. Such indicators make it easier to draw valid comparisons and evaluate trends. In some cases, however, this meant choosing indicators with significant limitations.

The individual measures in this table are influenced in varying degrees by many Government policies and programs, as well as by external factors beyond the Government's control. They are not outcome indicators, because they do not measure the direct results of Government activities, but they do provide a quantitative measure of the progress or lack of progress in reaching some of the ultimate values that Government policy is intended to promote.

Such a table can serve two functions. First, it highlights areas where the Federal Government might need to modify its current practices or consider new approaches. Where there are clear signs of deteriorating conditions, corrective action might be appropriate. Second, the table provides a context for evaluating other data on Government activities. For example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective.

An example of this occurs during economic recessions when reductions in tax collections lead to increased Government borrowing that adds to Federal liabilities. This deterioration in the Federal balance sheet provides an automatic stabilizer for the private sector. State Government, local government and private budgets are strengthened by allowing the Federal budget to run a deficit. More stringent Federal budgetary controls could be used to hold down Federal borrowing during such periods, but only at the risk of aggravating the downturn.

The Government cannot avoid making such trade-offs because of its size and the broad-ranging effects of its actions. Monitoring these effects and incorporating them in the Government's policy making is a major challenge.

### An Interactive Analytical Framework

No single framework can encompass all of the factors that affect the financial condition of the Federal Government. Nor can any framework serve as a substitute for actual analysis. Nevertheless, the framework presented above offers a useful way to examine the financial aspects of Federal policies. Increased Federal sup-

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

Table 2-5. ECONOMIC AND SOCIAL INDICATORS

General categories	Specific measures	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994 <sup>1</sup>	1995
<b>Economic:</b>													
Living Standards .....	Real GDP per person (1992 dollars) .....	12,512	14,792	16,521	17,896	20,252	22,345	24,559	24,058	24,447	24,728	25,335	25,591
	Average annual percent change .....	0.4	3.4	2.2	1.6	2.5	2.0	1.9	-2.0	1.6	1.2	2.5	1.0
	Median family income (1994 dollars):												
	All families .....	25,866	30,147	35,407	36,177	37,857	38,200	40,087	39,105	38,632	37,905	38,782	NA
	Married couple families .....	27,030	31,482	37,735	39,204	41,671	42,835	45,237	44,607	44,249	44,106	44,959	NA
	Female householder, no husband present .....	13,660	15,305	18,276	18,048	18,742	18,814	19,199	18,163	17,984	17,890	18,236	NA
	Income share of middle three quintiles (%) .....	54.0	53.9	53.6	53.5	53.4	52.0	51.2	51.4	51.0	43.9	49.0	NA
	Poverty rate (%) <sup>2</sup> .....	22.2	17.3	12.6	12.3	13.0	14.0	13.5	14.2	14.8	15.1	14.5	NA
	Economic security inflation and unemployment:												
	Civilian unemployment (%) .....	5.5	4.5	4.9	8.5	7.1	7.2	5.5	6.7	7.4	6.8	6.1	5.6
	CPI-U (year over year % change) .....	2.0	1.3	4.3	6.8	8.9	5.5	4.0	4.2	3.0	3.0	2.6	2.8
Employment prospects .	Increase in total payroll employment (millions, Dec. to Dec.) ....	-0.5	2.9	-0.5	0.4	0.2	2.5	0.3	-0.9	1.2	2.8	3.5	1.7
Wealth creation .....	Managerial or professional jobs (% of civilian employment) .....	NA	NA	NA	NA	22.2	24.1	26.0	26.5	26.5	27.1	27.5	28.3
Innovation .....	Net national saving rate (% of NNP) .....	11.4	13.3	9.3	6.8	7.3	6.2	4.2	4.1	2.7	2.8	3.9	4.7
Social:	Patents issued to U.S. residents (thous.) .....	42.0	53.6	50.1	51.4	40.8	43.4	53.0	57.8	58.7	61.1	64.2	64.4
	Multifactor productivity (average percent change) .....	1.1	3.2	1.1	1.3	0.7	0.6	0.3	-1.0	1.4	0.5	0.8	NA
Families .....	Children living with a single parent (% of all children) .....	9.2	10.2	12.9	16.4	18.6	20.2	21.6	22.4	22.8	23.3	23.1	NA
Safe communities .....	Violent crime rate (per 100,000 population) <sup>3</sup> .....	160	199	364	482	597	557	732	758	758	746	716	NA
	Murder rate (per 100,000 population) .....	5.1	5.1	7.8	9.6	10.2	7.9	9.4	9.8	9.3	9.5	9.0	NA
Health and illness .....	Juvenile crime (murders per 100,000 persons age 14-17) .....	NA	NA	NA	NA	8.2	7.1	15.8	17.3	17.5	18.6	NA	NA
	Infant mortality (per 1,000 live births) .....	26.0	24.7	20.0	16.1	12.6	10.6	9.2	8.9	8.5	8.4	7.9	NA
	Low birthweight (<2,500 gms) babies (%) .....	7.7	8.3	7.9	7.4	6.8	6.8	7.0	7.1	7.1	7.2	NA	NA
	Life expectancy at birth (years) .....	69.7	70.2	70.8	72.6	73.7	74.7	75.4	75.5	75.8	75.5	75.7	NA
	Cigarette smokers (% population 18 and over) .....	NA	42.4	39.5	36.4	33.2	30.1	25.5	25.6	26.5	25.0	NA	NA
	Bed disability days (average days per person) .....	6.0	6.2	6.1	6.6	7.0	6.1	6.2	6.5	6.3	6.7	NA	NA
Learning .....	National health expenditures (% of GDP) .....	5.2	5.8	7.2	8.1	9.0	10.4	12.1	12.8	13.1	13.5	NA	NA
	High school graduates (% of population 25 and older) .....	44.6	49.0	55.2	62.5	68.6	73.9	77.6	78.4	79.4	80.2	80.9	NA
	College graduates (% of population 25 and older) .....	8.4	9.4	11.0	13.9	17.0	19.4	21.3	21.4	21.4	21.9	22.2	NA
	National assessment of educational progress <sup>4</sup> .												
	Mathematics .....	NA	NA	NA	304	298	302	305	NA	307	NA	NA	NA
	Science .....	NA	NA	305	296	283	288	290	NA	294	NA	NA	NA
Participation .....	Voting for President (% eligible population) .....	62.8	NA	NA	NA	52.6	NA	NA	NA	55.2	NA	NA	NA
	Voting for Congress (% of eligible population) .....	58.5	NA	43.5	NA	47.4	NA	33.1	NA	50.8	NA	36.0	NA
	Individual charitable giving per capita (1994 dollars) .....	199	238	286	304	331	349	427	423	422	419	NA	NA
<b>Environment:</b>													
Air quality .....	Population living in counties with ozone levels exceeding the standard (millions) .....	NA	NA	NA	NA	NA	76	63	70	43	51	50	NA
Water quality .....	Population served by secondary treatment or better (millions) ...	NA	NA	NA	NA	NA	134	155	157	159	162	164	166

<sup>1</sup> Data are preliminary for infant mortality and life expectancy.<sup>2</sup> The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.<sup>3</sup> Not all crimes are reported, and the fraction that go unreported may have varied over time.<sup>4</sup> Dates shown in table for the national educational assessments are approximate.

port for investment, the reduction in Federal absorption of saving through deficit reduction, and other Administration policies to enhance economic growth are expected to promote national wealth and improve the fu-

ture financial condition of the Federal Government. As that occurs, the efforts will be clearly revealed in these tables.

## TECHNICAL NOTE: SOURCES OF DATA AND METHOD OF ESTIMATING

## Federally Owned Assets and Liabilities

## Assets

**Financial Assets:** The source of data is the Federal Reserve Board's Flow-of-Funds Accounts. Two adjustments were made to these data. First, U.S. Government holdings of financial assets were consolidated with the holdings of the monetary authority, i.e., the Federal Reserve System. Second, the gold stock, which is valued in the Flow-of-Funds at a constant historical price, is revalued using the market value for gold.

## Physical Assets

**Fixed Reproducible Capital:** Estimates were developed from the OMB historical database for physical capital outlays. The database extends back to 1940 and was supplemented by data from other selected sources for 1915-1939. The source data are in current dollars. To estimate investment flows in constant dollars, it is necessary to deflate the nominal investment series. This was done using BEA price deflators for Federal purchases of durables and structures. These price deflators are available going back as far as 1940. For earlier years, deflators were based on Census Bureau historical statistics for constant price public capital for-

mation. The capital stock series were adjusted for depreciation on a straight-line basis, assuming useful lives of 46 years for water and power projects; 40 years for other direct Federal construction; and 16 years for major nondefense equipment and for defense procurement.

**Fixed Nonreproducible Capital:** Historical estimates for 1960–1985 were based on estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, "Government Saving, Capital Formation and Wealth in the United States, 1947–1985," published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University of Chicago Press, 1989).

Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and in the Producer Price Index for Crude Energy Materials. The Bureau of Economic Analysis is in the process of preparing satellite accounts to accompany the National Income and Product Accounts that will report on changes in mineral deposits for the Nation as a whole, but this work is not yet completed.

### **Liabilities**

**Financial Liabilities:** The principal source of data is the Federal Reserve's Flow-of-Funds Accounts.

**Contingent Liabilities:** Sources of data are the OMB Deposit Insurance Model and the OMB Pension Guarantee Model. Historical data on contingent liabilities for deposit insurance were also drawn from the Congressional Budget Office's study, *The Economic Effects of the Savings and Loan Crisis*, issued January 1992.

**Pension Liabilities:** For 1979–1994, the estimates are the actuarial accrued liabilities as reported in the annual reports for the Civil Service Retirement System, the Federal Employees Retirement System, and the Military Retirement System (adjusted for inflation). Estimates for the years before 1979 are not actuarial; they are extrapolations. The estimate for 1994 is a projection.

### **Long-Run Budget Projections**

The long-run budget projections are based on long-run demographic and economic projections. A model of the Federal budget developed at OMB computes the budgetary implications of this forecast.

**Demographic and Economic Projections:** For the years 1996–2006 the assumptions are identical to those used in the budget. As always, these budget assumptions reflect the President's policy proposals, in this case that the budget be balanced. The long-run projections extend these budget assumptions by holding inflation, interest rates, and unemployment constant at the levels assumed in the budget for 2006. Population growth and labor force participation are extended using the intermediate assumptions from the 1995 social security trustees' report and Bureau of Labor Statistics projections. The projected rate of growth for real GDP is built up from the labor force assumptions and an assumed rate of productivity growth. The assumed rate of productivity growth is held constant at the average

rate of growth implied by the budget's economic assumptions. The economic forecast used to project the budget in the absence of the President's balanced budget proposals is altered to reflect the higher interest rates and lower profits that would be expected to prevail under these circumstances.

**Budget Projections:** For the years 1996–2006, the projections follow the budget. After 2006, receipts are projected using simple rules of thumb linking income taxes, payroll taxes, excise taxes, and other receipts to projected tax bases derived from the economic forecast. Outlays are computed in different ways. Discretionary spending grows at the rate of inflation. Social security, Medicare, and Federal pension outlays are projected using the most recent actuarial forecasts available at the time the budget was prepared (April 1995 for social security). These projections are repriced using Administration inflation assumptions. Other entitlement programs are projected based on rules of thumb linking program spending to elements of the economic and demographic forecast such as the poverty rate.

### **National Balance Sheet Data**

**Publicly Owned Physical Assets:** Basic sources of data for the federally owned or financed stocks of capital are the investment flows computed by OMB from the budget database. Federal grants for State and local Government capital were added together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local Government capital come from the capital stock data prepared by the BEA.

**Privately Owned Physical Assets:** Data are from the Flow-of-Funds national balance sheet. Preliminary estimates for 1995 were prepared based on net investment from the National Income and Product Accounts.

**Education Capital:** The stock of education capital is computed by valuing the cost of replacing the total years of education embodied in the U.S. population 16 years of age and older at the current cost of providing schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' forgone earnings, i.e., it reflects the opportunity cost of education.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions and for research and development conducted at colleges and universities because these outlays are classified elsewhere as investment in physical capital and investment in R&D capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate education spending in HHS, Defense and Agriculture; and most outlays for vocational training.

Data on investment in education financed from other sources come from educational institution reports on

the sources of their funds, published in U.S. Department of Education, *Digest of Education Statistics*. Education capital is assumed not to depreciate, but to be retired when a person dies. An education capital stock computed using this method with different source data can be found in Walter McMahon, "Relative Returns To Human and Physical Capital in the U.S. and Efficient Investment Strategies," *Economics of Education Review*, Vol. 10, No. 4, 1991. The method is described in detail in Walter McMahon, *Investment in Higher Education*, 1974.

*Research and Development Capital:* The stock of R&D capital financed by the Federal Government was developed from a database that measures the conduct of R&D. The data exclude Federal outlays for physical capital used in R&D because such outlays are classified elsewhere as investment in federally financed physical capital. Nominal outlays were deflated using the GDP deflator to convert them to constant dollar values.

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent on the outstanding balance for applied research and development. Basic research is assumed not to depreciate. The 1993 Budget contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and nondefense

components (see *Budget for Fiscal Year 1993*, January 1992, Part Three, pages 39–40).

A similar method was used to estimate the stock of R&D capital financed from sources other than the Federal Government. The component financed by universities, colleges, and other nonprofit organizations is based on data from the National Science Foundation, *Surveys of Science Resources*. The industry-financed R&D stock component is from that source and from the U.S. Department of Labor, *The Impact of Research and Development on Productivity Growth*, Bulletin 2331, September 1989.

Experimental estimates of R&D capital stocks have recently been prepared by BEA. The results are described in "A Satellite Account for Research and Development," *Survey of Current Business*, November 1994. These BEA estimates are lower than those presented here primarily because BEA assumes that the stock of basic research depreciates, while the estimates in Table 2–4 assume that basic research does not depreciate. BEA also assumes a slightly higher rate of depreciation for applied research and development, 11 percent, compared with the 10 percent rate used here.

### Social Indicators

The main sources for the data in this table are the Government statistical agencies. Generally, the data are publicly available in the President's annual *Economic Report* and the *Statistical Abstract of the United States*.

## 1. ECONOMIC ASSUMPTIONS

### **Introduction**

The economy is in excellent health. Not only are current conditions favorable, but they provide a solid foundation for continued economic progress. During the last two years, the economy achieved the often elusive "soft landing." Real economic growth slowed from the unsustainable 3.5 percent of 1994 to an average of 2 percent per year—close to the Administration's 2.3 percent estimate of the economy's potential growth rate. This occurred without an increase in the unemployment rate. Indeed, during this time, 4.8 million new jobs were created—enough new jobs to absorb all the new entrants into the labor force and raise the employment/population ratio to record levels. Inflation, meanwhile, has been low and relatively stable. In financial markets, interest rates at the end of 1996 were lower than two years ago, and the Dow Jones Industrial average gained 72 percent during 1995–1996.

The Administration projects real growth to continue during the next two years at the same rate as that of the past two years—2.0 percent. This will be enough growth to create millions more new jobs, while holding the unemployment rate close to its current level. Growth of demand is not projected to put in jeopardy the success achieved in the last four years in controlling inflation. Passage of the President's balanced budget plan is expected to bring interest rates down further.

Beyond 1998, the economic assumptions represent anticipated trends rather than a precise cyclical pattern. Assuming that the deficit continues on a path toward balance in 2002, potential growth on average is expected to be slightly faster than in recent years, unemployment and inflation are expected to remain low, and interest rates are likely to continue to decline as the budget approaches balance.

Most private forecasters also share a favorable view of the economic outlook. The most recent Blue Chip consensus forecast, an average of 50 private forecasts, also calls for real GDP growth to average 2.0 percent through 1998 and to pick up a bit thereafter. The consensus expects inflation and unemployment to remain low through 2002. However, the consensus expects interest rates to hold at around current levels, rather than decline as in the Administration's projection. This difference is probably due to differences in fiscal policy assumptions. The Administration assumes that a credible balanced budget agreement will be reached this year and fully implemented in the coming years. If private sector forecasters based their projections on this fiscal policy assumption, they too would likely project a downward trend for interest rates. The broad similarity between these private sector forecasts and the Administration's assumptions indicates that the assump-

tions provide a reasonable, prudent basis for projecting the budget.

The business cycle expansion that began in April 1991 has already outlasted all but three of the previous 20 expansions during this century. If the expansion continues through December 1998, it will become the century's longest peacetime expansion. If it continues 14 months beyond that date, through February 2000, it will surpass even the record of 106 months set by the 1960s expansion. With inflation under control, incomes and employment on the rise, consumer and business confidence high, interest rates trending down, and fiscal and monetary policy supporting noninflationary growth, this expansion certainly has the potential to enter the record books.

This chapter begins with a review of recent developments, followed by a discussion of two important statistical issues involving the measurement of real growth and inflation that are relevant to understanding recent trends. Next, the Administration's projections are presented and compared with those of the Congressional Budget Office (CBO). The chapter concludes with an analysis of the impact on the projected deficit of changes in economic assumptions since last year's budget, and with estimates of the sensitivity of the budget to changes in economic assumptions.

### **Fiscal and Monetary Policy**

The favorable economic environment currently prevailing and the buoyant outlook reflect the underlying strength of the American economy when it is supported by sound fiscal and monetary policies. The Omnibus Budget Reconciliation Act of 1993 (OBRA93) was intended to set the budget deficit on a sharp downward path. In 1992, prior to passage of OBRA93, the deficit hit a postwar record of \$290 billion, 4.7 percent of gross domestic product (GDP). Since then, the deficit has shrunk in every year. In 1996, the deficit was only \$107 billion, the lowest level in 15 years and just 1.4 percent of GDP. The last time the deficit share was this low was over two decades ago. Special factors added to the deficit's decline in 1996, and without those special factors in 1997, the deficit is expected to increase modestly. However, if the President's budget is adopted, the deficit will resume its downward trend in 1998.

The Administration originally estimated that OBRA93 would reduce deficits during 1994–98 by a cumulative total of \$505 billion. The budget and the economy have far outperformed the projections made in 1993. It now seems likely that the cumulative deficit reduction through 1998, even without the further deficit reductions proposed in this budget, will be around \$924 billion.

The lower deficit path contributed greatly to the economy's soft landing in 1995–1996. It enabled interest rates to decline, rather than rise—as has often occurred at similar stages of past business cycles. Lower interest rates, in turn, have helped propel the stock market, thereby lowering businesses' cost of capital and boosting household wealth. Lower interest rates have stimulated business investment in new plant and equipment and household interest-sensitive purchases of durable goods and new homes. The ensuing boost to business and household demand created new jobs and raised incomes as the economy continued to grow neither too fast nor too slowly. It also increased the Nation's productive capacity, and helped productivity to grow faster—thereby providing protection against future inflation.

Monetary policy helped to engineer the soft landing by acting preemptively to prevent inflation from picking up as the economy approached its potential output. In the past, when the economy approached capacity, excessive demands in labor and product markets often pushed it beyond the noninflationary limits. The ensuing strains caused inflation to accelerate, and forced the monetary authorities to tighten policy and precipitate a recession.

In this expansion, however, monetary policy tightened in 1994 and early 1995, when the economy was growing rapidly but before inflationary pressures had yet appeared. During 1995 and early 1996, as the pace of economic activity slowed and incipient inflationary pressures waned, the Federal Reserve gradually relaxed monetary policy to support economic growth. The last move in this direction occurred in January 1996 when the Federal Open Market Committee reduced the federal funds rate  $\frac{1}{4}$  percentage point to  $5\frac{1}{4}$  percent. During the past year, as the soft landing became evident, the Federal Reserve kept monetary policy unchanged.

The stability of monetary policy since January 1996 helped maintain short-term interest rates at relatively stable levels. The 3-month Treasury bill rate has been on a plateau near 5 percent. Long-term rates have been more volatile, moving up as the pace of activity quickened in the spring and down as the economy slowed in the second half of the year. During the first six months of the year, the 10-year Treasury bond yield rose  $1\frac{1}{4}$  percentage points to 7 percent in June. By the end of the year, however, the rate was 6.3 percent. Although higher than at the end of 1995, that rate was still  $1\frac{1}{2}$  percentage points lower than two years earlier, and very low by historical standards for periods with similar unemployment and economic growth.

### Recent Developments

**Real Growth:** The economy expanded an estimated 2.8 percent over the four quarters of last year, up from the 1.3 percent pace of the prior year. Several important but transitory factors restrained growth around the start of 1996. The Federal Government was partially shut down twice by budgetary disputes between the Administration and Congress. In addition, a severe January blizzard paralyzed business activity on the

East Coast; and in March, motor vehicle production was sharply curtailed by a strike at General Motors, the Nation's largest automaker. In the second quarter, however, the economy grew at nearly a 5 percent annual rate as it made up for the earlier losses of output and sales. In the second half of the year, the pace of economic activity moderated.

The fastest-growing component of GDP last year was business fixed investment, which was up at a double-digit pace during the first three quarters of the year. Outsized advances in spending on computers and other information processing equipment continued to lead the way, but businesses also boosted their outlays for other types of equipment and structures. During the past two years, business investment has been propelled by a need to reduce costs in competitive world markets, and also to expand capacity as the economy operated close to its potential, leaving little excess capacity to exploit. During 1995–1996, industrial capacity grew by 4 percent annually, up from the  $2\frac{1}{2}$ -percent average of the prior three years. Business inventory investment also contributed to GDP growth last year, especially in the third quarter. A pick-up in final sales in the fourth quarter kept inventories in line with sales.

The expansion was also supported by the household sector's willingness and ability to purchase big-ticket durable goods and homes. Consumer confidence rose during the year, and by the second half was at its highest level in years. Expanding employment and income and a booming stock market provided consumers with the wherewithal to spend. Over the first three quarters of the year, consumer spending rose at a  $2\frac{1}{2}$ -percent annual rate, led by durable goods purchases. New home sales during the first 11 months of the year reached the highest level in 17 years, helping to push housing starts to the highest level in eight years. The residential investment component of GDP increased at a 6 percent annual rate over the first three quarters of the year.

Even the government sector contributed modestly to growth last year. Over the first three quarters, Federal Government consumption and gross investment rose at a 4 percent annual rate. All of the growth, however, was attributable to a catch-up for the lost activity during the shutdowns in the fourth quarter of 1995. By the third quarter of 1996, the Federal component of GDP was lower than a year earlier. State and local governments' consumption and gross investment rose at a  $2\frac{1}{4}$  percent rate over the first three quarters of 1996, about the same pace as during 1995. State and local government finances have benefited from the long expansion, which has boosted revenues.

The foreign sector was the main restraint on GDP growth last year. During the first three quarters, net exports of goods and services slowed growth by 1 percentage point. The wider trade deficit reflected the stronger growth of domestic demand in the U.S. than in several of our trading partners.

**Labor Markets:** During 1996, nearly 2.6 million new jobs were created, bringing the total since this Adminis-

tration came into office in January 1993 to 11.2 million. Almost all the new jobs added last year were in the private sector, primarily in service industries. Manufacturing payrolls shrank for the second consecutive year. The availability of jobs throughout the country provided the incentive for more people to enter the labor force and to find work. By the fourth quarter of 1996, both the labor force participation rate and the employment/population ratio had reached their highest levels in the postwar period.

The unemployment rate last year averaged 5.4 percent, the lowest level since 1989. By the end of the year, 32 States had unemployment rates of 5 percent or less. Unemployment rates were 4 percent or less in States with the tightest labor markets. Even areas of the country that had lagged behind in job creation earlier in the recovery experienced favorable job markets and the lowest unemployment rates in years. By the end of 1996, almost all demographic groups enjoyed lower unemployment rates than a year earlier.

**Inflation:** Despite the low unemployment rate last year, inflation remained under control. The broadest measure of inflation, the GDP chain-weighted price index, rose at just a 2.2 percent annual rate during the first three quarters, down from 2.5 percent during 1995. As for consumer prices, core inflation measured by the Consumer Price Index excluding food and energy increased only 2.6 percent during 1996, the slowest rise since 1965. The overall Consumer Price Index rose 3.3 percent last year, mainly because of sharp increases in energy prices. These are not expected to be repeated in 1997.

The low inflation rate was made possible by a moderate growth of labor compensation. The most comprehensive measure of labor compensation, the Employment Cost Index (ECI), rose just 2.8 percent during the most recent 12 months, virtually the same as it did during the previous year. This is the smallest rise since the series began in 1981. The ECI is composed of both benefits and wages. In recent years, benefit costs have slowed substantially. Firms have been able to rein in health insurance costs thanks to innovations in health care delivery, and have also been able to reduce their contributions to retirement programs because of booming equity markets. Cash wages, however, increased more rapidly in the past year. This is consistent with the results of most studies that reveal that there is a trade-off between benefits and cash wages. Savings in benefit costs eventually are passed on to workers in the form of higher cash wages.

The favorable inflation performance last year sheds new light on the key question for monetary policy: What is the current threshold level of unemployment below which inflation tends to accelerate (and above which it decelerates)? This threshold has been called NAIRU—for “nonaccelerating inflation rate of unemployment.” For much of the 1980s, the consensus was that NAIRU was in the neighborhood of 6 percent. This estimate proved to be consistent with the experience

of 1987–1990, when inflation increased as unemployment fell below 6 percent.

A 6 percent estimate of NAIRU, however, is not consistent with the experience since 1994. Last year, unemployment averaged 5.4 percent. If NAIRU was 6 percent, inflation should have risen; instead it declined, as measured by the GDP chain-weighted price index and by the core CPI. In light of recent experience, it is likely that NAIRU is now well below 6 percent. In the 1997 Budget, the Administration had assumed NAIRU was 5.7 percent; in this Budget, NAIRU is assumed to be 5.5 percent, in part because of the moderate inflation experienced last year.

A decline in NAIRU in recent years can be attributed to three factors. First, the aging of the baby boomers has shifted the composition of the labor force towards groups that have lower unemployment rates. To achieve the same degree of labor market tightness in 1996 as a decade earlier would now require a lower overall unemployment rate. Second, heightened competition in product and labor markets may have made businesses less able to raise their prices, and workers more cautious in seeking wage gains. Finally, for much of the 1970s and early 1980s, wage demands appear to have been based on unrealistic expectations of productivity growth that did not incorporate the productivity slowdown that began in 1974. Because of these demands, the level of NAIRU consistent with stable inflation was higher. By 1996, however, the wage and productivity relationship was in better balance.

### Statistical Issues

Serious questions have been raised recently about whether real GDP accurately measures the economy's growth and whether the CPI accurately measures inflation.

**Real Growth:** In the past two years, a wide and growing discrepancy has developed between growth measured by the change in output (the familiar real GDP) and growth measured by the increase in real income (real Gross Domestic Income). In the two years ending in the third quarter of 1996, the most recent data available, real GDP rose at an average annual rate of 2.1 percent. Growth measured by real Gross Domestic Income (GDI), however, was up at a more rapid 3.1 percent rate. In the third quarter of 1996, the discrepancy had widened to 2.1 percentage points: GDP was up at a 2.1 percent annual rate, but GDI was up at a 4.2 percent pace.

In an ideal world, the two measures would be equal. In reality, they always differ because of inconsistencies and gaps in source data. The differences, however, have rarely been as large as they are now. The difference between the output and income measures is called the statistical discrepancy; it was nearly \$100 billion in the third quarter of 1996—a record 1.3 percent of nominal GDP.

The divergent readings during the last two years make it difficult to ascertain how fast the economy has grown and where the economy is with respect to

potential output. There are three reasons, however, for believing that the output measure of growth may be an underestimate.

- First, Treasury receipts during 1996 came in strong. While some of this may be due to capital gains receipts spurred by the booming stock market, which are not included in the national accounts measures, some may also be from taxes levied on economic activity that is not showing up on the output side (that is, GDP). The receipts growth is less puzzling in light of the higher income-side measure.
- Second, with GDP growth in the neighborhood of a 2.0 percent annual rate during the past two years, the unemployment rate might have been expected to have held steady or even risen slightly. Instead, it fell 0.3 percentage point, which is more consistent with the growth rate measured from the income side.
- Third, growth rates closer to the higher income-side reading would mean that productivity growth was also stronger than reported and unit labor cost growth less than reported. That more favorable scenario fits better with the subdued inflation experienced last year.

The incorporation of new source data in the forthcoming July benchmark revisions to the National Income and Product Accounts may narrow the difference between the output and income sides. On the other hand, the difference is so large that even after the benchmark there may still be considerable uncertainty about the pace of economic activity in recent years.

**Inflation:** In December, the Advisory Commission to Study the Consumer Price Index, appointed by the Senate Finance Committee and led by Michael Boskin, former Chairman of the Council of Economic Advisers, reported its finding that the Consumer Price Index for urban consumers (CPI-U), compiled by the Bureau of Labor Statistics (BLS), overestimates annual changes in the cost of living by 1.1 percentage points. The Commission's findings were controversial. Although there is a widely shared view that problems in calculating the CPI may give it an upward bias, there is far less agreement over the size of the bias and over the practical steps that should be taken to remedy it.

The BLS continually tests the CPI and regularly makes improvements in it when problems are discovered. It has been unable to identify quantitatively more than a fraction of the bias reported by the Commission. Recently, BLS has proposed a number of changes in the way it computes the CPI that are expected to reduce measured inflation over the next several years.

The CPI is a "fixed-weight" price index. The market basket on which it is based consists of about 200 categories of goods and services which are updated only once every 10 years or so. Within each of these categories, however, about one-fifth of the individual items are replaced each year, so the CPI can keep current with changing brands and other minor variations in consumption patterns. Essentially, the CPI measures

how much this market basket costs each month. The CPI was last updated in 1987 to reflect consumption patterns in 1982-1984; the next rebasing is scheduled for January 1998 when 1993-1995 spending patterns will be used.

The CPI has some long-recognized disadvantages which are highlighted in the Advisory Commission's report. In the first place, when relative prices change, people change their consumption patterns to reduce the effects of such changes on their living standards; because it is a fixed-weight index, the CPI misses these adjustments. And, because it is not based on current spending patterns, the CPI can miss the introduction of new products, which often have sharp price declines early in their life cycle. Also, when consumers switch from department stores to discount outlets to save money on name-brand merchandise, the BLS does not record this as a drop in consumer prices, because the discount outlets are assumed to provide less service.

The single largest source of bias identified by the Advisory Commission is insufficient adjustment for quality changes. Sometimes goods rise in price because their quality improves; for example, the higher prices paid today for many medical services may reflect the higher quality of these services, including a better chance of survival and less pain or confinement during treatment. Quality can also decline, of course, and if such changes are missed then the CPI would understate inflation. The BLS attempts to capture the effects of quality changes where there are reliable measures. For example, beginning this year, the BLS revised the way it treats hospital costs to account better for quality improvements. Most experts acknowledge that the task of incorporating quality changes into the CPI is quite difficult.

If the upward bias is as large as the Advisory Commission suggests, recent economic history would have to be rewritten to reflect the revised inflation estimate. For example, the decline in real weekly wages over the past three decades would be reversed if the CPI has really been overstated consistently by 1.1 percentage points per year since 1965. Real economic growth would also be raised by between 0.5 and 1.0 percentage points per year. Productivity growth would show a comparable increase. These are large changes, and it is not yet clear whether there is other evidence to support such wholesale revisions to recent history. This is another reason why the Advisory Commission's findings have been controversial.

Because many Federal benefit programs and tax provisions are indexed to the CPI, a lower rate of increase in the CPI would be helpful to the budget. Limiting the rate of change in the CPI by 1.1 percentage points per year compared with the current Administration forecast would lower the deficit projected in 2002 by \$58 billion, and would reduce the cumulative deficit between 1997 and 2002 by \$145 billion. These figures indicate how important the CPI is to the budget, but they are not necessarily a reason for changing the indexing formulas that rely on the CPI. Because the CPI

## 1. ECONOMIC ASSUMPTIONS

is important to the budget and to a wide variety of private contracts, any changes made to this index need to be studied carefully and justified thoroughly.

While the Advisory Commission has recommended changes in technical practices at BLS that might be expected to reduce the bias in the CPI, the actual effects of these changes remain to be determined. Moreover, the recommended procedures would require data that are not currently available in time for the monthly production of the CPI. In preparing its report, the Advisory Commission relied heavily on retrospective data that are unavailable when the CPI is actually produced. Other gaps in the data were filled by the informed judgements of its authors. This is a common practice in academic studies, and it is appropriate in that context, but it would be questionable in a Federal statistical series that must be based on objective data.

The technical experts at BLS, who have a long research tradition that has exposed weaknesses in the CPI in the past and provided remedies for them, will continue the scheduled sequence of improvements while continuing to refine the estimates of other possible bi-

ases. Improvements in procedures for hospital costs in January of 1997 will likely reduce measured inflation; and updating the CPI market basket in 1998 can be expected to lower reported inflation by bringing the market basket weights more in line with current experience.

All observers agree that the Nation needs the best possible measure for the cost of living. No change will be made to the CPI that is not technically appropriate for the better measurement of living costs.

### Economic Projections

**Key assumptions:** The economic projections underlying this budget are summarized in Table 1-1. They are based on the crucial assumption that the budget will be adopted. If it is, the deficit will be progressively reduced until the budget achieves a surplus by 2002. Deficit reduction is expected to continue to foster the favorable macroeconomic environment experienced in recent years. Interest rates would come down and private sector investment would continue to grow, without

Table 1-1. ECONOMIC ASSUMPTIONS<sup>1</sup>

(Calendar years; dollar amounts in billions)

	Actual 1995	Projections						
		1996	1997	1998	1999	2000	2001	
<b>Gross Domestic Product (GDP):</b>								
Levels, dollar amounts in billions:								
Current dollars .....	7,254	7,577	7,943	8,313	8,717	9,153	9,610	
Real, chained (1992) dollars .....	6,743	6,901	7,056	7,197	7,355	7,525	7,699	
Chained price index (1992 = 100), annual average .....	107.6	109.9	112.7	115.7	118.7	121.8	125.0	
Percent change, fourth quarter over fourth quarter:								
Current dollars .....	3.8	5.0	4.6	4.7	5.0	5.0	5.0	
Real, chained (1992) dollars .....	1.3	2.8	2.0	2.0	2.3	2.3	2.3	
Chained price index (1992 = 100) .....	2.5	2.3	2.5	2.6	2.6	2.6	2.6	
Percent change, year over year:								
Current dollars .....	4.6	4.5	4.8	4.7	4.9	5.0	5.0	
Real, chained (1992) dollars .....	2.0	2.3	2.2	2.0	2.2	2.3	2.3	
Chained price index (1992 = 100) .....	2.5	2.2	2.5	2.6	2.6	2.6	2.6	
<b>Incomes, billions of current dollars:</b>								
Corporate profits before tax .....	599	652	676	714	757	796	816	
Wages and salaries .....	3,431	3,628	3,808	3,982	4,168	4,374	4,590	
Other taxable income <sup>2</sup> .....	1,532	1,612	1,684	1,748	1,809	1,882	1,967	
<b>Consumer Price Index (all urban):<sup>3</sup></b>								
Level (1982-84 = 100), annual average .....	152.5	156.9	161.2	165.5	170.0	174.6	179.3	
Percent change, fourth quarter over fourth quarter .....	2.7	3.1	2.6	2.7	2.7	2.7	2.7	
Percent change, year over year .....	2.8	2.9	2.7	2.7	2.7	2.7	2.7	
<b>Unemployment rate, civilian, percent:</b>								
Fourth quarter level .....	5.5	5.3	5.4	5.6	5.5	5.5	5.5	
Annual average .....	5.6	5.4	5.3	5.5	5.5	5.5	5.5	
<b>Federal pay raises, January, percent:</b>								
Military .....	2.6	2.6	3.0	2.8	3.0	3.0	3.0	
Civilian <sup>4</sup> .....	2.6	2.4	3.0	2.8	NA	NA	NA	
<b>Interest rates, percent:</b>								
91-day Treasury bills <sup>5</sup> .....	5.5	5.0	5.0	4.7	4.4	4.2	4.0	
10-year Treasury notes .....	6.6	6.5	6.1	5.9	5.5	5.3	5.1	

NA = Not Available.

<sup>1</sup>Based on information available as of mid-November 1996.

<sup>2</sup>Rent, interest, dividend and proprietor's components of personal income.

<sup>3</sup>CPI for all urban consumers. Two versions of the CPI are now published. The index shown here is that currently used, as required by law, in calculating automatic adjustments to individual income tax brackets. Projections reflect scheduled changes in methodology.

<sup>4</sup>Overall average increase, including locality pay adjustments. Percentages to be proposed for years after 1998 have not yet been determined.

<sup>5</sup>Average rate (bank discount basis) on new issues within period.

any buildup of inflationary pressures. This would allow interest rates to decline without igniting inflation.

**Real GDP and unemployment:** Over the next two years, real GDP is expected to rise 2.0 percent annually, close to the rate of the past two years. During 1999–2002, the pace of growth is expected to quicken to 2.3 percent annually—the Administration's estimate of the economy's potential growth rate. As in recent years, the fastest growing component of GDP is likely to be business fixed investment, stimulated by the fall in interest rates. Federal consumption and gross investment is projected to decline as the budget moves towards balance. The net export component of GDP is expected to move from deficit to surplus as the Federal deficit shrinks, and there is less need for capital from abroad to support domestic investment.

The faster GDP growth in the outyears is due to an expected boost in trend productivity growth that is likely to accompany higher rates of investment. Productivity growth is projected to average 1.2 percent per year during the next seven years. By way of reference, from the last cyclical peak in the third quarter of 1990 to the third quarter of 1996, productivity growth was 0.9 percent per year measured from the output side and 1.2 percent measured from the income side.

Potential GDP growth can be decomposed into the trend growth of productivity (1.2 percent) and the growth of the labor force. The Administration's projection assumes that the working age population will grow 1.0 percent annually during the next seven years, and the labor force participation rate will edge up 0.1 percent per year. This labor force projection assumes that the trends of the past six years will continue, which represents a significant break with experience in 1974–1990 when both population and labor force participation were growing more rapidly. With the baby boom generation well into its working years, and both the labor force participation rate and the employment/population ratio already at record levels, it is prudent to project continued but slower growth of the work force in the future.

The real GDP growth projection of 2.0 percent during the next two years is consistent with a slight rise in the unemployment rate, edging up from the 5.4 percent average of last year to 5.5 percent by 1998. Thereafter, real growth is expected to be at the potential growth rate, implying that the unemployment rate would remain stable.

**Inflation:** With projected unemployment close to or at NAIRU throughout the budget forecast, inflation is expected to remain steady. The GDP chain-weighted price index is projected to stay on a plateau of 2.6 percent annual growth. The CPI is expected to grow 2.7 percent per year in almost every year, slightly slower than the 3.3 percent actual for 1996. The CPI would continue to grow about 3.0 percent during 1997–1998 if not for methodological improvements already instituted or planned by the Bureau of Labor Statistics.

These are expected to trim the annual growth of the CPI by about 0.3 percentage point.

**Interest rates:** Short- and long-term interest rates are expected to decline as a result of the passage of the Administration's budget proposals, which will reduce the Government's demands on credit markets. The 91-day Treasury bill rate is expected to decline steadily from 5.0 percent at the end of 1996 to 4.0 percent by 2001 and then hold at that level. The 10-year Treasury bond yield, which was 6.3 percent at the end of last year, is projected to fall to 5.1 percent by 2001 and remain at that level. With inflation holding steady, these interest rate projections imply a reduction in real interest rates to levels seen previously when the Federal budget was closer to balance.

**Incomes:** The decline in interest rates is expected to have important but largely offsetting impacts on the income of the household sector, a net lender in the economy, and the corporate sector, a net borrower. The share of personal interest income of the household sector in nominal GDP is expected to decline because of lower rates. On the other hand, the fall in rates will help keep the share of profits near the historically high levels that prevailed during 1996. During the first three quarters of last year, the share of corporate profits before tax in nominal GDP was the highest since 1979. The share of wages and salaries in nominal GDP is projected to remain close to the level of last year. Aggregate wages and salaries are projected to rise nearly 40 percent from 1996 to 2002. After adjustment for inflation, real wages and salaries are expected to increase 15 percent.

### Comparison with CBO

The Congressional Budget Office (CBO) prepares the economic projections used by Congress in formulating budget policy. In the executive branch, this function is performed jointly by the Treasury, the Council of Economic Advisers (CEA), and OMB. It is natural that the two sets of economic projections be compared with one another, but there are several important differences, along with the similarities, that should be kept in mind:

- The Administration's projections always assume that the President's policy proposals in the budget will be adopted in full. Currently, that means the deficit will be progressively reduced until the budget achieves a surplus in 2002. In contrast, CBO normally assumes that current law will continue to hold; thus, it makes a "pre-policy" projection. Both last year and this, however, CBO also presented economic projections based on a fiscal policy similar to the budget's.
- Both CBO and the Administration believe that balancing the Federal budget by 2002 would have significant macroeconomic effects, especially for interest rates and the distribution of income. The Administration does not present an explicit estimate of the fiscal dividend in this budget. CBO's

## 1. ECONOMIC ASSUMPTIONS

estimates of the dividend show that it is smaller now than it was a year ago, partly because the budget is already closer to balance.

- The two sets of projections are often prepared at different times. The Administration's projections must be prepared months ahead of the release of the budget. Some of the differences in the Administration's and CBO's near-term forecasts, therefore, may be due to the availability of more recent data to CBO; a direct comparison with the CBO projections is not always meaningful. Timing differences are much less likely to play an important role in any differences in outyear projections, however.

Table 1-2 presents a summary comparison of the two sets of projections based on the common assumption that the deficit will be eliminated by 2002.

- Real GDP:** The projections of real GDP growth are quite similar. The Administration projects that real GDP will grow at an average rate of 2.2 percent from 1997–2002; CBO projects a 2.1 percent average growth rate.
- Inflation:** Both the Administration and CBO expect inflation to continue at a slow, steady rate over the next several years. For the chain-weighted GDP price index, both predict that inflation will be 2.6 percent yearly beginning in 1998; CBO expects the annual rate of change in the CPI to be about one-quarter percentage point higher than the Administration.
- Unemployment:** CBO projects unemployment to rise from its current level to around 6 percent. The Administration believes unemployment can

stabilize near its current level without raising the rate of inflation.

- Interest rates:** Both the Administration and CBO have a similar decline in short-term interest rates. The Administration, however, projects a slightly larger drop in long-term rates than does CBO.
- Income distribution:** Both CBO and the Administration expect a shift of income from interest to corporate profits as a result of the lower interest rates produced by a balanced budget. The corporate sector is a net borrower and the profits share of GDP benefits from lower interest rates. In part because the Administration assumes a larger decline in long-term interest rates than does CBO, it projects a larger shift into profits.

CBO has a good economic forecasting record. During much of the 1980s its forecasts were more accurate than those of the Administration. The record over the last four years, however, has been more mixed. Since it took office in 1993, this Administration has placed the highest priority on careful and prudent economic forecasts. Partly because of its conservative approach to forecasting the deficit, the Administration has overestimated the deficit by about \$50 billion on average in the budgets submitted for fiscal years 1994–1996. It is too early to tell whether this pattern will continue, but even the Mid-Session estimate of the 1996 deficit proved to be an overestimate.

It would be preferable to project the deficit without any error, but that is not possible. Still, the Administration's cautious approach has meant that the projection misses have helped and not hurt in the effort to reduce the deficit. There are a number of reasons why the

Table 1-2. COMPARISON OF ECONOMIC ASSUMPTIONS

(Calendar years)

	Projections					
	1997	1998	1999	2000	2001	2002
<b>Real GDP (chain-weighted)<sup>1</sup>:</b>						
CBO January <sup>2</sup> .....	2.1	2.1	2.2	2.2	2.1	2.1
1998 Budget .....	2.0	2.0	2.3	2.3	2.3	2.3
<b>Chain-weighted GDP Price Index<sup>1</sup>:</b>						
CBO January <sup>2</sup> .....	2.4	2.6	2.6	2.6	2.6	2.6
1998 Budget .....	2.5	2.6	2.6	2.6	2.6	2.6
<b>Consumer Price Index (all-urban)<sup>1</sup>:</b>						
CBO January <sup>2</sup> .....	2.9	3.0	3.0	3.0	3.0	3.0
1998 Budget .....	2.6	2.7	2.7	2.7	2.7	2.7
<b>Unemployment rate<sup>3</sup>:</b>						
CBO January <sup>2</sup> .....	5.3	5.6	5.8	5.9	6.0	6.0
1998 Budget .....	5.3	5.5	5.5	5.5	5.5	5.5
<b>Interest rates<sup>3</sup>:</b>						
<b>91-day Treasury bills:</b>						
CBO January <sup>2</sup> .....	5.0	5.0	4.6	4.2	3.9	3.9
1998 Budget .....	5.0	4.7	4.4	4.2	4.0	4.0
<b>10-year Treasury notes:</b>						
CBO January <sup>2</sup> .....	6.2	6.1	5.8	5.5	5.5	5.5
1998 Budget .....	6.1	5.9	5.5	5.3	5.1	5.1

<sup>1</sup> Percent change, fourth quarter over fourth quarter.<sup>2</sup> Economic projections assuming balanced budget policy.<sup>3</sup> Annual averages, percent.

budget has performed better than expected. Some of these are technical shifts; for example, Medicaid spending has fallen short of expectations for technical reasons. In addition, however, the economy has performed as well as or better than the Administration has assumed, and even more in excess of CBO's expectations.

Because of the revisions to GDP adopted in January of 1996 by the Commerce Department, it is impossible to show a consistent history of real growth projections for both last year and the earlier years of the Administration. Looking at the unrevised data through 1995, however, the Administration was more accurate than CBO in its initial forecast of real GDP growth, but still underpredicted the actual performance of the economy by 0.8 percentage point per year on average. In subsequent forecasts, the Administration has also been slightly more accurate in projecting real GDP. Over the last four years, the Administration has been more accurate than CBO in its forecast of unemployment, but still has consistently overestimated the unemployment rate. CBO has also tended to resist the mounting evidence for a significant increase in the GDP share of corporate profits as a result of lower interest rates and the greater competitiveness of U.S. business. The Administration's projections of the profits share were closer to the actual outcome.

The differences in economic assumptions between the Administration and CBO have been small—smaller than they were under previous Administrations, and well within the usual range of error in such projections. However, even small differences in economic assumptions can yield sizable differences in budget projections when extended over several years. Given the positive economic outlook in the United States—strong and steady growth, robust job creation, and low inflation and interest rates with none of the excesses that suggest an economic downturn—there are sound reasons for believing that the Administration's projection is likely to be close to the actual outcome. In that case, the President's budget as presented in the document would continue in force through 2002, with no need to limit spending or suspend tax cuts to achieve a balanced budget.

### **Can We Do Better?**

The Administration's average projected rate of growth for real GDP over the budget period—2.2 percent per year—is about equal to the estimate of potential non-inflationary growth held by a broad consensus of the economics profession. It is natural to wonder if the economy is capable of doing better than this. The Administration is optimistic that it can, and has proposed the policies that are most likely to raise potential growth. However, it would not be prudent to base the budget on best-case assumptions, or even on assumptions much above the middle ground. Previous Administrations made that mistake, and one result was a sequence of large, unanticipated deficits.

Statistical problems suggest that growth might already be faster than we think. The possible mismeas-

urement of GDP on the "output" side (as opposed to Gross Domestic Income, on the "income" side) may have reduced measured average growth over the past six years by as much as  $\frac{1}{4}$  percentage point. The Administration assumes that the true rate of growth over this period was better approximated by the growth of incomes, and that assumption is reflected in the projected 2.3 percent growth rate for potential GDP.

The possibility that the CPI is mismeasured also affects GDP. As indicated above, an overstatement of 1.1 percentage point per year in the measurement of the CPI would have cut measured real GDP growth by between 0.5 and 1.0 percentage point. Correcting for such an error would raise the Administration's projected real growth rate to around 3 percent per year.

Another factor affecting the current measured growth rate of real GDP should not be a cause for concern. The growth of total output is equal to the sum of the growth rate of labor productivity and the growth rate of hours worked. The Administration projects that hours worked will increase by less than in the past. There are two benign reasons for the expected slowdown:

- The working-age population is growing more slowly than it did in earlier decades, purely because of lower historical birth rates. Family incomes and individual well-being should not be affected by such a slowdown.
- Both the rate of labor force participation and the percentage of the population employed are already at record levels, and accordingly are not expected to rise at the rates of recent years. During the past two decades there was a massive inflow of women into the paid labor force. That inflow has slowed, and there are signs that the rate of female labor force participation is stabilizing. This is not necessarily a cause for alarm even though it means slower growth in total hours worked and less real GDP growth. The voluntary decisions of people to enter or leave the labor force ought to be respected by Government, and incomes can rise on a per capita or per family basis whether or not labor force participation is increasing. If unemployment is low and jobs are plentiful, as they are now, then those women (and men) who would like to work have the best opportunity to do so.

Because of these changes, the average growth rate of hours worked is expected to decline from an average of about 1.7 percent per year during the 1970s and 1980s to around 1.2 percent per year for the next six years. This decline will reduce real GDP growth by a corresponding amount.

A further increase in productivity growth would be highly desirable, and Administration initiatives in education, technology, and regulatory reform are intended to improve productivity. But raising the trend rate of productivity growth has proved very difficult, however often policymakers have espoused that goal; therefore, a prudent assumption is to project a continuation in the prevailing productivity trend while working to ex-

**Table 1-3. SAVING, INVESTMENT, AND TRADE BALANCE**  
(Fiscal years; in billions of dollars)

	1996 actual	1998 estimate
Current account .....	-154	-180 to -140
Merchandise trade balance .....	-181	-210 to -170
Net foreign investment .....	-140	-175 to -135
Net domestic saving (excluding Federal saving) <sup>1</sup> .....	460	440 to 480
Net private domestic investment .....	393	415 to 455

<sup>1</sup>Defined for purposes of Public Law 100-418 as the sum of private saving and the current surpluses of State and local governments. All series are based on the National Income and Product Accounts (NIPA) measures except for the current account balance.

ceed that conservative forecast. If this course is successful, then inflation will be less than expected and the deficit will be smaller too. These surprises would be welcome.

### Omnibus Trade and Competitiveness Act of 1988

As required by the Omnibus Trade and Competitiveness Act of 1988, Table 1-3 shows estimates for economic variables related to saving, investment, and foreign trade consistent with the economic assumptions.

The merchandise trade and current account deficits deteriorated in fiscal year 1996 and are expected to stabilize near current levels through fiscal year 1998. Net private investment in the United States has expanded rapidly during this Administration, and it is expected to continue to increase as the economy expands. The sources for the increased private investment have been the decline in the Federal deficit and higher private saving, plus a larger inflow of foreign capital.

The Act requires information on the amount of borrowing by the Federal Government in private credit

markets. This is presented in Chapter 12, "Federal Borrowing and Debt."

It is difficult to gauge with precision the effect of Federal Government borrowing from the public on interest rates and exchange rates, as required by the Act. Both are influenced by many factors besides Government borrowing in a complicated process involving supply and demand for credit and perceptions of fiscal and monetary policy here and abroad.

### Impact of Changes in the Economic Assumptions

The economic assumptions underlying this budget are similar to those of last year. Both budgets envisaged that achieving a balanced budget would result in a substantial decline in interest rates that would serve to extend the economic expansion at a moderate pace while helping to maintain low, steady rates of inflation and unemployment. A shift to a balanced budget and the ensuing lower interest rates were also expected to shift income from interest to profits. This would have favorable effects on budget receipts and the deficit, be-

**Table 1-4. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 1997 AND 1998 BUDGETS**  
(Calendar years; dollar amounts in billions)

	1996	1997	1998	1999	2000	2001	2002
Nominal GDP:							
1997 budget assumptions .....	7,621	8,008	8,417	8,848	9,295	9,772	10,268
1998 budget assumptions .....	7,577	7,943	8,313	8,717	9,153	9,610	10,087
Real GDP (percent change): <sup>1</sup>							
1997 budget assumptions .....	2.2	2.3	2.3	2.3	2.3	2.3	2.3
1998 budget assumptions .....	2.8	2.0	2.0	2.3	2.3	2.3	2.3
GDP price index (percent change): <sup>1</sup>							
1997 budget assumptions .....	2.8	2.7	2.7	2.7	2.7	2.7	2.7
1998 budget assumptions .....	2.3	2.5	2.6	2.6	2.6	2.6	2.6
Consumer Price Index (percent): <sup>2</sup>							
1997 budget assumptions .....	3.1	2.9	2.8	2.8	2.8	2.8	2.8
1998 budget assumptions .....	3.1	2.6	2.7	2.7	2.7	2.7	2.7
Civilian unemployment rate (percent): <sup>2</sup>							
1997 budget assumptions .....	5.7	5.7	5.7	5.7	5.7	5.7	5.7
1998 budget assumptions .....	5.4	5.3	5.5	5.5	5.5	5.5	5.5
91-day Treasury bill rate (percent): <sup>2</sup>							
1997 budget assumptions .....	4.9	4.5	4.3	4.2	4.0	4.0	4.0
1998 budget assumptions .....	5.0	5.0	4.7	4.4	4.2	4.0	4.0
10-year Treasury note rate (percent): <sup>2</sup>							
1997 budget assumptions .....	5.6	5.3	5.0	5.0	5.0	5.0	5.0
1998 budget assumptions .....	6.5	6.1	5.9	5.5	5.3	5.1	5.1

<sup>1</sup>Fourth quarter-to-fourth quarter.

<sup>2</sup>Calendar year average.

cause profits face a higher marginal tax rate than interest income.

The changes in the economic outlook since last year's budget have been relatively modest. On the positive side, the differences are primarily the result of more favorable economic experience in 1996 than was anticipated in last year's assumptions; on the negative side, partly because of the failure to enact a balanced budget, interest rates did not decline as was anticipated in last year's assumptions. Indeed, interest rates increased during the first half of the year. Even so, inflation and unemployment continued to improve in 1996. Because of this favorable experience, the forecast average for the unemployment rate has been lowered by 0.2 percentage point, and inflation has been reduced by 0.1 percentage point. Meanwhile, interest rates are again assumed to decline in this budget, but the descent begins a year later than previously assumed, and the decline is smaller in percentage points.

The net effects on the budget of these modifications in the economic outlook are shown in Table 1-5. The last column in the table shows the effect in 2002. The largest effects come from lower receipts due to lower inflation and lower real GDP growth in 1997 and 1998, and from the shift in timing of the expected decline in interest rates. Because the decline starts a year later, interest rates are higher in this budget, which increases the deficit relative to last year's estimates. The budget surplus projected for 2002 would have been about \$43 billion larger had last year's economic assumptions been used in place of this year's assumptions.

### Structural vs. Cyclical Deficit

When there is slack in the economy, receipts are lower than they would be if resources were fully em-

ployed, and outlays for unemployment-sensitive programs (such as unemployment compensation and food stamps) are higher. As a result, the deficit is higher than it would be if unemployment were at NAIRU. The portion of the deficit that can be traced to such factors is called the cyclical deficit. The remainder, the portion that would remain with unemployment at NAIRU (consistent with a 5.5 percent unemployment rate), is called the structural deficit.

Changes in the structural deficit give a better picture of the impact of budget policy on the economy than does the unadjusted deficit. During a recession or the recovery from one, the structural deficit also gives a clearer picture of the deficit problem that fiscal policy must address, because this part of the deficit will persist even when the economy has fully recovered, unless policy changes.

In the early 1990's, large swings in net outlays for deposit insurance (the S&L bailouts) had substantial impacts on deficits, but had little impact on economic performance. It therefore became customary to remove deposit insurance outlays as well as the cyclical component of the deficit from the actual deficit to compute the adjusted structural deficit. This is shown in Table 1-6.

Because the economy is projected to be quite close to full employment over the forecast horizon, the cyclical component of deficits is small. Indeed, for 1996 and 1997, the unemployment rate is slightly below the full employment rate of 5.5 percent, resulting in negative cyclical components of the deficit (cyclical surpluses). Deposit insurance net outlays are relatively small and do not change greatly from year to year. Thus, rather unusually, the adjusted structural deficits in this budget display much the same pattern of year-to-year changes as the actual deficits. The most significant

**Table 1-5. EFFECTS ON THE BUDGET OF CHANGES IN ECONOMIC ASSUMPTIONS SINCE LAST YEAR**  
(In billions of dollars)

	1997	1998	1999	2000	2001	2002
Budget totals under 1997 budget economic assumptions and 1998 budget policies:						
Receipts .....	1,517.3	1,585.4	1,668.8	1,754.4	1,839.6	1,932.4
Outlays .....	1,630.3	1,677.9	1,748.4	1,802.9	1,834.8	1,872.1
Surplus or deficit (-) .....	-113.0	-92.6	-79.7	-48.5	4.9	60.3
Changes due to economic assumptions:						
Receipts .....	-11.9	-18.5	-25.4	-27.1	-31.3	-35.7
Outlays:						
Inflation .....	-1.5	-2.2	-3.3	-4.2	-5.4	-6.6
Unemployment .....	-3.3	-1.8	-1.4	-1.9	-2.0	-2.0
Interest rates .....	5.1	12.3	14.2	13.4	11.2	8.6
Interest on changes in borrowing .....	0.3	1.2	2.7	4.2	5.8	7.6
Total, outlay increases (net) .....	0.7	9.5	12.3	11.5	9.7	7.6
Increase in deficit (-) .....	-12.6	-28.1	-37.7	-38.6	-41.0	-43.3
Budget totals under 1998 budget economic assumptions and policies:						
Receipts .....	1,505.4	1,566.8	1,643.3	1,727.3	1,808.3	1,896.7
Outlays .....	1,631.0	1,687.5	1,760.7	1,814.4	1,844.5	1,879.7
Surplus or deficit (-) .....	-125.6	-120.6	-117.4	-87.1	-36.1	17.0

point illustrated by this table, is the fact that of the \$183 billion reduction in the actual budget deficit between 1992 and 1996 (from \$290 billion to \$107 billion), 41 percent (\$75 billion) resulted from cyclical improvement in the economy. The rest of the reduction stemmed primarily from policy actions—mainly those in the Omnibus Budget Reconciliation Act of 1993, early in President Clinton's first term, which reversed a projected continued steep rise in the deficit.

### Sensitivity of the Budget to Economic Assumptions

Both receipts and outlays are affected by changes in economic conditions. This sensitivity seriously complicates budget planning, because errors in economic assumptions lead to errors in the budget projections. It is therefore useful to examine the implications of alternative economic assumptions.

Many of the budgetary effects of changes in economic assumptions are fairly predictable, and a set of rules of thumb embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the deficit.

Economic variables that affect the budget do not usually change independently of one another. Output and employment tend to move together in the short run: a higher rate of real GDP growth is generally associated with a declining rate of unemployment, while weak or negative growth is usually accompanied by rising unemployment. In the long run, however, changes in the average rate of growth of real GDP are mainly due to changes in the rates of growth of productivity and labor supply, and are not necessarily associated with changes in the average rate of unemployment. Inflation and interest rates are also closely interrelated: a higher expected rate of inflation increases interest rates, while lower expected inflation reduces rates.

Changes in real GDP growth or inflation have a much greater cumulative effect on the budget over time if they are sustained for several years than if they last for only one year.

Highlights of the budget effects of the above rules of thumb are shown in Table 1-7.

If real GDP growth is lower by one percentage point in calendar year 1997 only and the unemployment rate rises by one-half percentage point, the fiscal 1997 deficit would increase by \$8.6 billion; receipts in 1997 would be lower by about \$7.1 billion, and outlays would

be higher by about \$1.5 billion, primarily for unemployment-sensitive programs. In 1998, the receipts shortfall would grow further to about \$15.2 billion, and outlays would be increased by about \$5.2 billion relative to the base, even though the growth rate in calendar 1998 follows the path originally assumed. This is because the level of real (and nominal) GDP and taxable incomes would be permanently lower and unemployment higher. The budget effects (including growing interest costs associated with the higher deficits) would continue to grow slightly in later years.

The budget effects are much larger if the real growth rate is assumed to be one percentage point less in each year (1997–2002) and the unemployment rate to rise one-half percentage point in each year. With these assumptions, the levels of real and nominal GDP would be below the base case by a growing percentage. The deficit would be \$143.0 billion higher than under the base case by 2002.

The effects of slower productivity growth are shown in a third example, where real growth is one percentage point lower per year while the unemployment rate is unchanged. In this case, the estimated budget effects mount steadily over the years, but more slowly, reaching a \$120.8 billion deficit add-on by 2002.

Joint changes in interest rates and inflation have a smaller effect on the deficit than equal percentage point changes in real GDP growth because their effects on receipts and outlays are substantially offsetting. An example is the effect of a one percentage point higher rate of inflation and one percentage point higher interest rates during calendar year 1997 only. In subsequent years, the price level and nominal GDP would be one percent higher than in the base case, but interest rates are assumed to return to their base levels. Outlays for 1997 rise by \$6.3 billion and receipts by \$8.1 billion, for a decrease of \$1.8 billion in the 1997 deficit. In 1998, outlays would be above the base by \$15.6 billion, due in part to lagged cost-of-living adjustments; receipts would rise \$16.5 billion above the base, however, resulting in a \$0.9 billion decrease in the deficit. In subsequent years, the amounts added to receipts would continue to be larger than the additions to outlays.

If the rate of inflation and the level of interest rates are higher by one percentage point in all years, the price level and nominal GDP would rise by a cumulatively growing percentage above their base levels. In this case, the effects on receipts and outlays mount

Table 1-6. ADJUSTED STRUCTURAL DEFICIT  
(In billions of dollars)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Unadjusted surplus (-)/deficit .....	290.4	255.0	203.1	163.9	107.3	125.6	120.6	117.4	87.1	36.1	-17.0
Cyclical component .....	68.7	52.6	24.2	2.3	-6.7	-10.3	-3.7	0.0	0.0	0.0	0.0
Structural deficit .....	221.7	202.6	178.9	161.6	114.0	135.9	124.4	117.4	87.1	36.1	-17.0
Deposit insurance outlays .....	-2.4	-28.0	-7.6	-17.8	-8.4	-12.1	-4.0	-2.0	-1.1	-1.6	-1.5
Adjusted structural surplus(-)/deficit .....	224.1	230.4	186.5	179.5	122.4	148.0	128.4	119.4	88.3	37.7	-15.5

steadily in successive years, adding \$75.1 billion to outlays and \$101.1 billion to receipts in 2002, for a net reduction in the deficit of \$26.0 billion.

The table also shows the interest rate and the inflation effects separately, and rules of thumb for the added interest cost associated with higher or lower deficits (increased or reduced borrowing). The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table. The impact of a one percentage point lower rate of

inflation or higher real growth would have about the same magnitude as the effects shown in the table, but with the opposite sign.

These rules of thumb are computed while holding the income share composition of GDP constant. Because different income components are subject to different taxes and tax rates, estimates of total receipts can be affected significantly by changing income shares. These relationships, however, have proved too complex to be reduced to simple rules.

**Table 1-7. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS**  
(In billions of dollars)

Budget effect	1997	1998	1999	2000	2001	2002
<b>Real Growth and Employment</b>						
<b>Budgetary effects of 1 percent lower real GDP growth:</b>						
For calendar year 1997 only: <sup>1</sup>						
Receipts .....	-7.1 1.5	-15.2 5.2	-17.4 6.5	-17.7 7.7	-18.2 8.9	-18.8 10.2
Outlays .....						
Deficit increase (+) .....	8.6	20.4	23.9	25.4	27.1	29.0
Sustained during 1997–2002: <sup>1</sup>						
Receipts .....	-7.1 1.5	-22.4 6.8	-40.6 13.3	-59.8 21.2	-80.2 30.2	-101.9 41.1
Outlays .....						
Deficit increase (+) .....	8.6	29.2	53.9	81.0	110.4	143.0
Sustained during 1997–2002, with no change in unemployment:						
Receipts .....	-7.1 0.2	-22.7 1.0	-41.6 2.6	-62.2 5.0	-84.2 8.3	-108.1 12.7
Outlays .....						
Deficit increase (+) .....	7.3	23.7	44.2	67.1	92.5	120.8
<b>Inflation and Interest Rates</b>						
<b>Budgetary effects of 1 percentage point higher rate of:</b>						
Inflation and interest rates during calendar year 1997 only:						
Receipts .....	8.1 6.3	16.5 15.6	16.4 12.9	15.3 11.8	16.1 11.3	16.9 11.1
Outlays .....						
Deficit increase (+) .....	-1.8	-0.9	-3.4	-3.5	-4.8	-5.8
Inflation and interest rates, sustained during 1997–2002:						
Receipts .....	8.1 6.3	25.0 22.3	42.6 36.7	60.3 50.1	79.7 62.7	101.1 75.1
Outlays .....						
Deficit increase (+) .....	-1.8	-2.6	-5.9	-10.2	-17.0	-26.0
Interest rates only, sustained during 1997–2002:						
Receipts .....	1.1 5.8	2.8 17.6	3.6 25.4	3.9 31.1	4.2 35.7	4.5 39.3
Outlays .....						
Deficit increase (+) .....	4.7	14.8	21.8	27.2	31.5	34.8
Inflation only, sustained during 1997–2002:						
Receipts .....	7.0 0.4	22.1 4.7	39.0 11.3	56.4 19.0	75.5 27.0	96.6 35.8
Outlays .....						
Deficit increase (+) .....	-6.6	-17.4	-27.7	-37.4	-48.5	-60.9
<b>Interest Cost of Higher Federal Borrowing</b>						
Effect of \$100 billion additional borrowing during 1997 .....	2.9	5.4	5.3	5.3	5.3	5.4

<sup>1</sup> The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

### Introduction

The Government's financial condition can be examined from several alternative perspectives, and a balanced assessment requires various approaches. This chapter presents an organizing framework for such analysis. The Government is not a business, and it cannot be evaluated simply by applying the usual business accounting techniques. A full evaluation of its finances must consider a broader range of information than is contained in a conventional balance sheet, and none of the tables in this chapter should be treated as if it were "the balance sheet" of the Federal Government. Considered as a whole, however, the chapter with all of its tables provides an overview of the Government's financial resources, the current and future claims on them, and some information about what the taxpayer is getting in exchange for this commitment of resources. In this way, the presentation that follows offers the kind of information that a financial analyst would expect to find in a business balance sheet.

Because of major differences between Government and business, and the serious limitations of the available data, this chapter's findings should be interpreted with considerable caution. The conclusions are tentative and subject to future revision as the estimating methods are improved and better data become available.

The presentation consists of three parts:

- The first part reports on what the Federal Government owns and what it owes. Table 2-1 summarizes this information. The assets and liabilities in this table are a useful starting point for a financial analysis of the Federal Government, but they are only a partial reflection of the full range of Government resources and responsibilities. The assets include only the items that are actually owned by the Government; through taxation the Government can rely on a much wider range of resources to meet future obligations. The liabilities in the table are binding Government commitments resulting from prior actions; the Government's financial responsibilities are considerably broader than this.
- The second part presents possible future paths for the Federal budget extending well into the next century, including an extension of the proposals in the 1998 Budget. The information is summarized in Table 2-2 and in the set of charts presented along with it. This is the appropriate context in which to examine the balance between

future Federal resources and responsibilities; and the analysis in this part offers the clearest indication of the long-run financial burdens that the Government faces and the resources that will be available to meet them. Some future claims on the Government receive special emphasis because of their importance to individuals' retirement plans. Table 2-3 summarizes the condition of the social security and Medicare trust funds and how that condition has changed since 1995.

- The third part of the presentation features information on broader economic and social conditions that are affected by Government activity. Table 2-4 is a summary of national wealth highlighting the different categories of Federal investment that have contributed to wealth. Table 2-5 is a sample of economic and social indicators. No single statistic, not even GDP, can capture the full ramifications of Federal actions; a comprehensive set of indicators, such as the one presented here, is needed to encompass the full range of Government activities and interests.

### Relationship with FASAB Objectives

The framework presented here meets one of the four objectives<sup>1</sup> of Federal financial reporting recommended by the Federal Accounting Standards Advisory Board and adopted for use by the Federal Government in September 1993. This Stewardship Objective says:

Federal financial reporting should assist report users in assessing the impact on the country of the Government's operations and investments for the period and how, as a result, the Government's and the Nation's financial conditions have changed and may change in the future. Federal financial reporting should provide information that helps the reader to determine:

- 3a. Whether the Government's financial position improved or deteriorated over the period.
- 3b. Whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due.
- 3c. Whether Government operations have contributed to the Nation's current and future well-being.

The experimental presentation here explores one possible approach for meeting this objective at the Government-wide level.

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<sup>1</sup> *Objectives of Federal Financial Reporting*. Statement of Federal Financial Accounting Concepts Number 1, September 2, 1993. The other three Objectives relate to budgetary integrity, operating performance, and systems and controls.

## QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"

**1. According to Table 2-1, the Government's liabilities exceed its assets. No business could operate that way. Why can't the Government run like a business?**

Because the Federal Government is not a business. It has fundamentally different objectives, and so must operate in different ways.

The primary goal of every business is to earn a profit. But in our free market system, the Federal Government leaves virtually all activities at which a profit could be earned to the private sector. In fact, the vast bulk of the Federal Government's operations are of a nature such that it would be difficult or impossible to charge prices at all—let alone prices that would cover expenses. The Government undertakes these activities not to improve its balance sheet, but for the balance sheet of the Nation—that is, its people and its businesses—including not only monetary but also nonmonetary values. No business would—or should—sacrifice its own balance sheet to bolster that of the rest of the country.

To illustrate, one of the Federal Government's most valuable assets is its holdings of gold. The price of gold generally fluctuates counter to the state of the economy—if inflation is rapid and out of control, the price of gold rises; but when inflation slows and steadies, the price of gold falls. One important source of the deterioration of the Federal Government's balance sheet since the 1980s has been the decline in the price of gold, which reduced the value of the Government's gold holdings. But that price decline—and hence a deterioration of the Government's balance sheet—was a direct consequence of Federal policies to reduce inflation, for the benefit of the people and businesses of the United States. No business would undertake such a policy of worsening its own balance sheet.

Similarly, the Federal Government invests in education and research. The Government earns no return from these investments; but the Nation and its people are made richer. A business, in contrast, undertakes investments that earn a profit for itself, not others.

Because the Federal Government's objectives are different, its balance sheet will behave differently.

**2. But doesn't Table 2-1 say that the Government is insolvent?**

No. Just as the Federal Government's responsibilities are of a different nature than those of a private business, so are its resources. Its solvency must be evaluated in different terms.

What the table shows is that those Federal obligations that are comparable to the liabilities that a business corporation would show on its balance sheet exceed the estimated value of the assets the Federal Government actually owns. However, the Government has access to other resources—such as through its sovereign powers of taxation and money creation. These powers give the Government the ability to meet its present obligations and those it will incur through future operations.

The financial markets clearly recognize this reality. The Federal Government's implicit credit rating is the best in the United States; lenders are willing to lend it money at interest rates substantially below those charged to private borrowers. This would not be true if the Government were really insolvent. In countries where governments totter on the brink of true insolvency, lenders are either unwilling to lend them money, or do so only in return for a substantial interest premium.

However, the Federal Government's balance sheet was clearly worsened by the budget policies of the 1980s. If the President's policy proposals in this budget are accepted, the excess of the Government's liabilities over its assets could well shrink over the foreseeable future.

**QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued****3. *The Government does not comply with the accounting requirements imposed on private businesses. Why can't the government keep a proper set of books?***

Because the Government is not a business, and its primary goal is not to earn profits and to enhance its own wealth, accounting standards designed to illuminate how much a business earns and how much equity it has would be misleading, and would not provide the most useful information. The appreciation of the need for separate Federal Government accounting standards is comparatively recent. But now the Federal Accounting Standards Advisory Board has developed, and the Federal Government has adopted, an accounting framework that reflects the Government's functions and answers the questions about the responsibilities for which it should be accountable. This framework addresses the Government's budgetary integrity, operating performance, stewardship, and systems and controls. The Board has also developed, and the Government has adopted, a full set of accounting standards. Federal agencies are issuing audited financial reports that follow these standards; a Government-wide consolidated financial report following these standards will be issued for FY 1997.

This chapter viewed in its entirety addresses the "stewardship objective"—assessing the inter-related financial condition of the Federal Government and of the Nation for which the Government is responsible. The data in this chapter are intended to develop a fuller understanding of the trade-offs and connections between making the Federal Government "better off" and making the Nation "better off."

However, there is no single number or "bottom line" for the Government comparable to the net worth of a business corporation. Some analysts find this absence of a bottom line to be frustrating. But pretending that there is such a number—when there clearly is not—does not advance the understanding of Government finances.

**4. *Why isn't social security shown as a liability in Table 2.1?***

Social security benefits are a political and moral responsibility of the Federal Government, but they are not a liability. The Government has unilaterally both increased and decreased benefits in the past; the Social Security Advisory Council has recently suggested further reforms, involving additional changes in benefits. When the amount in question can be changed in such a fashion, it would not ordinarily be considered a liability.

There are a large number of other Federal programs that are similar in many ways to social security, such as Medicare, veterans benefits, and student loans, to name only three. These programs are not counted as liabilities in the balance sheet. Treating social security benefits differently from these other programs would be hard to justify.

Furthermore, if social security benefits were to be treated as liabilities, then logic would suggest that the earmarked social security payroll tax receipts that finance those benefits should be assets. However, no other future tax receipts are counted as assets in the formal sense; and thus again, drawing a line between social security taxes and other taxes would appear questionable.

## QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued

**5. It is all very well to balance the budget in 2002, but can this be a permanent solution? When the baby-boom generation retires beginning in 2008, won't the deficit return larger and meaner than ever before?**

The aging of the U.S. population, which will become dramatically evident when the baby-boomers retire, poses serious long-term problems for the Federal budget and its major entitlement programs. However, balancing the budget over the next few years would leave the country much better prepared to address these problems.

If the reforms in this budget are enacted, not only would the budget come into balance, but that balance would be preserved for some time to come (under an extension of the economic and technical assumptions used for this budget). Far from being an exercise in futility, balancing the budget now is one of the key steps towards keeping it in balance when the baby-boomers retire. The second part of this chapter and the charts that accompany it show how the budget is likely to fare under various possible alternative assumptions. Absent the budget policy proposals the deficit is likely to begin growing sharply early in the next century.

**6. Does Federal investment exceed the deficit? Would it be sensible to permit a deficit so long as it was no larger than the amount spent on Federal investments?**

Gross Federal investment in physical capital was \$103 billion in 1996. This was about equal to the Federal deficit in that year. However, this does not mean that a deficit of this amount was appropriate.

First of all, the Government consumes capital each year in the process of providing goods and services to the public. The rationale that investment can justify borrowing should apply only to net investment, after depreciation is subtracted, because only net investment augments the assets available to offset the higher liability. For the Federal Government, as discussed in Chapter 6 of this volume, net investment in physical capital owned by the Federal Government is estimated to be negative in 1998. Thus, more deficit reduction would be required by this proposed criterion than would be required to balance the present budget.

The Federal Government also funds substantial amounts of physical capital that it does not own, such as highways and research facilities, and it funds investment in intangible "capital" such as education and training, or the conduct of research and development. A private business would never borrow to spend on assets that would be owned by other people. However, such spending is a principal function of Government. Chapter 6 shows that by this definition net investment is estimated to be positive in 1998, but by only a small amount.

There is another hitch in the logic of borrowing to invest. Businesses expect investments to earn a profit from which they repay the financing costs. In contrast, the Federal Government does not generally expect to receive a direct payoff (in the form of higher tax receipts) from its investments. In this sense, Government investments are no different from other Government expenditures, and the fact that they provide services over a longer period is no justification for excluding them when calculating the deficit.

Finally, the Federal Government has responsibilities for supporting the overall financial and economic well-being of the Nation. In this broader context, it might want to manage its fiscal policy so as to augment private saving and investment by paying for its own investments from current revenues, instead of borrowing in the credit market and crowding out private investment. In other words, there are considerations other than the amount of Federal investment that should govern the appropriate level of the deficit.

### What Can Be Learned from a Balance Sheet Approach

The budget is an essential tool for allocating resources within the Federal Government and between the public and private sectors, but the standard budget presentation, with its focus on annual outlays, receipts, and the deficit over a five- or six-year period does not provide all the information that would be needed for a full analysis of the Government's financial and investment decisions. In addition, information about Federal assets and liabilities can be helpful. Long-run budget projections that extend the usual forecast horizon are also important. Finally, it is important to examine the effects on society and the economy of Government policies in order to evaluate how well the Federal Government is performing. A business may ultimately be judged by the bottom line in its income statement or balance sheet, but for the National Government, the ultimate test is how its actions affect the entire country. The data needed to judge its performance go beyond a simple measure of the net assets of the Government alone; indeed, given the Federal Government's much broader responsibilities, looking at its net assets alone can be misleading (see the "Questions and Answers" in the accompanying box).

Consider, for example, Federal investments in education or infrastructure which generate returns that flow mainly to households, private businesses or other levels of government rather than back to the Federal Treasury. Considered in terms of the Federal Government's own "bottom line," these investments are a negative, but they make a real contribution to the Nation as a whole, the economy, and the people. A framework for evaluating Federal finances needs to take the return on such investments into account, even when the return accrues to someone other than the Federal Government.

A good place to start an evaluation of the Government's finances is with a measurement of its assets and liabilities, although this is only a starting point. Such a tabulation is presented below based on data from a variety of public and private sources. It has sometimes been suggested that the Federal Government's assets, if fully accounted for, would exceed its debts, and that a positive balance in such a calculation would mitigate the risks of large Government budget deficits. Table 2-1 clearly shows that this is not correct. The Federal Government's assets are substantially less than its debts mainly because of the steep increase in deficits that occurred in the 1980s.

But that is not the end of the story. The Federal Government has resources that go beyond the conventional assets that normally appear on a balance sheet. These include the Government's sovereign powers to tax, regulate commerce, and set monetary policy. These powers call for special treatment in evaluating the Government's financial position. The Government's sovereign powers give it access to resources that no private individual or business possesses, but these powers would not be considered assets in any normal sense of the word, nor would they be counted on a conven-

tional balance sheet. Yet they need to be considered in a comprehensive review of the Government's financial condition. The best way to do this is to make a long-run projection of the Federal budget. The budget provides a comprehensive measure of the Government's annual cash flows, and projecting it forward shows how the Government's powers are expected to generate cash flows in the future.

On the other side of the ledger are the Government's formal debt obligations, such as Treasury bills or notes, along with the present discounted value of its obligations to pay pension benefits to Federal retirees. Both types of obligations have obvious counterparts in the business world that would appear on a business balance sheet. Accrued obligations for government insurance policies and the estimated present value of future failed loan guarantees and deposit insurance claims should also be added to Government liabilities. These formal liabilities are only a subset of the Government's financial responsibilities. In addition, there are obligations which have no analogues in business accounting, and which would not be included on a conventional balance sheet.

For example, the Government has established a broad range of programs that dispense cash and other benefits to individual recipients. The Government is not constitutionally obligated to continue payments under these programs; the benefits can be modified or even ended at any time, subject to the decisions of the elected representatives in Congress. Last year's welfare reform legislation is only the most recent example of such a change. Allowing for such changes, however, it is likely that many of these programs will remain Federal obligations in some form for the foreseeable future. The present value of the benefits that will be paid out through these programs therefore, can be measured as a claim on future Government resources. Again, the best way to see how future responsibilities line up with future resources is to project the Federal budget forward far enough in time to capture the long-run effects of current and past decisions. Projections of this sort are presented below.

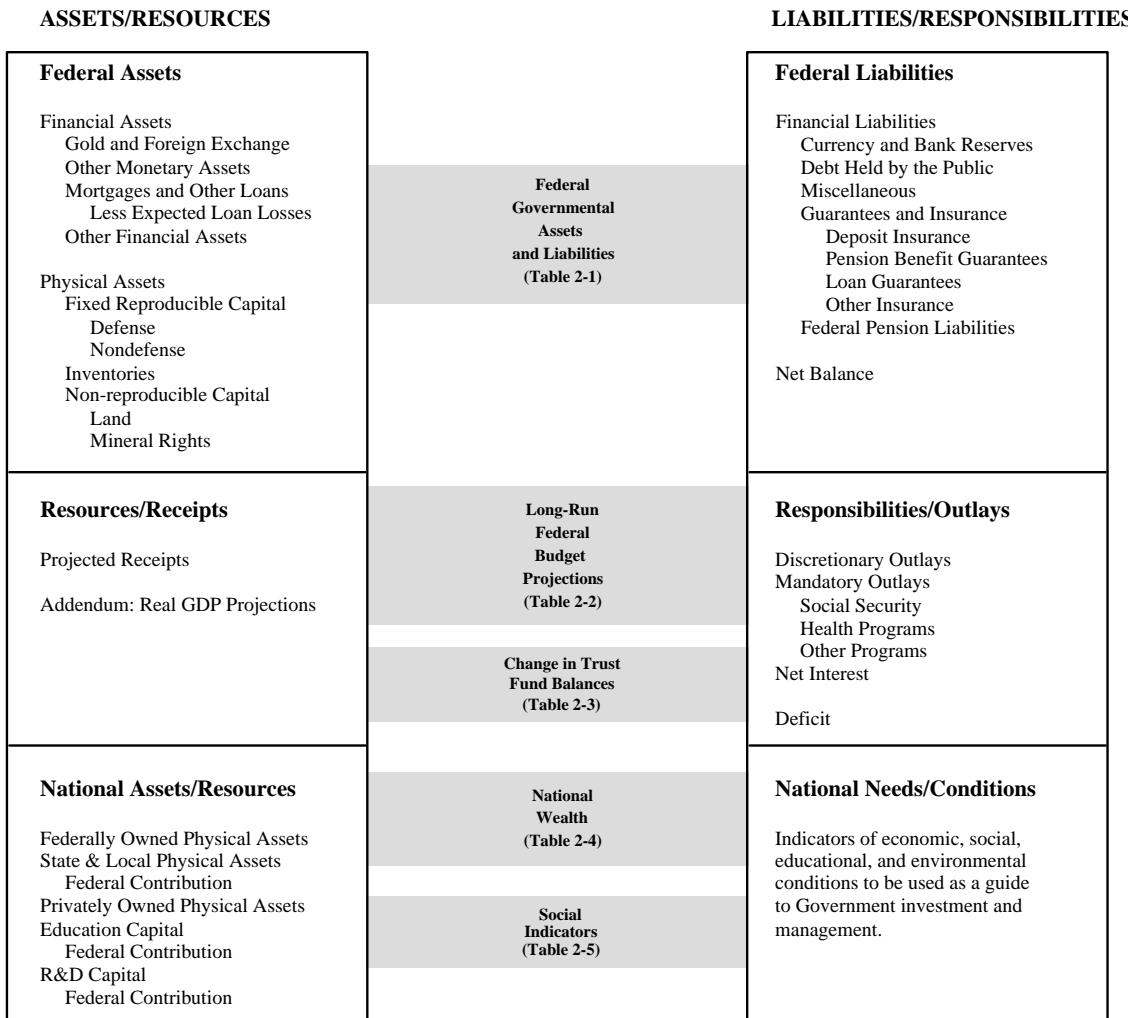
The budget, even when projected far into the future, does not show whether the public is receiving value for its tax dollars. That question requires performance measures for government programs supplemented by appropriate information about conditions in the U.S. economy and society. Some of these data are currently available but much more would need to be developed to obtain a full picture. Examples of what might be done are also shown below.

The presentation that follows consists of a series of tables and charts. No one of these is a "Government balance sheet," but all of them together can serve many of the functions of a balance sheet. The schematic diagram, Chart 2-1, shows how they fit together. The tables and charts should be viewed as an ensemble, the main elements of which can be grouped together in two broad categories—assets/resources and liabilities/responsibilities.

- Reading down the left-hand side of the diagram shows the range of Federal resources, including assets the Government owns, tax receipts it can expect to collect, and national wealth that underpins the Government's revenue raising capacity.

- Reading down the right-hand side reveals the full range of Federal obligations and responsibilities, beginning with Government's acknowledged liabilities based on past actions, such as the debt held by the public, and going on to include future budget outlays.

## Chart 2-1. A BALANCE SHEET PRESENTATION FOR THE FEDERAL GOVERNMENT



## PART I—THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2–1 summarizes what the Government owes as a result of its past operations along with the value of what it owns, for a number of years beginning in 1960. The values of assets and liabilities are measured in terms of constant FY 1996 dollars. For nearly all of this period, Government liabilities have exceeded the value of assets, but until the early 1980s the disparity was relatively small, and it was only growing slowly (see Chart 2–2).

In the late 1970s, a speculative run-up in the prices of oil, gold, and other real assets temporarily boosted Federal asset values, but since then they have declined. This temporary improvement highlights the importance of the other tables in this presentation. What is good for the Federal Government as an asset holder is not necessarily favorable to the economy. The decline in

inflation in the early 1980s reversed the speculative runup in gold and other commodity prices. That reduced the balance of Federal net assets, but it was good for the economy.

The total real value of Federal assets is estimated to be about 18 percent greater than it was in 1960. Meanwhile, Federal liabilities have increased by almost 180 percent in real terms. The sharp decline in the Federal net asset position in the 1980s was principally due to large Federal budget deficits along with a drop in asset values. Currently, the net excess of liabilities over assets is about \$3 trillion or \$12,000 per capita.

### **Assets:**

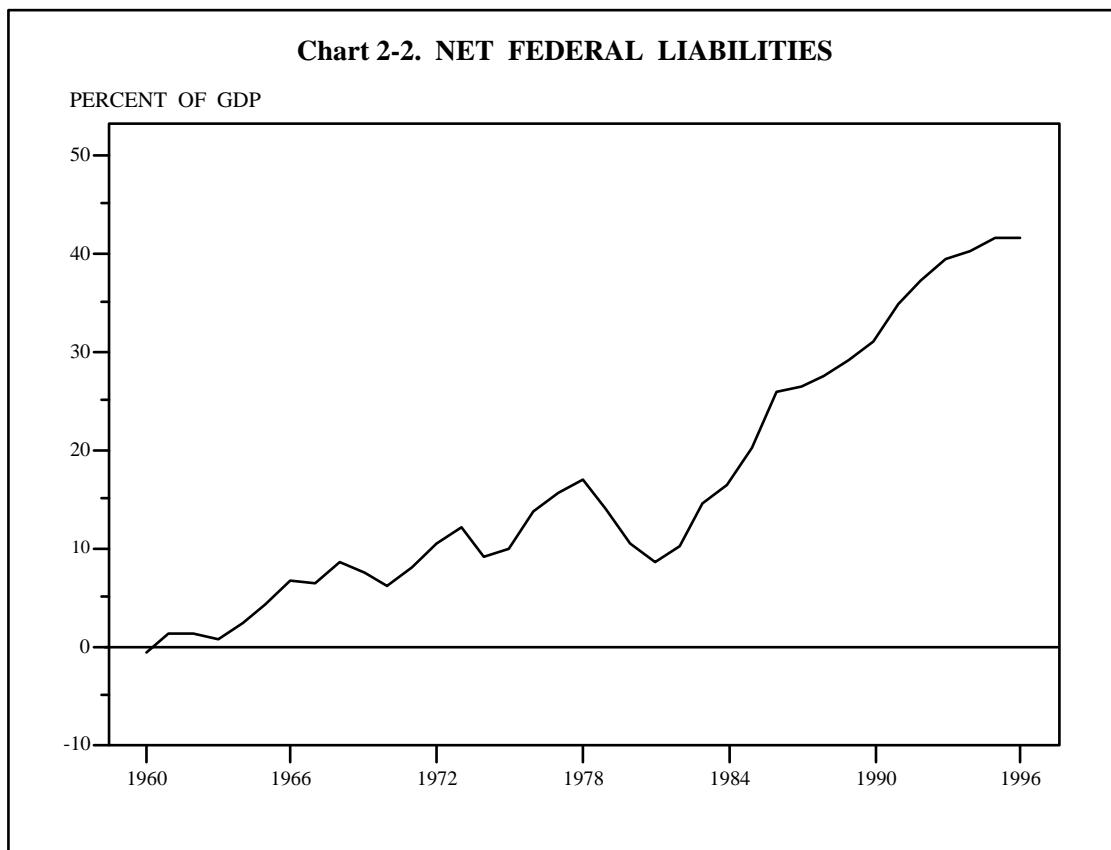
The assets in Table 2–1 reflect the most comprehensive possible list of the financial and physical resources

**Table 2–1 GOVERNMENT ASSETS AND LIABILITIES \***

(As of the end of the fiscal year, in billions of 1996 dollars)

	1960	1965	1970	1975	1980	1985	1990	1994	1995	1996
<b>ASSETS</b>										
Financial Assets:										
Gold and Foreign Exchange .....	100	71	59	133	328	157	198	174	181	165
Other Monetary Assets .....	77	112	68	43	82	52	68	69	70	87
Mortgages and Other Loans .....	124	159	206	206	284	348	282	224	196	171
less Expected Loan Losses. ....	-1	-3	-4	-9	-16	-16	-18	-26	-22	-22
Other Financial Assets .....	59	79	65	66	86	110	170	195	195	200
Subtotal .....	360	419	393	439	763	651	700	635	619	600
Physical Assets:										
Fixed Reproducible Capital:										
Defense .....	843	841	845	655	541	674	768	786	761	739
Nondefense .....	149	174	189	196	210	226	244	252	258	261
Inventories .....	257	222	207	184	225	257	224	174	172	168
Nonreproducible Capital:										
Land .....	89	123	153	238	302	325	321	242	240	239
Mineral Rights .....	321	297	245	340	618	696	465	367	342	376
Subtotal .....	1,659	1,658	1,639	1,613	1,896	2,178	2,022	1,820	1,773	1,783
<b>Total assets .....</b>	<b>2,018</b>	<b>2,077</b>	<b>2,032</b>	<b>2,052</b>	<b>2,659</b>	<b>2,829</b>	<b>2,722</b>	<b>2,455</b>	<b>2,392</b>	<b>2,383</b>
<b>LIABILITIES</b>										
Financial Liabilities:										
Currency and Bank Reserves .....	224	246	272	277	279	295	352	430	437	446
Debt held by the Public .....	973	961	815	802	1,039	1,845	2,532	3,219	3,302	3,347
Miscellaneous .....	25	27	28	41	59	84	126	112	117	120
Subtotal .....	1,222	1,234	1,115	1,120	1,377	2,224	3,010	3,761	3,856	3,913
Insurance Liabilities:										
Deposit Insurance .....	.....	.....	.....	.....	2	9	68	8	5	2
Pension Benefit Guarantee Corp. ....	.....	.....	.....	42	30	42	41	31	19	13
Loan Guarantees .....	.....	.....	2	6	12	10	15	31	28	31
Other Insurance .....	30	27	22	20	26	16	19	17	16	16
Subtotal .....	30	28	24	68	71	77	142	88	68	62
Federal Pension Liabilities .....	749	949	1,125	1,280	1,740	1,726	1,656	1,570	1,581	1,598
<b>Total liabilities .....</b>	<b>2,001</b>	<b>2,211</b>	<b>2,264</b>	<b>2,468</b>	<b>3,187</b>	<b>4,028</b>	<b>4,809</b>	<b>5,420</b>	<b>5,505</b>	<b>5,572</b>
<b>Balance .....</b>	<b>17</b>	<b>-134</b>	<b>-232</b>	<b>-416</b>	<b>-528</b>	<b>-1,199</b>	<b>-2,086</b>	<b>-2,965</b>	<b>-3,113</b>	<b>-3,189</b>
Per Capita (in 1996 dollars) .....	95	-689	-1,130	-1,926	-2,313	-5,013	-8,324	-11,344	-11,805	-11,985
Ratio to GDP (in percent) .....	0.7	-4.2	-6.2	-9.8	-10.4	-20.2	-30.9	-40.2	-41.6	-41.6

\* This table shows assets and liabilities for the Government as a whole, including the Federal Reserve System. Therefore, it does not break out separately the assets held in Government accounts, such as social security, that are the obligation of other Government agencies. Estimates for FY 1995 are extrapolated in some cases. Negative numbers are in parentheses.



owned by the Federal Government. The list corresponds to items that would appear on a typical balance sheet, but it does not constitute an exhaustive catalogue of Federal resources. In particular, the Government's most important financial resource, its ability to tax, is not reflected.

*Financial Assets:* According to the Federal Reserve Board's Flow-of-Funds accounts, the Federal Government's holdings of financial assets amounted to about \$600 billion at the end of 1996. Government-held mortgages and other loans (measured in constant dollars) reached a peak in the mid-1980s. Since then, Federal loans have declined. The holdings of mortgages, in particular, have declined sharply over the last five years as the holdings acquired from failed Savings and Loan institutions have been liquidated.

The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future losses and interest subsidy on these loans is about \$22 billion as of 1996. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Over time, variations in the price of gold have accounted for major swings in this category. Since the end of Fiscal Year 1980, gold prices have fallen and the real value of U.S. gold and foreign exchange hold-

ings has dropped by about 50 percent. Much of this decline occurred before 1990; since then the decline has continued but at a slower pace.

*Reproducible Capital:* The Federal Government is a major investor in physical capital. Government-owned stocks of fixed capital amounted to \$1.0 trillion in 1996 (OMB estimate). About three-quarters of this capital took the form of defense equipment or structures.

*Non-reproducible Capital:* The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings. Researchers in the private sector have estimated what they are worth, and these estimates are extrapolated in Table 2-1. Private land values are about 20 percent lower than they were at the end of the 1980s, although they have risen somewhat since 1993. It is assumed here that federal land has shared in this decline. Oil prices have fluctuated but are lower now than they were five years ago. The past year's increase in oil prices, however, has pulled up the value of Federal mineral deposits.

*Total Assets:* The total real value of Government assets is lower now than at the end of the 1980s, principally because of declines in the real prices of gold, land, and minerals. Even so, the Government's holdings are vast. At the end of 1996, the value of Government assets is estimated to have been about \$2.4 trillion.

### **Liabilities:**

Only liabilities analogous to those of a business corporation are shown in Table 2-1. These include the various forms of Federal debt, Federal pension obligations to its workers, and an imputed liability for Federal insurance and loan guarantee programs. Other potential claims on Federal financial resources are not reflected.

*Financial Liabilities:* The Government's financial liabilities amounted to about \$3.9 trillion at the end of 1996. The largest component was Federal debt held by the public, amounting to over \$3.3 trillion. This measure of Federal debt is net of the holdings of the Federal Reserve System, about \$390 billion in 1996. (Although independent in its policy deliberations, the Federal Reserve is part of the Federal Government, and its assets and liabilities are included here in the Federal totals.) In addition to debt held by the public, the Government's financial liabilities include approximately \$450 billion in currency and bank reserves, which are mainly obligations of the Federal Reserve System, and about \$120 billion in miscellaneous liabilities.

*Guarantees and Insurance Liabilities:* The Federal Government has contingent liabilities arising from loan guarantee and insurance programs. When the Government guarantees a loan or offers insurance, initial cash flows may be small or, if a fee is charged, they may even be negative, but the risk of future outlays associated with such commitments can be much larger. In the past, the accruing cost of such risks was not recognized until after a loss was realized. Table 2-1 includes

an estimate of the discounted present value of future costs traceable to risks assumed through the end of last year.

*Federal Pension Liabilities:* The Federal Government owes pension benefits to its retired workers and to current employees who will eventually retire. The amount of these liabilities is large. As of 1996, the discounted present value of the benefits is estimated to have been around \$1.6 trillion.<sup>2</sup>

### **The Balance of Net Liabilities**

Because its sovereign powers give it access to other resources, the Government need not maintain a positive balance of net assets, and the rapid buildup in liabilities since 1980 has not damaged the Federal creditworthiness. However, from 1980 to 1992, the balance between Federal liabilities and Federal assets did deteriorate at a rapid rate. In 1980, the negative balance was 10 percent of GDP. By 1992 it was 37 percent of GDP. Since then it has increased only half as fast. However, because the net liability did deteriorate, albeit slowly, it has reached about 42 percent of GDP.

The Government is able to finance its borrowing, and often does so at quite moderate interest rates, but ever continuing increases in the scale of its net liabilities would be worrisome. Fortunately, the upward trend is being reversed. Since 1992, the budget deficit has declined by about two thirds, and the rate of increase in Federal debt has slowed appreciably. If the budget were balanced, as the Administration proposes, the rate of decline in the net asset position would be reversed, and even before the budget reached surplus, the ratio of net liabilities to GDP would begin to decline.

## **PART II—THE BALANCE OF RESOURCES AND RESPONSIBILITIES**

The data summarized in Table 2-1 are useful in showing the consequences of past Government policies. But Government's continuing commitments to provide public services are not reflected there, nor can the Government's broader resources be displayed in a table that is limited to the assets that it owns. A better way to examine the balance between future Government obligations and resources is by projecting the overall budget. The budget offers the most comprehensive measure of the Government's financial burdens and its resources. By projecting total receipts and outlays, it is possible to examine whether there will be sufficient resources to support all of the Government's ongoing responsibilities.

This part of the presentation shows some alternative long-run projections of the Federal budget that extend into the middle of the next century. Forecasting the economy and the budget over such a long period is highly uncertain. Future budget outcomes depend on a host of unknowns—constantly changing economic conditions, unforeseen international developments, unexpected demographic shifts, the unpredictable forces of

technological advance, and unknown future political preferences. Those uncertainties increase the further ahead projections are pushed. Even so, long-run budget projections are needed to assess the full implications of current policy choices, and to sound warnings about future problems that could be avoided by timely action.

The Federal Government's responsibilities extend well beyond the five- or six-year window that has been the focus of recent budget analysis and debate. There is no time limit on Government's constitutional responsibilities, and programs like social security are clearly expected to continue indefinitely.

It is evident even now that there will be mounting challenges to the budget after the turn of the century. The huge baby-boom generation born in the years after World War II is aging and will begin to retire around the year 2005. By 2008, the first baby-boomers will become eligible for social security. In the years that follow there will be serious strains on the budget because of increased expenditures for both social security and Medicare. Long-range projections can help indicate

<sup>2</sup> These pension liabilities are expressed as the actuarial present value of benefits accrued-to-date based on past and projected salaries. The cost of retiree health benefits is not

included because estimates are unavailable. The 1996 liability is extrapolated from recent trends.

how serious these strains might become and what is needed to withstand them.

The retirement of the baby-boomers dictates the timing of the problem, but the underlying cause is deeper. The growth of the U.S. population has been slowing down, and because of that, and because people are living longer, a change is coming in the ratio of retirees to workers. That change will speed up dramatically when the baby-boomers begin to retire, but even after they have passed from the scene later in the century, the higher ratio of dependent elderly will persist. There is in short a long-run problem facing the Nation's retirement programs that will continue as long as Americans continue to live longer in retirement and have fewer offspring. The same problem is gripping other developed nations, even those that never experienced a baby boom—and, in fact, for some of those nations the problem has already arrived.

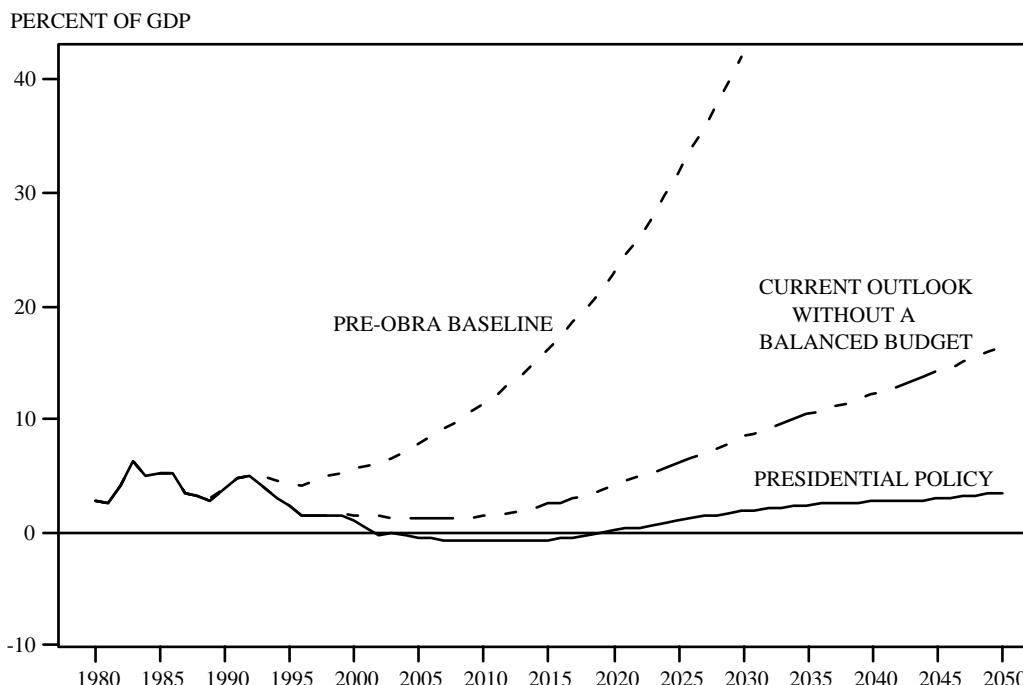
**The Long-Range Outlook for the Budget.**—Since this Administration first took office there have been major changes in the long-run budget outlook. In January 1993, the deficit was clearly on an unsustainable trajectory. Had the policies then in place continued unchanged, the deficit would have steadily mounted, not only in dollar terms, but relative to the size of the economy.<sup>3</sup> The Omnibus Budget Reconciliation Act of

1993 (OBRA 1993) changed that. Not only did it reduce the near-term deficit, but it also brought down the long-term budget deficit. Subsequent budget action pulled down the deficit even more. It is now expected that current budget policies would be sufficient to maintain the deficit as a relatively stable share of GDP for many years to come (see Chart 2-3).

Despite this improvement, however, the long-run outlook for the budget remains problematic. Without further action, substantial increases in Federal debt and the deficit are likely when the baby-boom generation retires. For example, the 1994 report of the Bipartisan Commission on Entitlement and Tax Reform found that there is a "long-term imbalance between the government's entitlement promises and the funds it will have available to pay for them." Last year, the Congressional Budget Office in *The Economic and Budget Outlook: Fiscal Years 1997-2006* observed in reference to the budgetary threat posed by the retirement of the baby-boomers, "Those fiscal demands could produce unsustainably high levels of federal debt unless additional actions are taken to control federal spending." On a narrower front, the annual Trustees' reports for both the social security and Medicare trust funds have for some time projected a long-run actuarial deficiency for these programs.

<sup>3</sup>Over long periods when the rate of inflation is positive, comparisons of dollar values are meaningless. Even the low rate of inflation assumed in this budget will reduce the value of a 1996 dollar by 60 percent by 2030, and by more than 75 percent by the year 2050. For long-run comparisons, it is much more useful to examine the ratio of the deficit and other budget categories to the overall size of the economy as measured by GDP.

Chart 2-3. LONG RUN DEFICIT PROJECTIONS



**Economic and Demographic Projections.**—Long-run budget projections must be based on a long-run demographic and economic forecast, even though such forecasts are highly uncertain and sure to be at least partly wrong. Otherwise, it is impossible to form any judgment about future resources or the potential claims on them. The forecast used here extends the Administration's medium-term economic projections described in the first chapter of this volume augmented by the long-run demographic projections from the most recent social security Trustees' Report.

- Inflation, unemployment and interest rates are assumed to hold stable at their values in the last year of the Administration projections, 2007.
- Productivity growth is assumed to continue at a constant rate equal to its average rate in the Administration's projections, approximately 1.1 percent per year.
- In line with the most recent projections of the social security Trustees, population growth is expected to slow over the next several decades. This is consistent with recent trends in the birth rate and an expected decline in the proportion of women in their childbearing years. The slowdown is expected to lower the rate of population growth from about 1 percent per year to half that rate by the year 2030.
- Labor force participation is also expected to decline as the population ages and the proportion of retirees in the population increases. Over the next decade, however, the Administration is projecting a higher rate of labor force participation than in the latest Trustees' Report. That difference is preserved in the long-run projections below.
- The real rate of economic growth is determined by the expected growth of the labor force (assuming a stable unemployment rate) plus labor productivity growth. Because labor force growth is expected to slow, even though productivity growth is assumed to be constant, real GDP growth declines during the period after 2007 from around  $2\frac{1}{4}$  percent to less than  $1\frac{1}{2}$  percent per year.

The assumptions just described are consistent with the Administration's policy of balancing the budget. For the long-run projections without a balanced budget, the assumptions are revised slightly to reflect higher interest rates and other changes that would occur if the President's proposals were not adopted. Aside from this revision for the baseline projections, the economic projections are set by assumption and do not automatically change in response to changes in the budget outlook. This is unrealistic, but it simplifies comparisons of alternative policies. It also tends to underestimate the budgetary effects of policies that fail to stabilize the deficit and the Federal debt. Such policies are likely to lower saving, raise interest rates, and reduce economic growth, creating a feedback effect that drives the budget deficit higher and raises the level of debt further. Thus, a more responsive (or dynamic) set of

assumptions would serve mainly to strengthen the conclusions based on the current approach.

**The Deficit Outlook.**—Chart 2-3 shows three alternative deficit projections: a projection based on the policies in place prior to enactment of OBRA 1993; the current baseline projections which incorporate the effects of OBRA 1993 along with subsequent changes in budget policy; and a projection that shows what would happen to the long-run deficit if the proposals in the current budget were adopted. The chart clearly illustrates the dramatic improvement in the deficit that has already been achieved. Despite the improvement in the outlook, serious long-run problems remain to be addressed. Without further changes, the deficit is expected to begin rising again relative to the size of the economy. If unchecked, the growth in the deficit would eventually push the debt to unsustainable levels. However, if the budget were balanced early in the next century, as the President proposes, the task of maintaining fiscal stability when the demographic bulge hits could be substantially reduced.

Table 2-2 shows long-range projections for the major categories of spending under current baseline assumptions and with the policy changes proposed in this year's budget. The table shows that the entitlement programs are the major driving force behind the rise in the deficit in the long run. Social security benefits, driven by the retirement of the baby-boom generation, rise from 4.6 percent of GDP in 2000 to 6.4 percent in 2030. The rise in Federal health care is even greater. Together Medicare and Medicaid reach 4.1 percent of GDP in 2000 along the current baseline, and then continue to rise to over 10 percent by the year 2030.

As this occurs, the deficit begins to soar. Initially, the programmatic spending drives the increase, but then a vicious spiral takes hold in which more borrowing leads to higher Federal interest payments on the growing debt which are financed in turn by yet more borrowing. The spiral is unstable in that if it continued unchecked it would lead to an unbounded increase in the debt and the deficit. At some point, a financial crisis would surely be triggered that would force some type of action on the Federal Government, action that was certain to be drastic and painful.

Because interest on the debt is the uncontrollable consequence of past spending decisions, it is useful to focus on the primary surplus or deficit, which is the balance between revenues and non-interest outlays. This measure is shown in Table 2-2 along with the total, or unified surplus or deficit. The large and rapidly growing deficit in the unified budget is the product of a smaller and slower growing primary deficit. If the imbalance in the primary budget could be controlled over time, the larger imbalance in the unified budget would automatically be resolved. The unsustainable spiral of increasing deficits and debt can be avoided by maintaining a small primary surplus. This is possible even with a modest deficit in the unified budget. How-

**Table 2-2. ALTERNATIVE BUDGET PROJECTIONS**  
(Percent of GDP)

	1995	2000	2005	2010	2020	2030	2040	2050
<b>Current outlook without a balanced budget:</b>								
Receipts .....	18.9	19.0	18.9	18.9	19.0	19.2	19.4	19.5
Outlays .....	21.1	20.7	20.2	20.3	23.1	27.6	31.5	35.9
Discretionary .....	7.6	6.5	5.9	5.4	4.7	4.2	3.7	3.3
Mandatory .....	10.3	11.3	11.8	12.6	15.7	18.6	19.9	20.7
Social security .....	4.6	4.6	4.6	4.7	5.6	6.4	6.5	6.5
Medicare and Medicaid .....	3.4	4.1	4.8	5.7	8.1	10.5	11.9	12.8
Net interest .....	3.2	2.9	2.5	2.3	2.8	4.8	8.0	12.0
Surplus or deficit (-) .....	-2.3	-1.6	-1.2	-1.4	-4.1	-8.4	-12.2	-16.5
Primary surplus or deficit (-) .....	0.9	1.2	1.2	0.9	-1.3	-3.6	-4.2	-4.5
Federal debt held by the public .....	50.1	48.3	44.9	42.2	52.7	91.9	152.1	227.4
<b>Presidential policy (balanced budget):</b>								
Receipts .....	18.9	19.1	19.0	18.9	19.0	19.2	19.3	19.4
Outlays .....	21.1	20.1	18.6	18.1	19.1	21.1	22.1	22.9
Discretionary .....	7.6	6.2	5.4	4.8	4.2	3.7	3.3	2.9
Mandatory .....	10.3	11.1	11.3	11.8	14.1	16.3	17.1	17.5
Social security .....	4.6	4.6	4.6	4.7	5.6	6.4	6.5	6.5
Medicare and Medicaid .....	3.4	3.8	4.3	4.9	6.6	8.2	9.1	9.6
Net interest .....	3.2	2.7	2.0	1.4	0.8	1.0	1.7	2.5
Surplus or deficit (-) .....	-2.3	-1.0	0.4	0.8	-0.1	-1.9	-2.8	-3.5
Primary surplus or deficit (-) .....	0.9	1.8	2.3	2.2	0.7	-0.9	-1.1	-1.0
Federal debt held by the public .....	50.1	47.2	37.7	27.5	15.8	21.4	36.0	51.3

ever, the spiral is inevitable with a permanent primary deficit, even a small one.<sup>4</sup>

The long-run deficit outlook would be much improved if current budget proposals were enacted. Eliminating the deficit by 2002 would leave the budget in surplus for nearly two decades thereafter. While deficits would eventually reappear, they would be substantially lower than if the budget were not balanced now. In this sense, the current policy proposals would do much to place the budget on a sounder footing to address the coming fiscal pressures created by the retirement of the baby-boom generation.

The key to these projections is the set of economic assumptions which has already been discussed plus technical assumptions about Medicare, Medicaid and discretionary spending.

- The Medicare savings proposed in the budget are assumed to lower Medicare spending permanently relative to the current baseline. After 2007, the policy projections assume that Medicare resumes the same rate of growth as in the baseline projections, but starting from a much lower level that reflects the impact of the Administration's proposed savings. The baseline rate of growth after 2007 is taken from the latest reports of the Medicare Trustees, who assume a marked slowdown in growth in the long term.
- The projections assume that the Administration's proposed cap for per capita Medicaid payments is maintained indefinitely. Medicaid would continue to be an entitlement, and enrollment in the program would be determined by general eligi-

bility requirements, but increases in the Federal payments on a per person basis would be capped by a formula.

- By convention, the current services estimates of discretionary spending are assumed to rise with the rate of inflation. This assumption, or any other used for discretionary spending, is inherently arbitrary, because discretionary spending is determined annually through the legislative process, and there is no legally binding formula to dictate the pattern of future spending. The assumption that the real value of Federal services is unchanging<sup>5</sup> implies over long periods of time that the size of the Federal establishment shrinks relative to the size of the economy.

Other assumptions are possible, and one reason why other analysts have come to varying conclusions is because of differences with one or more of these assumptions. For example, some assume that discretionary spending will hold to a constant share of GDP in the long run, even though that is not the current services assumption used by OMB and CBO. Under this alternative assumption, discretionary spending would seem neutral with respect to spending as a share of GDP. In contrast, when discretionary spending is held constant in real terms, as normally assumed by OMB, discretionary spending shrinks as a share of GDP, and consequently serves to offset some of the rise in entitlement spending as a share of GDP that occurs for demographic reasons.

<sup>4</sup>This is an approximation. The real value of the services in terms of purchasing power would be unchanged, but the quantity of services would depend on the productivity of Federal workers. A significant portion of discretionary spending consists of Federal payroll costs. In a period of moderately rising real wages, as assumed in the budget and in the Trustees' report, these costs would rise somewhat faster than inflation on a per employee basis. Under these circumstances, holding Federal discretionary spending constant over several decades would imply a significant decrease in the Federal work force and, unless offset by productivity gains, in the volume of Federal services.

<sup>5</sup>The exact relationship between fiscal sustainability and the primary surplus or deficit depends on the relationship among the initial ratio of debt to GDP, interest rates, and GDP growth. The higher the initial debt ratio or interest rates, or the lower GDP growth, the larger the primary surplus necessary to avoid the unsustainable debt spiral.

The Medicaid cap is also a key assumption. Limiting Federal Medicaid spending as a share of GDP would reduce the pressure on the budget by several percentage points of GDP, compared with a long-run projection in which Medicaid continues at its historical rate of growth.

Various alternative economic and technical assumptions are discussed below:

**Alternative Scenarios.**—Each alternative focuses on one of the key uncertainties in the outlook. Generally, the scenarios highlight negative possibilities rather than positive ones to show where the dangers are in the outlook.

1. *Discretionary Spending*: The projections assume that discretionary spending is held constant in real terms once budget balance is reached. With real economic growth and rising population, the public demand for Government services—more national parks, better transportation, additional Federal support for scientific research—might increase as well. The assumption also implies that the Nation's defense needs will not vary from the levels projected at the turn of the century. Alternative assumptions that allow for these programs to grow with population or overall economic activity are shown in Chart 2-4. These alternative assumptions worsen the deficit outlook.

2. *Health Spending*: Expenditures for Medicare and Medicaid have grown much faster than other entitlements, and even after the reforms in the President's

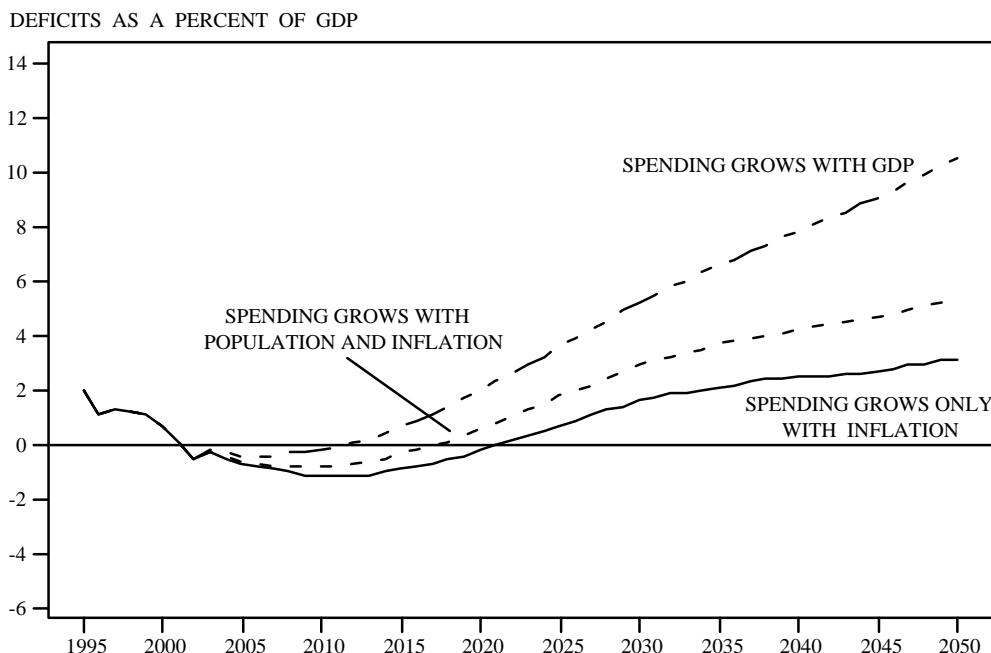
budget, they continue to rise at a rapid rate. The alternative assumptions show what would happen if spending for these programs speeds up or slows down after the budget is balanced. The budget is extremely sensitive to these assumptions, as can be seen in Chart 2-5.

3. *Productivity*: The slowdown in productivity growth in the U.S. economy that began in 1973 is responsible for the slow rise in U.S. real incomes since that time. Productivity can be altered by changes in the budget deficit which affect national saving, but many other factors influence it as well. The alternative scenarios illustrate what would happen to the budget deficit if productivity growth were higher or lower. A higher rate of growth would make the task of preserving a balanced budget dramatically easier; a lower growth rate would have the opposite effect. Chart 2-6 shows how the deficit varies with changes of one-half percentage point of average productivity growth.

4. *Population*: Much of the long-run problem is due to expected demographic shifts. Chart 2-6 illustrates how important these are by showing what happens to the deficit under the alternative demographic assumptions used by the Social Security Trustees in their most recent report. The projection of Presidential policy relies on the Trustees' intermediate assumptions.

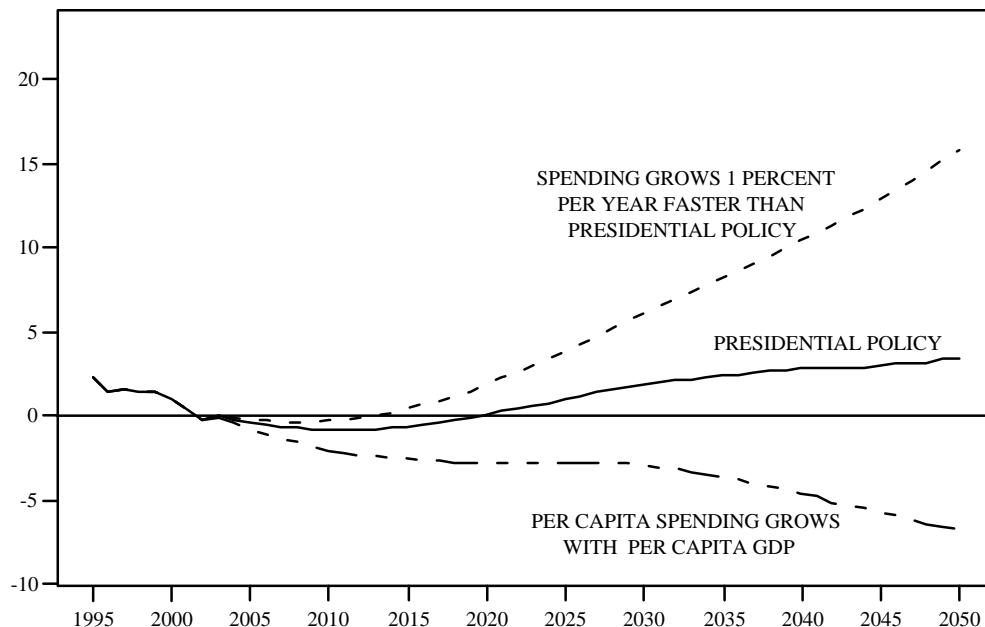
**Conclusion.**—OBRA 1993 and subsequent policy actions have improved the long-run deficit outlook, but the deficit is still projected to increase if further budget

Chart 2-4. ALTERNATIVE DISCRETIONARY SPENDING ASSUMPTIONS

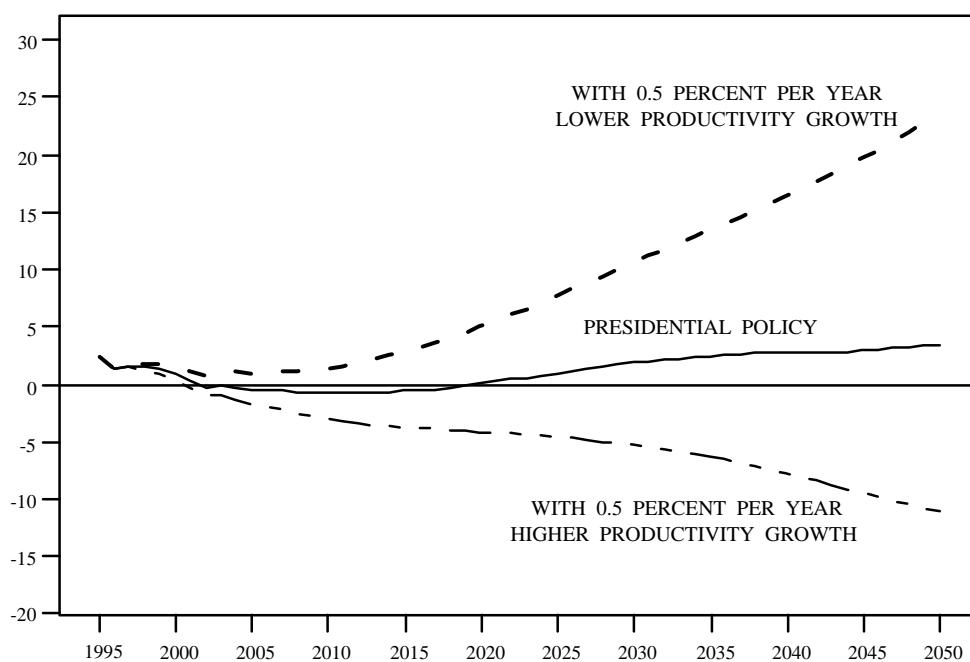


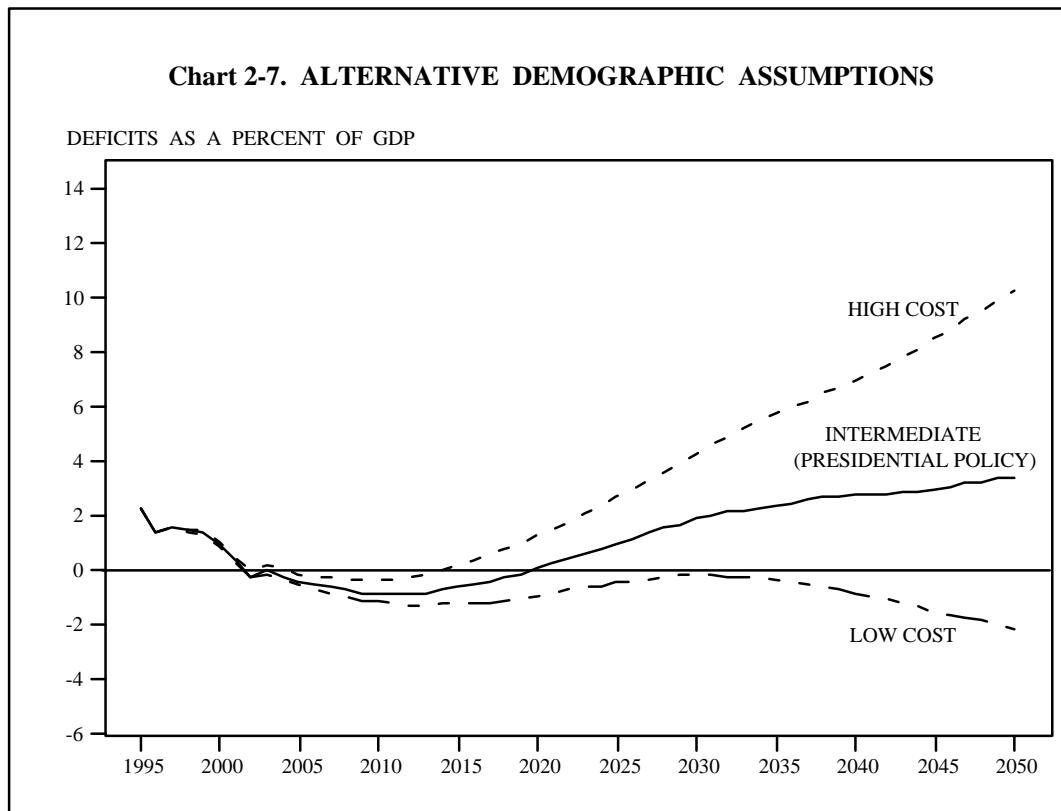
**Chart 2-5. ALTERNATIVE HEALTH SPENDING ASSUMPTIONS**

DEFICITS AS A PERCENT OF GDP

**Chart 2-6. ALTERNATIVE PRODUCTIVITY ASSUMPTIONS**

DEFICITS AS A PERCENT OF GDP





offsets are not made. The President's budget proposals would not only balance the budget by 2002, but go some distance toward resolving the long-run deficit problem as well.

**Actuarial Balance in the Social Security and Medicare Trust Funds.**—The Trustees for the social security and Hospital Insurance trust funds issue annual reports that include projections of income and outgo for these funds over a 75-year period. These projections are based on different methods and assumptions than the budget projections presented above, but they deliver a similar message: the retirement of the baby boom generation, coupled with high rates of health care cost growth, are expected to place large pressures on social security and Medicare, resulting in spending increases that outstrip the resources of the trust funds under current law.

The Trustees' reports highlight the 75-year actuarial balance of the trust funds as a summary measure of their financial status. This indicator measures the change in payroll taxes or program benefits, expressed as a percent of taxable payroll, that would be needed to leave the fund with a small positive balance at the end of 75 years.

Table 2-3 shows the changes in the 75-year actuarial balances of the social security and Hospital Insurance trust funds since 1995. There was only a small change in the consolidated balance for the combined OASDI fund, which aggregates the separate funds set up for

retirement and disability insurance. There was a noticeable deterioration in the Hospital Insurance fund for the Medicare program. In 1996, the Trustees for the Hospital Insurance Trust Fund projected that under their intermediate assumptions, the HI Trust Fund would be insolvent in 2002, one year earlier than projected in 1995. The Trustees are expected to revise the projected exhaustion date for HI later this spring in their 1997 Report. A significant change in the insolvency date is not expected. However, because the Trustees' analysis considers a wide range of uncertain developments, including additional experience in the current fiscal year, new analyses of factors affecting HI benefit growth during fiscal years 1991-1996, updated projections of HI payroll tax income, and possible revisions to interest rate expectations, it is not possible to predict the new exhaustion date prior to the Report's completion exactly. Furthermore, the Trustees' estimates do not take account of the legislative changes in Medicare proposed in this budget that would postpone the date at which the trust fund is expected to be depleted. While the HI fund is projected to be depleted within a few years in the intermediate actuarial projections, the combined OASDI fund would not be depleted for more than three decades.

The 75-year actuarial balance is widely reported, but it does not provide information about trends within the 75-year period. The social security trust fund, for example, is currently running large annual surpluses. Until 2012, the Trustees project that the current payroll tax

will be sufficient to cover program benefits. Afterwards, the program must draw down trust fund assets to finance benefits, until the fund is exhausted in 2029. If the payroll tax were raised today by the 2.2 percentage points necessary to eliminate the 75-year imbalance, the higher trust fund income would only cover outlays in the program until 2021, according to the

Trustees' intermediate projections. Beyond that point, trust fund assets would once again have to be drawn down to finance benefits. At the end of 75 years, the fund would have only enough assets to finance the following year's benefits, and would face exhaustion shortly thereafter.

**Table 2-3. CHANGE IN 75-YEAR ACTUARIAL BALANCE FOR OASDI AND HI TRUST FUNDS  
(INTERMEDIATE ASSUMPTIONS)**

(As a percent of taxable payroll)

	OASI	DI	OASDI	HI
<b>Actuarial balance in 1995 Report .....</b>	<b>-1.87</b>	<b>-0.31</b>	<b>-2.17</b>	<b>-3.52</b>
Changes in balance due to changes in:				
Valuation period .....	-0.07	-0.01	-0.08	-0.10
Economic and demographic assumptions .....	-0.06	.....	-0.07	-0.10
Disability Assumptions .....	.....	-0.03	-0.03	.....
Legislation .....	0.01	0.02	0.03	.....
Methods .....	0.14	.....	0.14	.....
Hospital Costs .....	.....	.....	.....	-0.54
Other .....	.....	.....	.....	-0.26
Total Changes .....	0.01	-0.03	-0.02	-1.00
<b>Actuarial balance in 1996 Report .....</b>	<b>-1.85</b>	<b>-0.34</b>	<b>-2.19</b>	<b>-4.52</b>

### PART III—NATIONAL WEALTH AND WELFARE

Unlike a private corporation, the Federal Government routinely invests in ways that do not add directly to its assets. For example, Federal grants are frequently used to fund capital projects by State or local governments for highways and other purposes. Such investments are valuable to the public, which pays for them with taxes, but they are not owned by the Federal Government and would not be reported on a conventional balance sheet.

The Federal Government also invests in education and research and development (R&D). These outlays contribute to future productivity and are in that sense analogous to an investment in physical capital. Indeed, economists have computed stocks of human and knowledge capital to reflect the accumulation of such investments. Nonetheless, these capital stocks are not owned by the Federal Government, nor would they usually appear on a balance sheet.

Table 2-4 presents a national balance sheet. It includes estimates of national wealth classified in three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories, and these contributions are also shown in the table. Data in this table are especially uncertain, and detailed assumptions are needed to prepare the estimates. Furthermore, the principal source of data on physical capital, the Bureau of Economic Analysis, is in the process of making significant revisions to the underlying series. As a result, the estimates for 1995–1996 are quite tentative, and

the data shown for earlier years are likely to be revised as well. In broad terms, however, the picture shown in Table 2-4 is not likely to be overturned.

Federal investments are responsible for about 7½ percent of total national wealth. This is a small fraction, but it represents a large volume of investment, \$4.3 trillion. The Federal contribution is down from around 8 percent at the end of the 1980s, and from over 12 percent in 1960. Much of this reflects the shrinking size of the defense capital stocks, which have gone down from 12 percent of GDP to 10 percent in the last few years. Chart 2-7 illustrates the relative contributions of different categories of wealth to the national total.

#### **Physical Assets**

Physical assets in Table 2-4 include stocks of plant and equipment, office buildings, residential structures, land, and government's physical assets such as military hardware, office buildings, and highways. Automobiles and consumer appliances are also included in this category. The total amount of such capital is vast, amounting to around \$27 trillion in 1996; by comparison, GDP was only about \$7½ trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus \$0.6 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed about one-quarter of the physical capital held by other levels of government.

**Table 2-4 NATIONAL WEALTH**

(As of the end of the fiscal year, in trillions of 1996 dollars)

	1960	1965	1970	1975	1980	1985	1990	1994	1995	1996
<b>ASSETS</b>										
Publicly Owned Physical Assets:										
Structures and Equipment .....	2.0	2.4	2.9	3.4	3.7	3.7	3.9	4.1	4.2	4.2
Federally Owned or Financed .....	1.1	1.2	1.3	1.2	1.2	1.4	1.6	1.6	1.6	1.6
Federally Owned .....	1.0	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.0	1.0
Grants to State & Local Governments .....	0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Funded by State & Local Governments .....	0.9	1.2	1.6	2.2	2.5	2.3	2.3	2.5	2.6	2.6
Other Federal Assets .....	0.8	0.7	0.7	0.9	1.5	1.4	1.1	0.9	0.9	0.9
Subtotal .....	2.8	3.0	3.5	4.3	5.2	5.1	5.1	5.0	5.0	5.1
Privately Owned Physical Assets:										
Reproducible Assets .....	5.5	6.4	8.0	10.4	13.2	13.9	15.3	16.1	16.6	17.1
Residential Structures .....	2.0	2.3	2.8	3.7	4.9	5.0	5.5	6.0	6.2	6.4
Nonresidential Plant & Equipment .....	2.0	2.3	3.0	4.1	5.1	5.7	6.1	6.3	6.4	6.6
Inventories .....	0.7	0.8	0.9	1.1	1.4	1.3	1.3	1.3	1.3	1.3
Consumer Durables .....	0.9	1.0	1.3	1.5	1.8	1.9	2.4	2.6	2.7	2.7
Land .....	2.0	2.3	2.7	3.5	5.2	6.0	6.0	4.5	4.5	4.5
Subtotal .....	7.5	8.7	10.7	13.8	18.5	19.8	21.3	20.7	21.1	21.6
Education Capital:										
Federally Financed .....	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	0.9
Financed from Other Sources .....	6.2	8.1	10.8	12.5	15.3	18.4	23.4	26.3	27.3	28.2
Subtotal .....	6.3	8.2	11.0	12.9	15.7	19.0	24.1	27.2	28.1	29.1
Research and Development Capital:										
Federally Financed R&D .....	0.2	0.3	0.5	0.5	0.6	0.6	0.8	0.8	0.9	0.9
R&D Financed from Other Sources .....	0.1	0.2	0.3	0.4	0.4	0.6	0.8	1.0	1.0	1.1
Subtotal .....	0.3	0.5	0.7	0.9	1.0	1.3	1.6	1.8	1.9	1.9
Total Assets .....	16.8	20.4	25.9	31.8	40.4	45.2	52.1	54.7	56.2	57.7
<b>LIABILITIES</b>										
Net Claims of Foreigners on U.S. .....	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(0.2)	0.3	0.7	0.9	1.1
Balance .....	17.0	20.7	26.2	32.0	40.9	45.4	51.8	53.9	55.3	56.7
Per Capita (thousands, 1996 dollars) .....	94.0	106.4	127.7	148.3	179.0	189.8	206.5	206.3	209.6	213.0
<b>ADDENDA:</b>										
Total Federally Funded Capital .....	2.1	2.3	2.6	3.0	3.7	4.1	4.2	4.2	4.2	4.3
Percent of National Wealth .....	12.3	11.2	10.1	9.3	9.0	8.9	8.1	7.8	7.6	7.5

***Education Capital***

Economists have developed the concept of human capital to reflect the notion that individuals and society invest in people as well as in physical assets. Investment in education is a good example of how human capital is accumulated.

Table 2-4 shows an estimate of the stock of capital formed by the Nation's investment in education. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over. The idea is to measure how much it would cost to reeducate the U.S. workforce at today's prices. The replacement value of education (as opposed to its original costs) is more meaningful economically, and is comparable to the measures of physical capital presented earlier.

Although this is a relatively crude measure, it does provide a rough order of magnitude of the current value of the investment in education. According to this measure, the stock of education capital amounted to \$29 trillion in 1996 of which about 3 percent was financed by the Federal Government. It exceeds the total value

of the Nation's stock of physical capital. The main investors in education capital have been State and local governments, parents, and students themselves who forego earning opportunities to acquire education.

There are even broader concepts of human capital. Not all useful training occurs in a schoolroom or in formal training programs at work. Much informal learning occurs within families or on the job, but measuring its value is very difficult. Labor compensation amounts to about two thirds of national income. Therefore, it is conceivable that the total value of human capital might be two to three times as large as the estimated value of physical capital. The estimates offered here are in a sense conservative, because they reflect only the costs of acquiring formal education and training.

***Research and Development Capital***

Research and development can also be thought of as an investment, because R&D represents a current expenditure that is made in the expectation of earning a future return. After adjusting for depreciation, the flow of R&D investment can be added up to provide

an estimate of the current R&D stock.<sup>6</sup> That stock is estimated to have been about \$1.9 trillion in 1996. Although this is a large amount of research, it is a relatively small portion of total National wealth. About half of this stock was funded by the Federal Government.

#### **Liabilities:**

When considering how much the United States owes as a Nation, the debts that Americans owe to one another cancel out. They do not belong in Table 2-4; but they are important. An unwise buildup in debt, most of which was owed to other Americans, was partly responsible for the sluggishness of the recovery from the 1990–1991 recession in its early stages. The only debt that appears in Table 2-4 is the debt that Americans owe to foreign investors. America's foreign debt has been increasing rapidly in recent years, because of the continuing imbalance in the U.S. current account; but even so the size of this debt is small compared with the total stock of U.S. assets. It amounted to slightly less than 2 percent of total U.S. wealth in 1996.

Most of the Federal debt held by the public is owned by Americans, so it does not appear in Table 2-4. Only that portion of the Federal debt held by foreigners is reflected. However, comparing the Federal Government's net liabilities with total national wealth gives another indication of the relative magnitude of the imbalance in the Government's accounts. Currently, the Federal net asset imbalance, as estimated in Table 2-1, amounts to less than 6 percent of total U.S. wealth, as shown in Table 2-4.

#### **Trends in National Wealth**

The net stock of wealth in the United States at the end of 1996 was about \$57 trillion. Since 1980 it has increased in real terms at an annual rate of 2.0 percent per year—less than half the 4.5 percent rate it averaged from 1960 to 1980. Public capital formation slowed down markedly between the two periods. The real value of the net stock of publicly owned physical capital was actually lower in 1996 than in 1980—\$5.1 trillion versus \$5.2 trillion in the earlier year. Since 1980, Federal grants to State and local governments for capital projects have grown less rapidly, while capital funded directly by State and local governments has grown at an average rate of only 0.4 percent per year.

Private capital formation in physical assets has also grown more slowly since 1980. The net stock of nonresidential plant and equipment grew 1.6 percent per year from 1980 to 1996, compared with 4.9 percent in the 1960s and 1970s, and the stock of business inventories actually declined. Overall, the stock of privately owned physical capital grew at an average rate of just 1.0 percent per year between 1980 and 1996. Economists might discuss whether slower growth in net private business investment is caused by a shift toward invest-

ment in more efficient but shorter-lived computers, and whether the decline in inventories really reflects a more efficient use of them.

The accumulation of education capital, as measured here, also slowed down in the 1980s, but not nearly as much. It grew at an average rate of 4.7 percent per year in the 1960s and 1970s, about the same as the average rate of growth in private physical capital during the same period. Since 1980, education capital has grown at a 3.9 percent annual rate. This reflects the extra resources devoted to schooling in this period, and the fact that such resources were rising in relative value. R&D stocks have grown at about the same rate as education capital since 1980.

#### **Other Federal Influences on Economic Growth**

Many Federal policies have contributed to the slowdown in capital formation that occurred after 1980. Federal investment policies obviously were important, but the Federal Government also contributes to wealth in ways that cannot be easily captured in a formal presentation. Monetary and fiscal policies affect the rate and direction of capital formation. Regulatory and tax policies affect how capital is invested, as do the Federal Government's credit assistance policies.

One important channel of influence is the Federal budget deficit, which determines the size of the Federal Government's borrowing requirements. Smaller deficits in the 1980s would have resulted in a smaller gap between Federal liabilities and assets than is shown in Table 2-1. It is also likely that, had the more than \$3 trillion in added Federal debt since 1980 been avoided, a significant share of these funds would have gone into private investment. National wealth might have been 2 to 4 percent larger in 1996 had fiscal policy avoided the buildup in the debt.

#### **Social Indicators**

There are certain broad responsibilities that are unique to the Federal Government. Especially important are the Government's role in fostering healthy economic conditions, promoting health and social welfare, and protecting the environment. Table 2-5 offers a rough cut of information that can be useful in assessing how well the Federal Government has been doing in promoting these general objectives.

The indicators shown here are only a limited subset drawn from the vast array of available data on conditions in the United States. In choosing indicators for this table, priority was given to measures that were consistently available over an extended period. Such indicators make it easier to draw valid comparisons and evaluate trends. In some cases, however, this meant choosing indicators with significant limitations.

The individual measures in this table are influenced in varying degrees by many Government policies and programs, as well as by external factors beyond the Government's control. They are not outcome indicators, because they do not measure the direct results of Government activities, but they do provide a quantitative measure of the progress or lack of progress in reaching

<sup>6</sup>R&D depreciates in the sense that the economic value of applied research and development tends to decline with the passage of time which leads to movement in the technological frontier.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

Table 2-5. ECONOMIC AND SOCIAL INDICATORS

General categories	Specific measures	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996
<b>Economic:</b>														
Living Standards .....	Real GDP per person (1992 dollars) .....	12,512	14,792	16,521	17,896	20,252	22,345	24,559	24,058	24,447	24,738	25,352	25,630	25,998
	Average annual percent change .....	0.4	3.4	2.2	1.6	2.5	2.0	1.9	-2.0	1.6	1.2	2.5	1.1	1.4
	Median income (1994 dollars):													
	All households .....	26,598	31,001	36,410	37,202	38,930	39,283	41,223	40,214	39,727	38,980	39,881	40,611	NA
	Married couple families .....	27,796	32,375	38,805	40,315	42,852	44,049	46,519	45,871	45,503	45,356	46,223	47,062	NA
	Female householder, no husband present .....	14,047	15,738	18,793	18,559	19,272	19,346	19,742	18,677	18,493	18,397	18,753	19,691	NA
	Income share of middle three quintiles (%) .....	54.0	53.9	53.6	53.5	53.4	52.0	51.2	51.4	51.0	43.9	49.0	49.1	NA
	Poverty rate (%) <sup>1</sup> .....	22.2	17.3	12.6	12.3	13.0	14.0	13.5	14.2	14.8	15.1	14.5	13.8	NA
Economic security .....	Economic security inflation and unemployment:													
	Civilian unemployment (%) .....	5.5	4.5	4.9	8.5	7.1	7.2	5.5	6.7	7.4	6.8	6.1	5.6	5.4
	CPI-U (year over year % change) .....	1.7	1.6	5.7	9.1	13.5	3.6	5.4	4.2	3.0	3.0	2.6	2.8	3.0
Employment prospects	Increase in total payroll employment (millions) .....	-0.5	2.9	-0.5	0.4	0.2	2.5	0.3	-0.8	1.1	2.8	3.8	2.2	2.6
Wealth creation .....	Managerial or professional jobs (% of civilian employment) .....	NA	NA	NA	NA	NA	24.1	25.8	26.3	26.2	26.8	27.5	28.3	28.8
Innovation .....	Net national saving rate (% of NNP) .....	10.1	12.0	8.3	6.0	6.4	5.4	3.7	3.6	2.4	2.5	3.4	4.5	5.4
Social:	Patents issued to U.S. residents (thous.) .....	42.0	53.6	50.1	51.4	40.8	43.3	52.8	57.7	58.7	61.1	64.2	64.5	NA
Families .....	Multifactor productivity (average annual percent change) .....	1.1	3.2	1.1	1.3	0.7	0.6	0.3	-1.0	1.5	0.5	0.7	NA	NA
Safe communities .....	Children living with a single parent (% of all children) .....	9.2	10.2	11.6	16.4	18.6	20.2	21.6	22.4	22.8	23.3	23.1	24.0	NA
	Violent crime rate (per 100,000 population) <sup>2</sup> .....	160	199	364	482	597	557	732	758	758	747	714	685	650
	Murder rate (per 100,000 population) .....	5	5	8	10	10	8	9	10	9	10	9	8	8
Health and illness .....	Juvenile crime (murders per 100,000 persons age 14-17) .....	NA	NA	NA	NA	9	7	16	18	17	19	19	NA	NA
	Infant mortality (per 1,000 live births) .....	26.0	24.7	20.0	16.1	12.6	10.6	9.2	8.9	8.5	8.4	7.9	7.6	NA
	Low birthweight (<2,500 gms) babies (%) .....	7.7	8.3	7.9	7.4	6.8	6.8	7.0	7.1	7.1	7.2	7.3	NA	NA
	Life expectancy at birth (years) .....	69.7	70.2	70.8	72.6	73.7	74.7	75.4	75.5	75.8	75.5	75.7	NA	NA
	Cigarette smokers (% population 18 and older) .....	NA	42.4	39.5	36.4	33.2	30.1	25.5	25.6	26.5	25.0	NA	NA	NA
Learning .....	Bed disability days (average days per person) .....	6.0	6.2	6.1	6.6	7.0	6.1	6.2	6.5	6.3	6.7	6.2	NA	NA
	High school graduates (% of population 25 and older) .....	44.6	49.0	55.2	62.5	68.6	73.9	77.6	78.4	79.4	80.2	80.9	81.7	NA
	College graduates (% of population 25 and older) .....	8.4	9.4	11.0	13.9	17.0	19.4	21.3	21.4	21.4	21.9	22.2	23.0	NA
	National assessment of educational progress <sup>3</sup> :													
	Mathematics .....	NA	NA	NA	304	298	302	305	NA	307	NA	306	NA	NA
	Science .....	NA	NA	305	296	283	288	290	NA	296	NA	294	NA	NA
Participation .....	Voting for President (% eligible population) .....	62.8	NA	NA	NA	52.6	NA	NA	NA	55.2	NA	NA	NA	49
	Voting for Congress (% of eligible population) .....	58.5	NA	43.5	NA	47.4	NA	33.1	NA	50.8	NA	36.0	NA	NA
	Individual charitable giving per capita (1996 dollars) .....	205	246	295	313	341	359	438	438	429	426	427	NA	NA
Environment:														
Air quality .....	Population living in counties with ozone levels exceeding the standard (millions) .....	NA	NA	NA	NA	NA	76	63	70	43	51	50	71	NA
Water quality .....	Population served by secondary treatment or better (millions) ...	NA	NA	NA	NA	NA	134	155	157	159	162	164	166	168

<sup>1</sup>The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.<sup>2</sup>Not all crimes are reported, and the fraction that go unreported may have varied over time.<sup>3</sup>Data shown for the National Education assessment are preliminary.

some of the ultimate values that government policy is intended to promote. Such a table can serve two functions. First, it highlights areas where the Federal Government might need to modify its current practices or consider new approaches; where there are clear signs of deteriorating conditions, corrective action might be appropriate. Second, the table provides a context for evaluating other data on Government activities; for example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective.

For example, during economic recessions, reductions in tax collections lead to increased government borrowing that adds to Federal liabilities. This decline in Federal net assets, however, provides an automatic stabilizer for the private sector. State and local governments and private budgets are strengthened by allowing the Federal budget to go deeper into deficit. More stringent Federal budgetary controls could be used to hold down Federal borrowing during such periods, but

only at the risk of aggravating the downturn and weakening the other sectors.

The Government cannot avoid making such trade-offs because of its size and the broad ranging effects of its actions. Monitoring these effects and incorporating them in the Government's policy making is a major challenge.

#### An Interactive Analytical Framework

No single framework can encompass all of the factors that affect the financial condition of the Federal Government. Nor can any framework serve as a substitute for actual analysis. Nevertheless, the framework presented above offers one useful way to examine the financial aspects of Federal policies. Increased Federal support for investment, the reduction in Federal absorption of saving through deficit reduction, and other Administration policies to enhance economic growth are expected to promote national wealth and improve the future financial condition of the Federal Government and the Nation as a whole. As that occurs, the efforts will be clearly revealed in these tables.

## TECHNICAL NOTE: SOURCES OF DATA AND METHOD OF ESTIMATING

### Federally Owned Assets and Liabilities

#### **Assets**

*Financial Assets:* The source of data is the Federal Reserve Board's Flow-of-Funds Accounts. Two adjustments were made to this data. First, U.S. Government holdings of financial assets were consolidated with the holdings of the monetary authority, i.e., the Federal Reserve System. Second, the gold stock, which is valued in the Flow-of-Funds at a constant historical price, is revalued using the market value for gold.

#### **Physical Assets**

*Fixed Reproducible Capital:* Estimates were developed from the OMB historical data base for physical capital outlays. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. The source data are in current dollars. To estimate investment flows in constant dollars, it is necessary to deflate the nominal investment series. This was done using price deflators for Federal purchases of durables and structures from the National Income and Product Accounts. These price deflators are available going back as far as 1930. For earlier years, deflators were based on historical statistics for constant price public capital formation. The capital stock series were adjusted for depreciation on a straight-line basis, assuming useful lives of 46 years for water and power projects; 40 years for other direct Federal construction; and 16 years for major nondefense equipment and for defense procurement.

*Fixed Nonreproducible Capital:* Historical estimates for 1960–1985 were based on estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, "Government Saving, Capital Formation and Wealth in the United States, 1947–1985," published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University of Chicago Press, 1989).

Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and in the Producer Price Index for Crude Energy Materials. The Bureau of Economic Analysis is in the process of preparing satellite accounts to accompany the National Income and Product Accounts that will report on changes in mineral deposits for the Nation as a whole, but this work is not yet completed.

#### **Liabilities**

*Financial Liabilities:* The principal source of data is the Federal Reserve's Flow-of-Funds Accounts.

*Contingent Liabilities:* Sources of data are the OMB Deposit Insurance Model and the OMB Pension Guarantee Model. Historical data on contingent liabilities for deposit insurance were also drawn from the Congressional Budget Office's study, *The Economic Effects of the Savings and Loan Crisis*, issued January 1992.

*Pension Liabilities:* For 1979–1995, the estimates are the actuarial accrued liabilities as reported in the an-

nual reports for the Civil Service Retirement System, the Federal Employees Retirement System, and the Military Retirement System (adjusted for inflation). Estimates for the years before 1979 are not actuarial; they are extrapolations. The estimate for 1996 is a projection.

#### **Long-Run Budget Projections**

The long-run budget projections are based on long-run demographic and economic projections. A spreadsheet model of the Federal budget developed at OMB computes the budgetary implications of this forecast.

*Demographic and Economic Projections:* For the years 1997–2007, the assumptions are identical to those used in the budget. As always, these budget assumptions reflect the President's policy proposals, in this case that the budget be balanced. The long-run projections extend these budget assumptions by holding constant inflation, interest rates, and unemployment at the levels assumed in the final year of the budget. Population growth and labor force participation are extended using the intermediate assumptions from the 1996 social security Trustees' report. The projected rate of growth for real GDP is built up from the labor force assumptions and an assumed rate of productivity growth. The assumed rate of productivity growth is held constant at the average rate of growth implied by the budget's economic assumptions. The economic assumptions used for the current services projections subtract the "fiscal dividend" from interest rates, profits, and dividends.

*Budget Projections:* For the budget period, the projections follow the budget. Beyond the budget horizon, receipts are projected using simple rules of thumb linking income taxes, payroll taxes, excise taxes, and other receipts to projected tax bases derived from the economic forecast. Outlays are computed in different ways. Discretionary spending grows at the rate of inflation. Social security, Medicare, and Federal pensions are projected using the most recent actuarial forecasts available at the time the budget was prepared (June 1996 for social security). These projections are repriced using Administration inflation and wage growth assumptions. Other entitlement programs are projected based on rules of thumb linking program spending to elements of the economic and demographic forecast such as the poverty rate.

#### **National Balance Sheet Data**

*Publicly Owned Physical Assets:* Basic sources of data for the federally owned or financed stocks of capital are the investment flows described in Chapter 6 of this volume. Federal grants for State and local government capital were added together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local government capital come from the unrevised capital stock data prepared by the Bureau of Economic Analysis.

*Privately Owned Physical Assets:* Data are from the Flow-of-Funds national balance sheet. Estimates for 1995–1996 were based on investment data from the National Income and Product Accounts.

*Education Capital:* The stock of education capital is computed by valuing the cost of replacing the total years of education embodied in the U.S. population 16 years of age and older at the current cost of providing schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' foregone earnings, i.e., it reflects the opportunity cost of education.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions and for research and development conducted at colleges and universities because these outlays are classified elsewhere as investment in physical capital and investment in R&D capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate education spending in HHS, Defense and Agriculture; and most outlays for vocational training.

Data on investment in education financed from other sources come from educational institution reports on the sources of their funds, published in U.S. Department of Education, *Digest of Education Statistics*. Nominal expenditures were deflated by the implicit price deflator for GDP to convert them to constant dollar values. Education capital is assumed not to depreciate, but to be retired when a person dies. An education capital stock computed using this method with different source data can be found in Walter McMahon, "Relative Returns To Human and Physical Capital in the U.S. and Efficient Investment Strategies," *Economics of Education Review*, Vol. 10, No. 4, 1991. The method is described in detail in Walter McMahon, *Investment in Higher Education*, 1974.

*Research and Development Capital:* The stock of R&D capital financed by the Federal Government was developed from a data base that measures the conduct of

R&D. The data exclude Federal outlays for physical capital used in R&D because such outlays are classified elsewhere as investment in federally financed physical capital. Nominal outlays were deflated using the GDP deflator to convert them to constant dollar values.

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent on the outstanding balance for applied research and development. Basic research is assumed not to depreciate. Chapter 6 of this volume contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and non-defense components.

A similar method was used to estimate the stock of R&D capital financed from sources other than the Federal Government. The component financed by universities, colleges, and other nonprofit organizations is based on data from the National Science Foundation, *Surveys of Science Resources*. The industry-financed R&D stock component is from that source and from the U.S. Department of Labor, *The Impact of Research and Development on Productivity Growth*, Bulletin 2331, September 1989.

Experimental estimates of R&D capital stocks have recently been prepared by BEA. The results are described in "a Satellite Account for Research and Development," *Survey of Current Business*, November 1994. These BEA estimates are lower than those presented here primarily because BEA assumes that the stock of basic research depreciates, while the estimates in Table 2-3 assume that basic research does not depreciate. BEA also assumes a slightly higher rate of depreciation for applied research and development, 11 percent, compared with the 10 percent rate used here.

### Social Indicators

The main sources for the data in this table are the Government statistical agencies. Generally, the data are publicly available in the President's annual *Economic Report* and the *Statistical Abstract of the United States*.

## 1. ECONOMIC ASSUMPTIONS

### **Introduction**

The prudent fiscal and monetary policies pursued during this Administration have fostered the healthiest economy in over a generation. Judged by the yardsticks of growth, jobs, unemployment, inflation, interest rates and the stock market, 1997 was a banner year. Real Gross Domestic Product (GDP) expanded by nearly 4 percent, the Nation's payrolls increased by 3.2 million jobs, and the unemployment rate fell to the lowest level in 24 years. Despite robust growth, inflation edged down; the rise in the Consumer Price Index excluding the volatile food and energy components last year was the smallest since 1965. The combination of low inflation and low unemployment pulled the "Misery Index"—the sum of the inflation and unemployment rates—to its lowest level in three decades.

Households and businesses have prospered in this environment. Wages and salaries after adjustment for inflation have increased faster than at any time in the past two decades. And thanks to unusually strong productivity growth for this stage of an expansion, profits also have grown at a healthy pace. The share of profits in GDP climbed to over 10 percent last year, the highest it has been since 1968.

Financial markets have responded to these favorable developments by bidding up the prices of bonds and equities. Long-term interest rates, which move in the opposite direction from bond prices, fell one-half percentage point last year. At year's end, the yield on the 30-year Treasury bond was below 6 percent, the lowest level in four years. In early January, the rate fell another one-quarter percentage point to the lowest level since this maturity was first regularly issued in 1977.

The Dow Jones Industrial Average rose 23 percent during 1997, which followed a 68 percent gain during 1995–96. Since the end of 1994, the Dow average has doubled, making this the best three-year performance in the postwar period and the second best in the 101-year history of the Dow. The broader market indexes, the S&P 500 and the NASDAQ composite index, also doubled during these three years.

These outstanding financial and nonfinancial achievements—fostered by sound fiscal and monetary policies—have further boosted business and consumer confidence. Businesses last year spent heavily on capacity-expanding new plant and equipment; investment rose at a double-digit pace after adjustment for inflation. Consumer optimism soared. According to the University of Michigan Consumer Sentiment Index, optimism reached the highest level since the survey began in the early 1950s. Overseas investors also have expressed their confidence in the U.S. economy. With many finan-

cial markets around the world in turmoil, foreign investors increasingly turned to the safe haven provided by U.S. financial markets.

The fundamental forces affecting the economy and prospective fiscal and monetary policies point to continued healthy economic conditions in the coming years. The budget is projected to reach balance in 1999—the first time that has occurred in three decades—and to remain in balance during the remainder of the 10-year planning horizon. A stronger dollar is likely to keep inflation low. While some may have thought that real growth in the recent past was too fast, in the future these concerns may well be eased by developments in Asia. Against this background, monetary policy should be able to accommodate continued economic growth with low inflation.

The Administration projects real growth in the next few years to be around 2.0 percent per year, before rising to 2.4 percent in 2002–2007. The unemployment rate, which at current low levels may run the risk of igniting inflation, is projected to edge up slightly to a rate that the Administration conservatively estimates to be consistent with stable inflation. Nonetheless, millions of new jobs are expected to be created. Short-term interest rates are projected to decline and long-term rates are expected to remain relatively low as private and public credit demands ease and as expectations of continued low inflation are incorporated into bond yields. Beyond 1999, the Administration's economic projections represent expected trends rather than a definite cyclical pattern.

Private forecasters have a similarly favorable view of the economic outlook. The January *Blue Chip* consensus forecast, an average of 50 private forecasts, projected real growth, unemployment and inflation at rates nearly identical to those used in this budget. The projected interest rates were somewhat higher than in the budget assumptions. The similarity to the private sector forecasts is an indication that the Administration's assumptions are a reasonable, prudent basis for projecting the budget.

The expansion that began in April 1991 has just completed 82 consecutive months of growth, exceeding 17 of the 20 expansions of this century. By December of this year, the expansion will become the second longest U.S. expansion of all time and the longest peacetime expansion. If it continues through February 2000, this expansion will set a new longevity record, outlasting the current record of 106 months of uninterrupted growth in the 1960s. According to the *Blue Chip* survey, most private-sector forecasters now expect this to happen.

This chapter begins with a review of recent developments and then discusses two statistical issues: the

growing statistical discrepancy (the difference between the aggregate measures of output and income) and recent methodological improvements in the calculation of the Consumer Price Index. The chapter then presents the Administration's economic projections, followed by a comparison with the Congressional Budget Office's projections. The following sections present the impact of changes in economic assumptions since last year on the projected fiscal balance and the structural deficit. The chapter concludes with estimates of the sensitivity of the budget to changes in economic assumptions.

### Fiscal and Monetary Policy

When this Administration took office, its first priority was to reverse the 12-year trend of large, uncontrolled fiscal deficits. The Administration proposed, and Congress passed, the landmark Omnibus Budget Reconciliation Act of 1993 (OBRA) which set the budget deficit on a downward path. After having reached a postwar record of \$290 billion in 1992—a huge 4.7 percent of GDP—the deficit has declined each year, falling to just \$22 billion in 1997—just 0.3 percent of GDP. The last time the deficit share of GDP was this low was in 1970.

The deficit reductions following OBRA have far exceeded predictions made at the time of its passage. OBRA was projected to reduce pre-Act deficits by \$505 billion over the five years 1994–98. Over the five years 1993–97, the cumulative deficit reduction has been \$811 billion. In other words, OBRA and subsequent developments have enabled the Treasury to issue \$811 billion less debt than would have been required under previous law. By 1998, the cumulative deficit reduction from 1994 through 1998 is estimated to be \$1.1 trillion, more than double the original estimate.

While OBRA fundamentally altered the course of fiscal policy towards lower deficits, it was not projected to eliminate the deficit. In the absence of further action, deficits were expected to begin to climb once again. To prevent this and bring the budget into surplus, last summer the Administration negotiated the Balanced Budget Agreement with the Congress. This budget proposes to achieve a surplus in 1999—three years earlier than originally projected. The last budget surplus was in 1969. OBRA and the Balanced Budget Agreement together are expected to reduce the deficit by a cumulative total of \$3.3 trillion over 1993–2002 compared with the pre-OBRA baseline.

The economy has outperformed most forecasters' expectations in recent years and, at the same time, deficits have been much lower than projected. This is more than a coincidence. Lower deficits contribute to a healthy, sustainable expansion by reducing interest rates and boosting interest-sensitive spending in the economy. Rapid growth of business capital spending expands industrial capacity and boosts productivity growth. The extra capacity, in turn, prevents shortages and bottlenecks that might otherwise emerge.

Lower interest rates also raise equity prices, which reduces the cost of capital to business and increases

household wealth and optimism. The added impetus to business and consumer spending creates new jobs and business opportunities. The result is more production, more income, more jobs, more Federal revenues, and a smaller deficit—a virtuous circle of prosperity. That has been the experience of the past five years, and it will be the likely consequence of policies that achieve budget surpluses, and reduce Government debt.

In this expansion, monetary policy shifted when necessary to prevent inflation from picking up, and shifted again to prevent the expansion from stalling when that seemed needed. In 1994 and early 1995, monetary policy tightened when rapid growth raised the possibility that inflationary pressures were about to build. During 1995 and early 1996, monetary policy eased because the expansion appeared to be slowing unduly and the risk of higher inflation had lessened. Since January 1996, monetary policy has remained steady. The sole adjustment was in March 1997 when the federal funds rate target was raised one-quarter percentage point to its current level of 5½ percent.

Stable monetary policy for the past two years has kept the 3-month Treasury bill rate in a narrow range around 5 percent. Long-term interest rates have fluctuated in response to the outlook for inflation and the deficit. When economic growth accelerated during the first four months of 1997, the yield on the 30-year Treasury bond edged up 50 basis points to 7.1 percent. During the remainder of the year, however, the rate fell over 100 basis points in response to low inflation, the agreement to balance the budget, the unexpectedly low 1997 budget deficit, and international developments. By early 1998, the yield had fallen to 5.7 percent.

### Recent Developments

**Real Growth:** The economy expanded an estimated 3.7 percent over the four quarters of 1997, up from 2.8 percent the prior year. As in 1996, the fastest growing sector was business fixed investment. During the first three quarters of 1997, business spending for new plant and equipment rose at a 13 percent annual rate after adjustment for inflation, led by an 18 percent advance in equipment spending. The biggest gains continued to be for information processing and related equipment, but businesses invested heavily in other forms of equipment and in structures as well.

This exceptionally strong business capital spending has boosted productivity and expanded industrial capacity to meet current and future demands. Manufacturing capacity rose by more than 5 percent in each of the past three years. The last time capacity grew this rapidly was in the late 1960s. The extra capacity has helped keep inflation low by easing the bottlenecks that might otherwise have developed. In the fourth quarter of 1997, the manufacturing operating rate was near its long-term average, even though labor markets were much tighter than usual.

Growth last year was also supported by robust household spending. Low unemployment, rising real incomes,

and large capital gains have provided households with the resources and willingness to spend heavily, especially on discretionary purchases. Overall consumer spending after adjustment for inflation rose at a 4 percent annual rate during the first three quarters of the year; spending on durable goods soared at a 9 percent pace.

The same factors spurring consumption, along with relatively low mortgage rates, pushed new home sales during the first 11 months of 1997 to their highest level since 1978. Buoyant sales and low inventories of unsold homes have provided a strong incentive for builders to start new construction. Housing starts remained at high levels last year, and residential investment, after adjustment for inflation, increased at nearly a 5 percent annual rate during the first three quarters of the year.

Government purchases, on balance, made only a small contribution to GDP growth last year. Federal government spending in GDP after adjustment for inflation was about unchanged over the first three quarters. State and local spending rose at only a 2 percent rate during this period, despite the healthy fiscal surpluses that have resulted from sharply rising incomes and profits.

The foreign sector was the primary restraint on growth last year, trimming real GDP growth by nearly 1 percentage point during the first three quarters of the year. Although exports expanded rapidly, import growth was even stronger. The widening of the net export deficit reflected the relatively faster growth of domestic demand in the United States than in our trading partners, and also the rise in the dollar. Last year, the dollar gained 12 percent on a trade-weighted basis on top of a 4 percent rise during 1996.

**Labor Markets:** The performance of the labor market last year far exceeded most predictions. At the start of the year, most forecasters had expected the unemployment rate to rise slightly during 1997. Instead, the unemployment rate fell 0.6 percentage point to 4.7 percent by December 1997. November's rate was 4.6 percent. This is the lowest two consecutive months since March/April 1970. When this Administration took office, the unemployment rate was 7.3 percent. All demographic groups have benefited from the decline. Thirty-eight states had unemployment rates of 5.0 percent or less at the end of last year; only five had rates above 6.0 percent.

The Nation's payrolls expanded by 3.2 million jobs last year, the biggest gain since 1994. Since the Administration took office in January 1993, 14.3 million jobs have been created. Job growth was widespread across industries last year. The service sector accounted for most of the new jobs, but manufacturing industries increased their payrolls by over 200,000 jobs. State and local government payrolls also expanded, while Federal government employment continued to contract. The abundance of employment opportunities pushed the employment/population ratio up to 64.1 percent by year-end, the highest level on record.

**Inflation:** Despite rapid growth and the unusually low unemployment rate last year, inflation not only remained low, it actually declined. The broadest measure of inflation, the GDP chain-weighted price index, rose at just a 1.9 percent annual rate during the first three quarters of 1997, 0.4 percentage point less than during the four quarters of 1996. The last time aggregate inflation was this low was in 1964. The Consumer Price Index (CPI) and the CPI excluding food and energy also increased less in 1997 than in 1996. The core CPI excluding food and energy rose just 2.2 percent last year, the slowest rise since 1965. The total CPI rose even less, 1.7 percent, because of falling energy prices.

The favorable inflation performance was the result of several factors. The rise in the dollar has reduced the costs of imported materials and intensified price competition from imports. Non-oil import prices have fallen nearly every month in the past two years. Although the pace of wages and salaries picked up, overall compensation costs were restrained by continued low health-care inflation. Finally, robust investment in new plant and equipment has contributed to unusually strong productivity growth for this stage of an expansion, restraining inflation by offsetting gains in labor compensation. Unit labor costs have risen very slowly during the first three quarters of 1997.

The absence of inflation pressures has implications for the estimate of the level of unemployment that is consistent with stable inflation. This threshold has been called the NAIRU, or "nonaccelerating inflation rate of unemployment." Economists have been lowering their estimates of NAIRU in recent years in keeping with the accumulating experience that lower unemployment has not led to higher inflation, even after taking into account the influence of temporary factors. The economic projections for this Budget assume that NAIRU is 5.4 percent. That is 0.1 percentage point less than estimated in the 1998 Budget assumptions and 0.3 percentage point less than in the 1997 Budget.

By the end of 1997, the unemployment rate was about three-quarter percentage point below the current estimate of NAIRU. In the absence of special factors, if unemployment remains below NAIRU, inflation would eventually creep up. The Administration forecast for real growth over the next three years, however, is moderate enough to imply that unemployment will return to 5.4 percent.

### Statistical Issues

The U.S. statistical agencies endeavor to produce accurate measures of the economy's performance. Nonetheless, in recent years serious concerns have been raised about possible mismeasurement, especially of real GDP growth and of inflation.

**Real Growth:** In a perfect statistical world, the value of *output* would equal the value of *income* generated in its production, that is, GDP would match Gross Domestic Income (GDI). However, because the series are based on different source data, each with its own gaps

and inconsistencies, the two measures are hardly ever identical. What is particularly unusual now is the wide and growing difference between product and income measures.

This "statistical discrepancy," defined as aggregate output minus aggregate income, was -\$103 billion in the third quarter of 1997—a nearly record-setting 1.3 percent of nominal GDP. By comparison, in the first quarter of 1995, the statistical discrepancy was nearly zero, and two years earlier, in the first quarter of 1993, it was \$71 billion. A swing of this magnitude means that during the past four and a half years, the annual average real growth rate measured from the familiar output side has been about 0.5 percentage point less than the growth rate measured from the income side. During the first three quarters of last year, real GDP rose at a 3.8 percent annual rate but real Gross Domestic Income at a 4.5 percent pace. In the third quarter of 1997, the divergence widened further. Real GDP growth was at a 3.1 percent annual rate, but real GDI surged at a 4.5 percent rate.

The absence of a single, clear picture of the economy's actual growth performance is a cause for concern. It is difficult to know if growth is accelerating or decelerating; if actual growth is above or below the economy's potential growth rate; or even what the economy's potential growth rate is.

Any estimate of potential growth depends on an estimate of trend productivity growth, which itself depends on recent data on actual growth. When there is a growing divergence between product and income measures, there is a comparable divergence in estimates of the productivity trend. For example, measured from the last cyclical peak to the third quarter of 1997, labor productivity growth has increased at a 1.1 percent annual rate according to the official productivity statistics which measure output growth from the product side. Labor productivity growth measured from the income side, however, has risen at a 1.5 percent annual rate.

It is unclear whether the product or the income side provides the more accurate measure of growth. The Bureau of Economic Analysis recognizes the shortcomings of both measures but believes that GDP is a more reliable measure of output than GDI (see *The Survey of Current Business*, August 1997, page 19). Other experts believe that GDI, or some figure between the two measures, may be more accurate.

There is circumstantial evidence to suggest that growth may be faster than shown by the traditional GDP measure. The recent combination of low inflation and a rising profits share suggests that productivity growth is stronger than reported from the output side. Moreover, the unexpected strength of Treasury receipts in the last two years suggests that the output measure, and even the income measure, may be too low. While some of the higher receipts are from capital gains generated by the booming stock market, which are excluded from the national income accounts, this source does not fully account for the surge.

The uncertainty surrounding actual growth and its trend makes it more difficult to determine appropriate monetary policy. From a budgetary perspective, estimates of receipts and expenditures have a larger degree of uncertainty because they are dependent on the forecast for growth. As shown in Table 1-6, "Sensitivity of the Budget to Economic Assumptions," errors in forecasting real GDP growth can have a significant effect on the budget balance.

**Inflation:** Accurate measurement of inflation has become increasingly important in recent years, even as inflation has been brought under control. Eliminating biases of even a few tenths of a percentage point a year can have important meaning relative to a goal of price stability when inflation is low, while it may have less significance when inflation is higher.

In recent years, serious questions have been raised about the magnitude of bias in the Consumer Price Index. In December 1996, the Advisory Commission to Study the Consumer Price Index, appointed by the Senate Finance Committee, reported that the index overstated the actual cost of living by 1.1 percentage points per year. The Bureau of Labor Statistics (BLS), however, believes that the empirically demonstrated bias is significantly less.

The BLS has instituted a number of methodological changes in recent years to improve the accuracy of the Consumer Price Index, and has announced several more changes that will be put in place this year and next. Taken together, these changes are estimated to result in a 0.7 percentage point slower annual rise in the CPI by 1999. The changes instituted from 1995–1997 are estimated to have slowed the growth of the CPI by 0.3 percentage point per year; the forthcoming changes are expected to trim another 0.4 percentage point per year. Because the CPI is used to deflate some nominal spending components of GDP, a slower rise in the CPI translates into a faster rise in real GDP. By 1999, measured real GDP growth and, therefore, productivity growth, is likely to be boosted by 0.2 percentage point per year as a consequence of the cumulative improvements to the CPI since 1995.

Two methodological improvements have been instituted beginning with the release of the CPI for January 1998: an updating of the expenditure weights, and a better technique for estimating quality improvements for computers. Together, the two changes are expected to slow CPI growth by 0.2 percentage point per year.

This year, the BLS updated the expenditure weights used in the CPI from a 1982–84 basis to 1993–95, using Consumer Expenditure Survey data. At the same time, BLS introduced a more accurate geographic sample based on the 1990 decennial census, and redefined the groupings of items. In the future, BLS expects to introduce updated expenditure weights more frequently than in the past, when there were approximately 10 years between updates.

For computers and peripheral equipment, the BLS has now begun to use a hedonic regression procedure to distinguish price from quality changes. The esti-

mated value of an improvement obtained from this regression procedure is deducted from the observed price change for the product. For example, if the CPI sample of computer prices shows no change in the retail price of a new computer, but it is 20 percent better than the prior model as measured by the hedonic procedure, the CPI will report a corresponding drop in price for this model. A similar procedure has been adopted for estimating computer prices in the Producer Price Index and in the National Income and Product Accounts. It is especially important to measure accurately, and on a timely basis, the extraordinary leaps in computer power that must be a part of a meaningful measure of computer prices.

For 1999, BLS has announced that it will select items to be sampled on a product rather than a geographical basis. This switch will allow more frequent sampling of categories with rapidly changing product lines, such as consumer electronics.

A very important change next year will be the replacement of the current fixed-weighted Laspeyres formula by a geometric mean formula for combining individual price quotations at the lower level of aggregation in the CPI. Under certain assumptions, a CPI calculated using geometric means more closely approximates a cost-of-living index. Unlike the current fixed-weighted aggregation, the geometric mean formula allows for shifts in consumer spending patterns in response to changes in relative prices within categories of goods and services.

Since last April, the BLS has been publishing an experimental CPI each month that uses geometric means for all lower level aggregation and has provided a historical series beginning with December 1990. If a geometric mean is used for all lower level aggregation, BLS estimates that the growth in the CPI would be slowed by about one-quarter percentage point per year. Partial adoption would result in a lesser impact. BLS is expected to announce shortly which categories will be shifted to geometric means next year and the likely impact on the growth of the CPI.

### Economic Projections

The economy's strong performance last year and the continuation of the virtuous circle of prosperity made possible by sound fiscal and monetary policies raises the possibility that actual economic developments may even be better than the assumptions—as has been the case in recent years. Nonetheless, it is prudent to base budget estimates on a conservative set of economic assumptions close to the consensus of private sector forecasts.

**Virtuous Circle of Prosperity:** The economic assumptions summarized in Table 1-1 are predicated on the adoption of the policies proposed in this budget. The swing in the fiscal position from deficit to surplus is expected to support a continuation of the favorable economic performance of recent years. The shift from Federal Government dissaving to saving would pull interest rates down, stimulating private sector invest-

ment in new plant and equipment. The economy is likely to continue to grow, although at a more moderate pace than during 1997. While job opportunities are expected to remain plentiful, the unemployment rate is likely to rise gradually to a level consistent with stable inflation. New job creation would boost incomes and consumer spending and keep confidence at a high level. Continued low inflation would enable monetary policy to support economic growth. Growth, in turn, would further improve the budget balance.

#### **Real GDP, Potential GDP and Unemployment:**

Over the next three years, real GDP is expected to rise 2.0 percent per year. This shift to more moderate growth recognizes that by conservative, mainstream assumptions, growth has exceeded the pace that can be maintained on a sustained basis, which could eventually result in upward pressures on inflation. A slowdown has been expected for this reason. Also, the financial dislocations in Asia could contribute to this slowing of U.S. growth. From 2001–2007, growth is expected to average a slightly faster 2.4 percent per year—the Administration's estimate of the economy's potential growth rate. Real GDP growth in 2008 is projected to slow to 2.3 percent to reflect the beginning of the years of slower growth of the workforce as the baby-boomers begin to retire.

The net export component of GDP is expected to restrain real growth by about 1 percentage point during 1998, as our export growth is curtailed by slower growth in Asia and the appreciation of the dollar. Thereafter, as the effects of the crisis abroad wane, export growth is likely to pick up slightly. Beginning with 1999, the foreign sector is not expected to make a large contribution, positive or negative, to overall growth.

As has been the case throughout this expansion, during the next six years business fixed investment is expected to be the fastest growing component of GDP. Although residential investment is also expected to benefit from low mortgage rates, the high level of housing starts in recent years and underlying demographic trends may tend to reduce growth. Consumer spending, especially on durable goods, is also likely to moderate from the rapid pace of 1997. The fundamental factors supporting consumer spending are likely to remain favorable, although not quite to the same extent as during 1997. The government component of GDP will hardly grow through 2003. A decline in Federal consumption and gross investment is projected to be offset by moderate growth in State and local spending.

Continued strong growth of business fixed investment and the output-increasing effects of methodological improvements to the CPI noted above are expected to raise the measured trend of productivity growth during the next six years to 1.3 percent per year. By comparison, during the seven years following the last business cycle peak in the third quarter of 1990, productivity growth averaged 1.1 percent per year, as measured from the GDP side of the accounts.

Table 1-1. ECONOMIC ASSUMPTIONS<sup>1</sup>

(Calendar years; dollar amounts in billions)

	Actual 1996	Projections								
		1997	1998	1999	2000	2001	2002			
<b>Gross Domestic Product (GDP):</b>										
Levels, dollar amounts in billions:										
Current dollars .....	7,636	8,080	8,430	8,772	9,142	9,547	9,993	10,454		
Real, chained (1992) dollars .....	6,928	7,187	7,357	7,503	7,652	7,820	8,008	8,199		
Chained price index (1992 = 100), annual average .....	110.2	112.5	114.6	116.9	119.5	122.1	124.8	127.5		
Percent change, fourth quarter over fourth quarter:										
Current dollars .....	5.6	5.5	4.0	4.1	4.3	4.6	4.6	4.6		
Real, chained (1992) dollars .....	3.2	3.6	2.0	2.0	2.0	2.3	2.4	2.4		
Chained price index (1992 = 100) .....	2.3	1.9	2.0	2.1	2.2	2.2	2.2	2.2		
Percent change, year over year:										
Current dollars .....	5.1	5.8	4.3	4.1	4.2	4.4	4.7	4.6		
Real, chained (1992) dollars .....	2.8	3.7	2.4	2.0	2.0	2.2	2.4	2.4		
Chained price index (1992 = 100) .....	2.3	2.0	1.9	2.0	2.2	2.2	2.2	2.2		
<b>Incomes, billions of current dollars:</b>										
Corporate profits before tax .....	677	729	754	768	790	805	830	851		
Wages and salaries .....	3,633	3,868	4,057	4,237	4,424	4,623	4,840	5,068		
Other taxable income <sup>2</sup> .....	1,693	1,786	1,859	1,915	1,975	2,046	2,128	2,213		
<b>Consumer Price Index (all urban):<sup>3</sup></b>										
Level (1982-84 = 100), annual average .....	157.0	160.7	164.1	167.7	171.5	175.5	179.5	183.6		
Percent change, fourth quarter over fourth quarter .....	3.2	2.0	2.2	2.2	2.3	2.3	2.3	2.3		
Percent change, year over year .....	2.9	2.4	2.1	2.2	2.3	2.3	2.3	2.3		
<b>Unemployment rate, civilian, percent:</b>										
Fourth quarter level .....	5.3	4.8	5.0	5.2	5.4	5.4	5.4	5.4		
Annual average .....	5.4	5.0	4.9	5.1	5.3	5.4	5.4	5.4		
<b>Federal pay raises, January, percent:</b>										
Military <sup>4</sup> .....	2.6	3.0	2.8	3.1	3.0	3.0	3.0	3.0		
Civilian <sup>5</sup> .....	2.4	3.0	2.8	3.1	3.0	3.0	3.0	3.0		
<b>Interest rates, percent:</b>										
91-day Treasury bills <sup>6</sup> .....	5.0	5.0	5.0	4.9	4.8	4.7	4.7	4.7		
10-year Treasury notes .....	6.4	6.4	5.9	5.8	5.8	5.7	5.7	5.7		

<sup>1</sup>Based on information available as of early December 1997.<sup>2</sup>Rent, interest, dividend and proprietor's components of personal income.<sup>3</sup>Seasonally adjusted CPI for all urban consumers. Two versions of the CPI are now published. The index shown here is that currently used, as required by law, in calculating automatic adjustments to individual income tax brackets. Projections reflect scheduled changes in methodology.<sup>4</sup>Beginning with the 1999 increase, percentages apply to basic pay only; adjustments for housing and subsistence allowances will be determined by the Secretary of Defense.<sup>5</sup>Overall average increase, including locality pay adjustments.<sup>6</sup>Average rate (bank discount basis) on new issues within period.

Potential GDP growth of 2.4 percent during the projection horizon can be decomposed into the trend growth of productivity, 1.3 percent per year, plus the growth of the labor force, estimated at 1.1 percent annually. The Administration's labor force projection assumes that the population of working age will grow 1.0 percent per year and that the labor force participation rate will edge up 0.1 percent per year.

Both the labor force and participation rate assumptions are lower than recent experience. The participation rate has risen 0.4 percent per year since 1994, as falling unemployment and rapidly expanding job opportunities have strongly induced job-seeking. But with the labor force participation rate and employment/population ratio at post-World War II highs, it is prudent to project a slower rise in the coming years. In addition, the female participation rate, which had risen sharply during much of the postwar period, grew much slower during the 1990s, and this trend is assumed to continue.

The real GDP growth projection of 2.0 percent through 2000 is consistent with a gradual rise in the unemployment rate to 5.4 percent. Unemployment is then projected to remain on a plateau at that level

from 2001 onward, when real GDP growth averages the Administration's estimate of the economy's potential growth rate.

**Inflation:** With unemployment expected to be slightly below NAIRU during the next three years, inflation is projected to creep up by about one-quarter percentage point by 2000. The CPI is projected to increase 2.3 percent in that year and the subsequent years of the forecast horizon; the GDP chain-weighted price index is projected to increase 2.2 percent in 2000 and beyond. The relatively small 0.1 percentage point difference between the two inflation measures is narrower than in the past because of recent and forthcoming methodological improvements to both indexes.

Despite the relatively tight labor market in the next few years, inflation is projected to remain low, partly because of two temporary factors. The rise in the dollar is expected to hold down import prices and intensify price competition from imported goods and services. In addition, wide profit margins provide a cushion that will enable firms to absorb cost increases without having to pass them on fully into higher prices.

Moreover, as discussed above, the methodological improvements to the CPI will offset some of the rise that might otherwise occur. By 1999, the improvements instituted this year and next will trim about 0.4 percentage point off of the annual rise in the CPI. These same improvements are likely to restrain the rise in the GDP chain weighted price index by about 0.1 percentage point per year.

**Interest Rates:** The assumptions, which were finalized in early December, project a gradual decline in short- and long-term interest rates consistent with the improved fiscal balance and low inflation. By 2001 the 91-day Treasury bill rate is expected to be 30 basis points lower than the fourth quarter 1997 average; the yield on the 10-year Treasury bond is projected to be 20 basis points lower.

The sharp drop in long-term rates in early 1998 has already driven long-term rates below the levels anticipated in the economic assumptions. Recent developments, including the improved budget outlook, may have caused market participants to lower their expectations for inflation and credit demands. The turmoil in Asian markets may have fostered further portfolio adjustments into the safe haven of U.S. bonds. In light of these developments, it is possible that long-term rates will be lower on average than those in the economic assumptions. Financial markets, however, can be quite volatile; the recent drop in long rates could prove to be temporary.

**Incomes:** The moderating of real growth during the projection horizon is expected to shift the distribution of national income slightly, augmenting the share going to labor while trimming the unusually high profits share in GDP. On balance, total taxable income is projected to decline gradually as a share of GDP.

Between 1997 and 2003, aggregate wages and salaries are projected to rise 31 percent in nominal terms and 15 percent after adjustment for inflation. Corresponding to the rise in the wage share, corporate profits before tax are projected to rise just 16 percent in nominal terms from 1997 to 2003, a markedly slower pace than in recent years. By 2003, taxable profits as a share of GDP are projected to be about 1 percentage point lower than the 30-year high reached during 1997. The favorable impact of lower interest rates on the debt service payments of the corporate sector helps to cushion the impact on profits of the expected shift of income back toward wages.

Lower interest rates will pull down the share of personal interest income in GDP because the household sector is a net lender in the economy. Little change is expected in the shares of other components of taxable income (dividends, rents and proprietors' income).

### Comparison with CBO

The Congressional Budget Office (CBO) develops economic projections used by Congress in formulating its budget policy. In the executive branch, the analogous function is performed jointly by the Treasury, the Coun-

cil of Economic Advisers (CEA), and the Office of Management and Budget (OMB). These two sets of economic projections can be compared with one another, but differences in their preparation should be borne in mind:

- The Administration's projections always assume that the President's policy proposals in the budget will be adopted in full. In contrast, CBO normally assumes that current law will continue unchanged; thus, it makes a "pre-policy" or baseline projection, while the Administration's projections are "post-policy."
- The two sets of projections are often prepared at different times. The Administration's projections must be prepared months ahead of the release of the budget. Differences in the Administration's and CBO's near-term forecasts, therefore, can be due to the availability of more recent data to CBO; a direct comparison with the CBO near-term projections is not always meaningful. Timing differences are much less likely to play an important role in any differences in outyear projections, however.

Table 1-2 presents a summary comparison of the current CBO and Administration projections.

- Real GDP: The projections of real GDP growth are quite similar. The Administration projects that real GDP will grow at an average annual rate of 2.2 percent from 1998 through 2003; CBO projects a 2.1 percent rate.
- Inflation: Both the Administration and CBO expect inflation to continue at a slow, steady rate over the next several years. For the chain-weighted GDP price index, CBO assumes that inflation will average 2.3 percent a year over the 1998-2003 period while the Administration projects a 2.1 percent average for that span; CBO expects the annual rate of change in the CPI to average 0.4 percentage point higher than the Administration forecast over the same period.
- Unemployment: CBO projects unemployment to rise from its fourth quarter average of 4.7 percent to 5.9 percent by 2003, slightly above its estimate of the NAIRU. The Administration believes unemployment will average its estimate of the NAIRU, 5.4 percent, during 2001 to 2003.
- Interest rates: Both the Administration and CBO expect a similar decline to a level of 4.7 percent by the year 2001 for the 91-day bill rate. The Administration, however, projects a slightly greater (0.2 percentage point) decline in long-term rates than does CBO.
- Income distribution: Both CBO and the Administration project a decline in the profits share of GDP, although both also expect a shift of income from personal interest income to corporate profits. In part because the Administration assumes a slightly larger decline in long-term interest rates than does CBO, it projects less of a decline in the profits share. CBO projects a slightly higher wage and salary share of GDP than does the Ad-

**Table 1-2. COMPARISON OF ECONOMIC ASSUMPTIONS**  
(Calendar years; percent)

	Projections					
	1998	1999	2000	2001	2002	2003
<b>Real GDP (chain-weighted):<sup>1</sup></b>						
CBO January .....	2.3	1.9	1.9	2.0	2.2	2.3
1999 Budget .....	2.0	2.0	2.0	2.3	2.4	2.4
<b>Chain-weighted GDP Price Index:<sup>1</sup></b>						
CBO January .....	2.1	2.2	2.4	2.5	2.4	2.5
1999 Budget .....	2.0	2.1	2.2	2.2	2.2	2.2
<b>Consumer Price Index (all-urban):<sup>1</sup></b>						
CBO January .....	2.4	2.5	2.7	2.8	2.8	2.8
1999 Budget .....	2.2	2.2	2.3	2.3	2.3	2.3
<b>Unemployment rate:<sup>2</sup></b>						
CBO January .....	4.8	5.1	5.4	5.6	5.8	5.9
1999 Budget .....	4.9	5.1	5.3	5.4	5.4	5.4
<b>Interest rates:<sup>2</sup></b>						
<b>91-day Treasury bills:</b>						
CBO January .....	5.3	5.2	4.8	4.7	4.7	4.7
1999 Budget .....	5.0	4.9	4.8	4.7	4.7	4.7
<b>10-year Treasury notes:</b>						
CBO January .....	6.0	6.1	6.0	5.9	5.9	5.9
1999 Budget .....	5.9	5.8	5.8	5.7	5.7	5.7
<b>Taxable income<sup>3</sup> (share of GDP):</b>						
CBO January .....	79.0	78.3	77.7	77.3	77.0	76.7
1999 Budget .....	79.1	78.9	78.6	78.3	78.0	77.8

<sup>1</sup>Percent change, fourth quarter over fourth quarter.

<sup>2</sup>Annual averages, percent.

<sup>3</sup>Taxable personal income plus corporate profits before tax.

ministration. Overall, CBO's taxable income share of GDP declines from 79.1 percent for 1997 to 76.7 percent for 2003; the Administration's assumptions also show a decline, but only to 77.8 percent for 2003. Both forecasts thus recognize that the 1997 share is historically high, in large measure reflecting the discrepancy in recent GDP and GDI growth rates discussed earlier in this Chapter.

CBO has a good economic forecasting record. During much of the 1980s, its forecasts were more accurate than those of the Administrations then in office. The record over the last five years, however, has been more mixed. Since it took office in 1993, this Administration has placed high priority on careful and prudent economic forecasts. Economic performance in the last four years has been better than assumed by the Administration, while exceeding CBO's assumptions by an even wider margin. The Administration's cautious approach to forecasting is one of the reasons that actual deficits have consistently come in below expectations since 1993.

The differences in economic assumptions between the Administration and CBO have been small—smaller than they were under previous Administrations, and well within the usual range of error in such projections. CBO's assumptions and those used in this Budget are unusually close, and both are similar to private sector forecasts such as the *Blue Chip* consensus. However, even small differences in economic assumptions can yield sizable differences in budget projections when extended over a long planning horizon. Given the positive

economic outlook in the United States—steady growth, robust job creation, and low inflation and interest rates with none of the excesses that foreshadow an economic downturn—there are sound reasons for believing that the Administration's projection is likely to be close to the actual outcome.

### Impact of Changes in the Economic Assumptions

The economic assumptions underlying this budget are similar to those of last year. Both budgets anticipated that achieving a balanced budget would result in a significant decline in interest rates that would serve to extend the economic expansion at a moderate pace, while helping to maintain low, steady rates of inflation and unemployment. A shift to a balanced budget and the ensuing lower interest rates were also expected to shift income from interest to profits. This would have favorable effects on budget receipts and the deficit, because profits are on average taxed more heavily than interest income.

The changes in the economic assumptions since last year's budget have been relatively modest, as Table 1-3 shows. The differences are primarily the result of more favorable economic experience in 1997 than was anticipated. Economic growth was stronger than expected in 1997, while inflation and unemployment were lower. Because of this favorable experience, the projected annual averages for the unemployment and inflation rates have been reduced slightly. At the same time, interest rates are again assumed to decline in this

## 1. ECONOMIC ASSUMPTIONS

**Table 1-3. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 1998 AND 1999 BUDGETS**  
(Calendar years; dollar amounts in billions)

	1997	1998	1999	2000	2001	2002	2003
Nominal GDP:							
1998 Budget assumptions <sup>1</sup> .....	8,005	8,379	8,786	9,226	9,686	10,167	10,674
1999 Budget assumptions .....	8,080	8,430	8,772	9,142	9,547	9,993	10,454
Real GDP (percent change): <sup>2</sup>							
1998 Budget assumptions .....	2.0	2.0	2.3	2.3	2.3	2.3	2.3
1999 Budget assumptions .....	3.6	2.0	2.0	2.0	2.3	2.4	2.4
GDP price index (percent change): <sup>2</sup>							
1998 Budget assumptions .....	2.5	2.6	2.6	2.6	2.6	2.6	2.6
1999 Budget assumptions .....	1.9	2.0	2.1	2.2	2.2	2.2	2.2
Consumer Price Index (percent change): <sup>2</sup>							
1998 Budget assumptions .....	2.6	2.7	2.7	2.7	2.7	2.7	2.7
1999 Budget assumptions .....	2.4	2.1	2.2	2.3	2.3	2.3	2.3
Civilian unemployment rate (percent): <sup>3</sup>							
1998 Budget assumptions .....	5.3	5.5	5.5	5.5	5.5	5.5	5.5
1999 Budget assumptions .....	5.0	4.9	5.1	5.3	5.4	5.4	5.4
91-day Treasury bill rate (percent): <sup>3</sup>							
1998 Budget assumptions .....	5.0	4.7	4.4	4.2	4.0	4.0	4.0
1999 Budget assumptions .....	5.0	5.0	4.9	4.8	4.7	4.7	4.7
10-year Treasury note rate (percent): <sup>3</sup>							
1998 Budget assumptions .....	6.1	5.9	5.5	5.3	5.1	5.1	5.1
1999 Budget assumptions .....	6.4	5.9	5.8	5.8	5.7	5.7	5.7

<sup>1</sup>Adjusted for July 1997 NIPA revisions.<sup>2</sup>Fourth quarter-to-fourth quarter.<sup>3</sup>Calendar year average.

budget, but the decline is smaller in percentage points, in part because the deficit has already fallen much faster than expected.

The net effects on the budget of these modifications in the economic outlook are shown in Table 1-4. The largest effects come from higher receipts during 1998–2002 due to higher projected levels of taxable in-

comes. In all years through 2003, there are higher outlays for interest due to the smaller expected decline in interest rates, offset by lower outlays for cost-of-living adjustments to Federal programs due to lower rates of inflation. A more favorable economic outlook since last year improves the budget balance by \$38 billion for 1998 and by \$15 billion in 2003.

**Table 1-4. EFFECTS ON THE BUDGET OF CHANGES IN ECONOMIC ASSUMPTIONS SINCE LAST YEAR**  
(In billions of dollars)

	1998	1999	2000	2001	2002	2003
Budget totals under 1998 Budget economic assumptions and 1999 Budget policies:						
Receipts .....	1,630.0	1,714.3	1,775.4	1,855.1	1,947.3	2,032.4
Outlays .....	1,677.9	1,745.0	1,796.8	1,846.8	1,874.5	1,964.5
Deficit (-) or surplus .....	-47.9	-30.7	-21.4	8.3	72.8	67.8
Changes due to economic assumptions:						
Receipts .....	27.9	28.4	18.2	7.5	2.0	-4.2
Outlays:						
Inflation .....	-4.4	-8.1	-12.4	-16.8	-20.8	-25.3
Unemployment .....	-5.4	-4.2	-2.4	-1.0	-1.0	-1.1
Interest rates .....	0.7	3.4	7.3	10.6	12.7	13.7
Interest on changes in borrowing .....	-1.0	-2.8	-4.2	-5.1	-5.8	-6.5
Total, outlay decreases (net) .....	-10.1	-11.8	-11.7	-12.4	-14.9	-19.2
Increase in surplus or reduction in deficit .....	38.0	40.2	29.9	19.9	17.0	15.0
Budget totals under 1999 Budget economic assumptions and policies:						
Receipts .....	1,657.9	1,742.7	1,793.6	1,862.6	1,949.3	2,028.2
Outlays .....	1,667.8	1,733.2	1,785.0	1,834.4	1,859.6	1,945.4
Deficit (-) or surplus .....	-10.0	9.5	8.5	28.2	89.7	82.8

### Structural vs. Cyclical Balance

When the economy is operating above potential as it is currently estimated to be, receipts are higher than they would be if resources were less fully employed, and outlays for unemployment-sensitive programs (such as unemployment compensation and food stamps) are lower. As a result, the deficit is smaller or the surplus is larger than it would be if unemployment were at NAIRU. The portion of the surplus or deficit that can be traced to such factors is called the cyclical surplus or deficit. The remainder, the portion that would remain with unemployment at NAIRU (consistent with a 5.4 percent unemployment rate), is called the structural surplus or deficit.

Changes in the structural balance give a better picture of the impact of budget policy on the economy than does the unadjusted budget balance. The level of the structural balance also gives a clearer picture of the stance of fiscal policy, because this part of the surplus or deficit will persist even when the economy returns to normal operating levels.

In the early 1990's, large swings in net outlays for deposit insurance (the S&L bailouts) had substantial impacts on deficits, but had little concurrent impact on economic performance. It therefore became customary to remove deposit insurance outlays as well as the cyclical component of the surplus or deficit from the actual surplus or deficit to compute the adjusted structural balance. This is shown in Table 1-5.

Because unemployment is projected to be quite close to NAIRU over the forecast horizon, the cyclical component of the surplus is small. For the period 1997 through 2000, the unemployment rate is slightly below the estimated NAIRU of 5.4 percent, resulting in cyclical surpluses. Deposit insurance net outlays are relatively small and do not change greatly from year to year. The adjusted structural surplus or deficits in this budget display much the same pattern of year-to-year changes as the actual deficits. The most significant point illustrated by this table is the fact that of the \$268 billion reduction in the actual budget deficit between 1992 and 1997 (from \$290 billion to \$22 billion), 35 percent (\$94 billion) resulted from cyclical improvement in the economy. The rest of the reduction stemmed primarily from policy actions—mainly those in the Omnibus Budget Reconciliation Act of 1993, which reversed a projected continued steep rise in the

deficit and set the stage for the remarkable cyclical improvement that has occurred.

### Sensitivity of the Budget to Economic Assumptions

Both receipts and outlays are affected by changes in economic conditions. This sensitivity seriously complicates budget planning, because errors in economic assumptions lead to errors in the budget projections. It is therefore useful to examine the implications of alternative economic assumptions.

Many of the budgetary effects of changes in economic assumptions are fairly predictable, and a set of rules of thumb embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the surplus or deficit.

Economic variables that affect the budget do not usually change independently of one another. Output and employment tend to move together in the short run: a higher rate of real GDP growth is generally associated with a declining rate of unemployment, while weak or negative growth is usually accompanied by rising unemployment. In the long run, however, changes in the average rate of growth of real GDP are mainly due to changes in the rates of growth of productivity and labor supply, and are not necessarily associated with changes in the average rate of unemployment. Inflation and interest rates are also closely interrelated: a higher expected rate of inflation increases interest rates, while lower expected inflation reduces rates.

Changes in real GDP growth or inflation have a much greater cumulative effect on the budget over time if they are sustained for several years than if they last for only one year.

Highlights of the budget effects of the above rules of thumb are shown in Table 1-6.

If real GDP growth is lower by one percentage point in calendar year 1998 only and the unemployment rate rises by one-half percentage point, the fiscal 1998 deficit would increase by \$9.1 billion; receipts in 1998 would be lower by about \$7.5 billion, and outlays would be higher by about \$1.5 billion, primarily for unemployment-sensitive programs. In 1999, the receipts shortfall would grow further to about \$16.2 billion, and outlays would increase by about \$5.5 billion relative to the base, even though the growth rate in calendar 1999 equals the rate originally assumed. This is because the level of real (and nominal) GDP and taxable incomes would be permanently lower and unemployment higher.

Table 1-5. ADJUSTED STRUCTURAL BALANCE

(In billions of dollars)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Unadjusted deficit (-) or surplus .....	-290.4	-255.0	-203.1	-163.9	-107.4	-21.9	-10.0	9.5	8.5	28.2	89.7	82.8
Cyclical component .....	-72.5	-57.2	-27.8	-8.4	-4.2	21.4	30.1	19.6	9.0	.....	.....	.....
Structural deficit (-) or surplus .....	-217.9	-197.8	-175.3	-155.5	-103.2	-43.4	-40.1	-10.0	-0.4	28.2	89.8	82.8
Deposit insurance outlays .....	-2.3	-28.0	-7.6	-17.9	-8.4	-14.4	-4.5	-4.5	-1.9	-1.4	-1.2	-0.3
Adjusted structural deficit (-) or surplus .....	-220.3	-225.8	-182.9	-173.4	-111.6	-57.8	-44.6	-14.5	-2.3	26.7	88.6	82.5

## 1. ECONOMIC ASSUMPTIONS

The budget effects (including growing interest costs associated with higher deficits or smaller surpluses) would continue to grow slightly in later years.

The budget effects are much larger if the real growth rate is assumed to be one percentage point less in each year (1998–2003) and the unemployment rate to rise one-half percentage point in each year. With these assumptions, the levels of real and nominal GDP would be below the base case by a growing percentage. The budget balance would be worsened by \$153.3 billion relative to the base case by 2003.

The effects of slower productivity growth are shown in a third example, where real growth is one percentage point lower per year while the unemployment rate is unchanged. In this case, the estimated budget effects mount steadily over the years, but more slowly, resulting in a \$130.2 billion worsening of the budget balance by 2003.

The effects of an abrupt and sustained one percentage point increase in the level of the unemployment rate (due, say, to a sudden rise in labor force participation relative to the base case), with no change in the level or growth rate of real GDP, are shown in a fourth example. In this case, unemployment-sensitive outlays would increase by amounts rising from \$6.5 billion in 1998 to \$12.4 billion in 2003. The effects on the surplus would be smaller (a \$7.9 billion reduction in 2003), however, because under current law, federal unemployment tax collections would gradually rise during a period of sustained higher unemployment rates.

Joint changes in interest rates and inflation have a smaller effect on the deficit than equal percentage point changes in real GDP growth, because their effects on receipts and outlays are substantially offsetting. An example is the effect of a one percentage point higher rate of inflation and one percentage point higher interest rates during calendar year 1998 only. In subsequent years, the price level and nominal GDP would be one

percent higher than in the base case, but interest rates are assumed to return to their base levels. Outlays for 1998 rise by \$5.8 billion and receipts by \$8.7 billion, for a decrease of \$2.8 billion in the 1998 deficit. In 1999, outlays would be above the base by \$14.2 billion, due in part to lagged cost-of-living adjustments; receipts would rise \$17.6 billion above the base, however, resulting in a \$3.4 billion improvement in the budget balance. In subsequent years, the amounts added to receipts would continue to be larger than the additions to outlays.

If the rate of inflation and the level of interest rates are higher by one percentage point in all years, the price level and nominal GDP would rise by a cumulatively growing percentage above their base levels. In this case, the effects on receipts and outlays mount steadily in successive years, adding \$62.6 billion to outlays and \$106.5 billion to receipts in 2003, for a net increase in the surplus of \$43.9 billion.

The table also shows the interest rate and the inflation effects separately, and rules of thumb for the added interest cost associated with changes in the budget surplus or deficit (increased or reduced borrowing). The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table. The impact of a one percentage point lower rate of inflation or higher real growth would have about the same magnitude as the effects shown in the table, but with the opposite sign.

These rules of thumb are computed while holding the income share composition of GDP constant. Because different income components are subject to different taxes and tax rates, estimates of total receipts can be affected significantly by changing income shares. However, the relationships between changes in income shares and changes in growth, inflation, and interest rates are too complex to be reduced to simple rules.

**Table 1-6. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS**  
(In billions of dollars)

Budget effect	1998	1999	2000	2001	2002	2003
<b>Real Growth and Employment</b>						
<b>Budgetary effects of 1 percent lower real GDP growth:</b>						
For calendar year 1998 only: <sup>1</sup>						
Receipts .....	-7.5	-16.2	-18.7	-19.0	-19.5	-20.1
Outlays .....	1.5	5.5	6.8	8.2	9.8	11.6
Decrease in surplus (-) .....	-9.1	-21.8	-25.5	-27.2	-29.3	-31.7
Sustained during 1998–2003: <sup>1</sup>						
Receipts .....	-7.5	-24.0	-43.4	-63.6	-85.2	-108.0
Outlays .....	1.5	7.1	14.0	22.3	32.6	45.3
Decrease in surplus (-) .....	-9.1	-31.1	-57.4	-86.0	-117.8	-153.3
Sustained during 1998–2003, with no change in unemployment:						
Receipts .....	-7.5	-24.3	-44.5	-66.1	-89.4	-114.4
Outlays .....	0.2	1.1	2.9	5.9	10.1	15.8
Decrease in surplus (-) .....	-7.7	-25.4	-47.4	-71.9	-99.5	-130.2
<b>Budgetary effects of 1 percent higher unemployment rate:</b>						
Sustained during 1998–2003, with no change in real GDP:						
Receipts .....	*	0.9	2.2	3.2	3.9	4.5
Outlays .....	6.5	9.4	10.1	10.7	11.4	12.4
Decrease in surplus (-) .....	-6.5	-8.5	-7.9	-7.5	-7.5	-7.9
<b>Inflation and Interest Rates</b>						
<b>Budgetary effects of 1 percentage point higher rate of:</b>						
Inflation and interest rates during calendar year 1998 only:						
Receipts .....	8.7	17.6	17.5	16.2	17.0	17.9
Outlays .....	5.8	14.2	11.9	11.5	11.1	10.5
Increase in surplus (+) .....	2.8	3.4	5.6	4.7	5.9	7.4
Inflation and interest rates, sustained during 1998–2003:						
Receipts .....	8.7	26.7	45.4	63.8	84.1	106.5
Outlays .....	5.9	20.7	32.8	44.0	53.6	62.6
Increase in surplus (+) .....	2.8	6.0	12.7	19.8	30.5	43.9
Interest rates only, sustained during 1998–2003:						
Receipts .....	1.2	2.9	3.7	4.0	4.3	4.6
Outlays .....	5.5	16.0	21.7	25.1	27.5	29.1
Decrease in surplus (-) .....	-4.3	-13.0	-17.9	-21.2	-23.2	-24.4
Inflation only, sustained during 1998–2003:						
Receipts .....	7.5	23.8	41.7	59.8	79.8	101.9
Outlays .....	0.4	4.7	11.1	18.9	26.1	33.5
Increase in surplus (+) .....	7.1	19.0	30.6	41.0	53.7	68.3
<b>Interest Cost of Higher Federal Borrowing</b>						
Outlay effect of \$100 billion additional borrowing during 1998 .....	2.9	5.5	5.6	5.8	6.0	6.3

<sup>1</sup>\$50 million or less.<sup>1</sup>The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.

## 2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

### Introduction

A balanced assessment of the Government's financial condition requires several alternative perspectives. This chapter presents a framework for such analysis.

The usual business accounting techniques do not work well for the Government. A full evaluation of the Government's financial condition must consider a broader range of information than would usually be shown on a business balance sheet, and no one of the tables in this chapter should be treated as if it were "the balance sheet" of the Federal Government. Rather, this chapter taken as a whole provides an overview of the Government's financial resources—the current and future claims on them, and what the taxpayer gets in exchange for this commitment of resources. In this way, the presentation that follows offers the kind of information that a financial analyst would expect to find on a balance sheet, taking into account the Government's unique task and circumstances.

Because of the differences between Government and business, and because there are serious limitations in the available data, this chapter's findings should be interpreted with considerable caution. The conclusions are tentative and subject to future revision.

The presentation consists of three parts:

- The first part reports on what the Federal Government owns and what it owes. Table 2-1 summarizes this information. The assets and liabilities in this table are a useful starting point for a financial analysis of the Federal Government, but they are only a partial reflection of the full range of Government resources and responsibilities. The assets include only items that are actually owned by the Government; but the Government can also rely on taxes and other means to meet future obligations. The liabilities in the table are limited to the binding commitments resulting from prior Government actions; but the Government's financial responsibilities are considerably broader than this.
- The second part presents possible future paths for the Federal budget extending well into the next century, including an extension of the proposals in the 1999 Budget. The information is summarized in Table 2-2. The analysis in this part offers the clearest indication of the long-run financial burdens that the Government faces, and the

resources that will be available to meet them. Some future claims on the Government receive special emphasis because of their importance to individuals' retirement plans. Table 2-3 summarizes the condition of the social security and Medicare trust funds and how that condition has changed since 1996.

- The third part of the presentation features information on broader economic and social conditions which the Government affects in some degree by its actions. Table 2-4 is a summary of national wealth highlighting the different categories of Federal investment that have contributed to wealth. Table 2-5 is a sample of economic and social indicators. No single statistic can capture all the ramifications of Federal actions, so a set of indicators is needed to encompass the full range of Government activities and interests. Table 2-5 is intended to illustrate what might be learned from a more complete set of indicators.

### Relationship with FASAB Objectives

The framework presented here meets the stewardship objective<sup>1</sup> for Federal financial reporting recommended by the Federal Accounting Standards Advisory Board and adopted for use by the Federal Government in September 1993.

Federal financial reporting should assist report users in assessing the impact on the country of the Government's operations and investments for the period and how, as a result, the Government's and the Nation's financial conditions have changed and may change in the future. Federal financial reporting should provide information that helps the reader to determine:

- 3a. Whether the Government's financial position improved or deteriorated over the period.
- 3b. Whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due.
- 3c. Whether Government operations have contributed to the Nation's current and future well-being.

The experimental presentation here explores one possible approach for meeting this objective at the Government-wide level.

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<sup>1</sup> *Objectives of Federal Financial Reporting*, Statement of Federal Financial Accounting Concepts Number 1, September 2, 1993. The other objectives relate to budgetary integrity, operating performance, and systems and controls.

## QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"

### **1. According to Table 2-1, the Government's liabilities exceed its assets. No business could operate that way. Why can't the Government run like a business?**

Because the Federal Government is not a business. It has fundamentally different objectives, and so must operate in different ways.

The primary goal of every business is to earn a profit. But in our free market system, the Federal Government leaves almost all activities at which a profit could be earned to the private sector. In fact, the vast bulk of the Federal Government's operations are such that it would be difficult or impossible to charge prices for them—let alone prices that would cover expenses. The Government undertakes these activities not to improve its balance sheet, but to benefit the Nation—its people and businesses—to foster not only monetary but also nonmonetary values. No business would—or should—sacrifice its own balance sheet to bolster that of the rest of the country.

To illustrate, one of the Federal Government's most valuable assets is its holdings of gold. The price of gold generally fluctuates counter to the state of the economy—if inflation is rapid and out of control, the price of gold rises; but when inflation slows and steadies, the price of gold falls. One source of the deterioration of the Federal Government's balance sheet since the 1980s has been a decline in the price of gold, which has reduced the value of the Government's gold holdings. But that price decline—and the resulting deterioration of the Government's balance sheet—was a direct consequence of Federal policies to reduce inflation, for the benefit of the people and businesses of the United States. No business would undertake such a policy of worsening its own balance sheet.

Similarly, the Federal Government invests in education and research. The Government earns no direct return from these investments; but the Nation and its people are made richer. A business's motives for investment are quite different; business invests to earn a profit for itself, not others.

Because the Federal Government's objectives are different, its balance sheet behaves differently, and should be interpreted differently.

### **2. But doesn't Table 2-1 say that the Government is insolvent?**

No. Just as the Federal Government's responsibilities are of a different nature than those of a private business, so are its resources. Its solvency must be evaluated in different terms.

What the table shows is that those Federal obligations that are most comparable to the liabilities of a business corporation exceed the estimated value of the assets the Federal Government actually owns. However, the Government has access to other resources through its sovereign powers, which include taxation, seigniorage and other means. These powers give the Government the ability to meet its present obligations and those it will incur through future operations.

The financial markets clearly recognize this reality. The Federal Government's implicit credit rating is the best in the United States; lenders are willing to lend it money at interest rates substantially below those charged to private borrowers. This would not be true if the Government were really insolvent. In countries where governments totter on the brink of true insolvency, lenders are either unwilling to lend them money, or do so only in return for a substantial interest premium.

**QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued**

However, the Federal Government's balance sheet was clearly worsened by the budget policies of the 1980s. Under President Clinton, the deterioration in the balance sheet has been halted, and with the recently enacted agreement to balance the budget, the excess of Government liabilities over assets should begin to shrink.

**3. *The Government does not comply with the accounting requirements imposed on private businesses. Why can't the government keep a proper set of books?***

Because the Government is not a business, and its primary goal is not to earn profits and to enhance its own wealth, accounting standards designed to illuminate how much a business earns and how much equity it has would be misleading, and would not provide useful information. In recent years, the Federal Accounting Standards Advisory Board has developed, and the Federal Government has adopted, an accounting framework that reflects the Government's functions and answers the questions for which it should be accountable. This framework addresses the Government's budgetary integrity, operating performance, stewardship, and systems and controls. The Board has also developed, and the Government has adopted, a full set of accounting standards. Federal agencies are issuing audited financial reports that follow these standards; a Government-wide consolidated financial report for fiscal year 1997 following these standards is scheduled to be issued later this year.

This chapter addresses the "stewardship objective"—assessing the interrelated financial condition of the Federal Government and of the Nation. The data in this chapter are intended to develop a fuller understanding of the trade-offs and connections between making the Federal Government "better off" and making the Nation "better off." There is no "bottom line" for the Government comparable to the net worth of a business corporation. Some analysts may find the absence of a bottom line to be frustrating. But pretending that there is such a number—when there clearly is not—does not advance the understanding of Government finances.

**4. *Why isn't social security shown as a liability in Table 2-1?***

Social security benefits are a political and moral responsibility of the Federal Government, but they are not a liability. In the past, the Government has unilaterally decreased as well as increased benefits, and the Social Security Advisory Council has recently suggested further reforms that would change benefits, if enacted by Congress. When the amount in question can be changed unilaterally, it is not ordinarily considered a liability.

There are a number of other Federal programs that are quite similar in their promises to social security, including Medicare and veterans benefits, to name only two. These programs are not usually considered to be liabilities. Treating social security differently from these programs would be hard to justify. There is no bright line dividing social security from Government's other income maintenance programs.

A similar problem arises on the tax side. If social security benefits were to be treated as liabilities, logic would suggest that the earmarked social security payroll tax receipts that finance those benefits ought to be considered assets. However, no other tax receipts are counted as assets, and drawing a line between social security taxes and other taxes would be questionable.

**QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued****5. It is all very well to balance the budget, but can this be a permanent solution? When the baby-boom generation retires, won't the deficit return larger and meaner than ever before?**

The aging of the U.S. population, which will become dramatically evident when the baby-boomers retire, poses serious long-term problems for the Federal budget and its major entitlement programs. However, balancing the budget will leave the country much better prepared to address these problems.

Once the budget comes into balance, it will be possible to preserve that balance for some time to come (under an extension of the economic and technical assumptions used for this budget). Far from being an exercise in futility, balancing the budget now is one of the key steps towards keeping it in balance when the baby-boomers retire.

The second part of this chapter and the charts that accompany it show how the budget is likely to fare under various possible alternative scenarios.

**6. Would it be sensible to permit a deficit so long as it was no larger than the amount spent on Federal investments?**

Gross Federal investment in physical capital was \$114 billion in 1997. This was considerably larger than the 1997 Federal deficit, but that does not necessarily mean that the 1997 deficit was "too small."

First of all, the Government consumes capital each year in the process of providing goods and services to the public. The rationale for using Federal borrowing to finance investment applies only to net investment, after depreciation is subtracted, because only net investment augments the assets available to offset the increase in debt resulting from the borrowing. As discussed in Chapter 6 of this volume, net investment in physical capital owned by the Federal Government is estimated to have been negative in 1997 and to be negative again in 1998 and 1999. Thus, even more deficit reduction would be required by this proposed criterion than is required to balance the present budget. The Federal Government also funds substantial amounts of physical capital that it does not own, such as highways and research facilities, and it funds investment in intangible "capital" such as education or the conduct of research and development. A private business would never borrow to spend on assets that would be owned by someone else. However, such spending is a principal function of Government. Chapter 6 shows that when these investments are also included, net investment is estimated to be positive in 1999, but by only a moderate amount.

There is another hitch in the logic of borrowing to invest. Businesses expect investments to earn a profit from which to repay the financing costs. In contrast, the Federal Government does not generally expect to receive a direct payoff (in the form of higher tax receipts) from its investments, whether or not it owns them. In this sense, Government investments are no different from other Government expenditures, and the fact that they provide services over a longer period is no justification for excluding them when calculating the deficit.

Finally, the Federal Government has responsibilities for supporting the overall financial and economic well-being of the Nation. In this broader context, it might want to manage its fiscal policy so as to augment private saving and investment by paying for its own investments from current revenues, instead of borrowing in the credit market and crowding out private investment. Considerations other than the size of Federal investment need to be weighed in choosing the appropriate level of the surplus or deficit.

### What Can Be Learned from a Balance Sheet Approach

The budget is an essential tool for allocating resources within the Federal Government and between the public and private sectors. The standard budget presentation, however, with its focus on annual outlays, receipts, and the deficit, does not provide all the information needed for a full analysis of the Government's financial and investment decisions. Information about Federal assets and liabilities, and budget projections beyond the usual forecast horizon are needed for such analysis. We must also examine the effects on society and the economy of Government policies to evaluate how well the Federal Government is performing. A business may ultimately be judged by the bottom line in its balance sheet, but for the National Government, the ultimate test is how its actions affect the country. The data needed to judge its performance go beyond a simple measure of net assets. Consider, for example, Federal investments in education or infrastructure, which generate returns that flow mainly to households, private businesses or other levels of government, rather than back to the Federal Treasury. From the standpoint of the Federal Government's "bottom line," these investments might appear to be unnecessary or even wasteful; but they make a real contribution to the economy and to people's lives. A framework for evaluating Federal finances needs to take Federal investments into account, even when the return they earn accrues to someone other than the Federal Government.

A good starting point to evaluate the Government's finances is to examine its assets and liabilities. An illustrative tabulation of net assets is presented below in Table 2-1, based on data from a variety of public and private sources. It has sometimes been suggested that the Federal Government's assets, if fully accounted for, would exceed its debts. Table 2-1 clearly shows that this is not correct. The Federal Government's assets are less than its debts; the sharp increase in deficits in the 1980s caused Government debts to increase far more than Government assets.

But that is not the end of the story. The Federal Government has resources that go beyond the assets that normally appear on a conventional balance sheet—including the Government's sovereign powers to tax, regulate commerce, and set monetary policy. However, these powers call for special treatment in financial analysis. The best way to incorporate them is to make a long-run projection of the Federal budget. The budget provides a comprehensive measure of the Government's annual cash flows, and projecting it forward shows how the Government's sovereign powers are expected to generate cash flows in the future.

On the other side of the ledger are the Government's binding obligations—such as Treasury debt, and the present discounted value of Federal obligations to pay pension benefits to Government retirees and current

employees when they retire. These obligations have counterparts in the business world, and would be expected to appear on a business balance sheet. Accrued obligations for government insurance policies and the estimated present value of failed loan guarantees and deposit insurance claims are also analogous to private liabilities, and are included with the other Government liabilities. Taken together, these formal obligations are only a subset of the Government's financial responsibilities.

The Government has established a broad range of programs that dispense cash and other benefits to individual recipients. The Government is not constitutionally obligated to continue payments under these programs; the benefits can be modified or even ended at any time, subject to the decisions of the elected representatives in Congress. Many such changes occurred in last year's Balanced Budget Agreement. Allowing for such changes, however, it is likely that many of these programs will remain Federal obligations in some form for the foreseeable future. Again, the best way to see how future responsibilities line up with future resources is to project the Federal budget forward far enough in time to capture the long-run effects of current and past decisions. Projections of this sort are presented below.

The budget, even when projected far into the future, does not show whether the public is receiving value for its tax dollars. Information on that point requires performance measures for government programs supplemented by appropriate information about conditions in the U.S. economy and society. Some such data are currently available, but far more need to be developed to obtain a full picture. Examples of what might be done are also shown below.

The presentation that follows consists of a series of tables and charts. All of them taken together function as a Federal balance sheet. The schematic diagram, Chart 2-1, shows how they fit together. The tables and charts should be viewed as an ensemble, the main elements of which can be grouped together in two broad categories—assets/resources and liabilities/responsibilities.

- Reading down the left-hand side of the diagram shows the range of Federal resources, including assets the Government owns, tax receipts it can expect to collect, and national wealth that provides the base for Government revenues.
- Reading down the right-hand side reveals the full range of Federal obligations and responsibilities, beginning with Government's acknowledged liabilities based on past actions, such as the debt held by the public, and going on to include future budget outlays. This column ends with a set of indicators highlighting areas where Government activity might require adjustment.

## Chart 2-1. A BALANCE SHEET PRESENTATION FOR THE FEDERAL GOVERNMENT

ASSETS/RESOURCES	LIABILITIES/RESPONSIBILITIES
<p><b>Federal Assets</b></p> <p>Financial Assets Gold and Foreign Exchange Other Monetary Assets Mortgages and Other Loans Less Expected Loan Losses Other Financial Assets</p> <p>Physical Assets Fixed Reproducible Capital Defense Nondefense Inventories Non-reproducible Capital Land Mineral Rights</p>	<p style="text-align: center;"><b>Federal Governmental Assets and Liabilities (Table 2-1)</b></p>
<p><b>Resources/Receipts</b></p> <p>Projected Receipts Addendum: Real GDP Projections</p>	<p style="text-align: center;"><b>Long-Run Federal Budget Projections (Table 2-2)</b></p> <p style="text-align: center;"><b>Change in Trust Fund Balances (Table 2-3)</b></p>
<p><b>National Assets/Resources</b></p> <p>Federally Owned Physical Assets State &amp; Local Physical Assets Federal Contribution Privately Owned Physical Assets Education Capital Federal Contribution R&amp;D Capital Federal Contribution</p>	<p style="text-align: center;"><b>National Wealth (Table 2-4)</b></p> <p style="text-align: center;"><b>Social Indicators (Table 2-5)</b></p>
	<p><b>Federal Liabilities</b></p> <p>Financial Liabilities Currency and Bank Reserves Debt Held by the Public Miscellaneous Guarantees and Insurance Deposit Insurance Pension Benefit Guarantees Loan Guarantees Other Insurance Federal Pension Liabilities</p> <p style="text-align: center;">Net Balance</p> <p><b>Responsibilities/Outlays</b></p> <p>Discretionary Outlays Mandatory Outlays Social Security Health Programs Other Programs Net Interest Deficit</p> <p><b>National Needs/Conditions</b></p> <p>Indicators of economic, social, educational, and environmental conditions to be used as a guide to Government investment and management.</p>

## PART I—THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2–1 summarizes what the Government owes as a result of its past operations along with the value of what it owns, for a number of years beginning in 1960. The values of assets and liabilities are measured in terms of constant FY 1997 dollars. For most of this period, Government liabilities have exceeded the value of assets, but until the early 1980s the disparity was relatively small, and it was growing slowly (see chart 2–2).

In the late 1970s, a speculative run-up in the prices of oil, gold, and other real assets temporarily boosted the value of Federal holdings, but since then those

prices have declined.<sup>2</sup> Currently, the total real value of Federal assets is estimated to be only about 14 percent greater than it was in 1960. Meanwhile, Federal liabilities have increased by 170 percent in real terms. The sharp decline in the Federal net asset position was principally due to large Federal budget deficits along with a drop in asset values. Currently, the net excess of liabilities over assets is about \$3.3 trillion, or \$12,000 per capita.

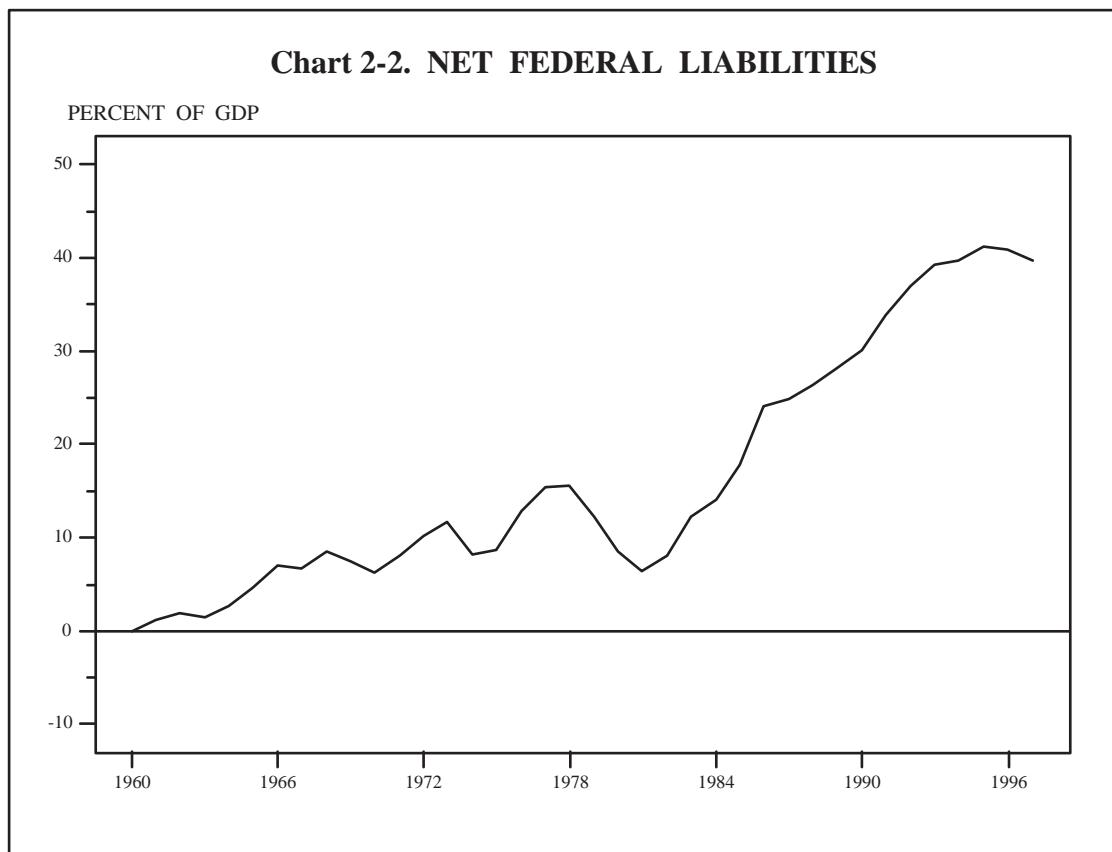
<sup>2</sup>This temporary improvement highlights the importance of the other tables in this presentation. What is good for the Federal Government as an asset holder is not necessarily favorable to the economy. The decline in inflation in the early 1980s reversed the speculative runup in gold and other commodity prices. This reduced the balance of Federal net assets, but it was good for the economy and the nation as a whole.

**Table 2–1 GOVERNMENT ASSETS AND LIABILITIES \***

(As of the end of the fiscal year, in billions of 1997 dollars)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
<b>ASSETS</b>														
Financial Assets:														
Gold and Foreign Exchange	103	72	61	136	336	161	202	181	178	178	178	184	168	142
Other Monetary Assets .....	39	55	33	15	39	25	32	23	41	41	32	32	44	44
Mortgages and Other Loans	127	163	211	211	290	356	289	293	270	240	228	201	176	160
less Expected Loan Losses	-1	-3	-4	-9	-17	-17	-19	-21	-23	-25	-27	-23	-22	-34
Other Financial Assets .....	61	81	65	66	82	106	159	190	222	201	188	185	185	182
Subtotal .....	329	370	365	419	731	631	663	666	688	636	599	579	551	494
Physical Assets:														
Fixed Reproducible Capital:														
Defense .....	931	911	886	723	627	788	817	831	828	815	803	777	754	732
Nondefense .....	138	212	249	273	296	319	337	340	342	343	346	351	349	357
Inventories .....	264	228	212	188	230	263	229	208	202	186	177	158	140	127
Nonreproducible Capital:														
Land .....	91	126	157	243	309	332	328	299	267	251	247	245	243	244
Mineral Rights .....	329	304	250	348	632	712	476	451	426	404	374	350	395	413
Subtotal .....	1,752	1,781	1,755	1,776	2,094	2,414	2,187	2,128	2,064	2,000	1,947	1,880	1,882	1,872
<b>Total Assets .....</b>	<b>2,081</b>	<b>2,151</b>	<b>2,119</b>	<b>2,195</b>	<b>2,825</b>	<b>3,046</b>	<b>2,851</b>	<b>2,794</b>	<b>2,752</b>	<b>2,636</b>	<b>2,546</b>	<b>2,459</b>	<b>2,433</b>	<b>2,366</b>
<b>LIABILITIES</b>														
Financial Liabilities:														
Currency and Bank Reserves	230	253	279	284	285	302	360	365	383	413	439	446	454	474
Debt held by the Public .....	999	985	836	822	1,063	1,886	2,589	2,792	3,049	3,200	3,286	3,371	3,410	3,358
Miscellaneous .....	26	28	30	43	67	93	139	127	119	118	120	123	123	144
Subtotal .....	1,254	1,266	1,145	1,148	1,415	2,281	3,088	3,284	3,551	3,731	3,840	3,937	3,988	3,976
Insurance Liabilities:														
Deposit Insurance .....	.....	.....	.....	.....	2	9	69	76	39	13	9	5	2	1
Pension Benefit Guarantee Corp. .....	.....	.....	.....	43	31	43	42	46	51	66	32	20	54	30
Loan Guarantees .....	.....	.....	2	6	12	10	15	24	27	30	32	28	32	38
Other Insurance .....	31	28	22	20	27	17	19	19	19	18	17	17	16	16
Subtotal .....	31	29	24	70	72	79	146	165	135	127	90	69	104	85
Federal Pension Liabilities .....	794	1,006	1,193	1,355	1,781	1,766	1,694	1,682	1,693	1,628	1,603	1,614	1,566	1,568
<b>Total Liabilities .....</b>	<b>2,079</b>	<b>2,300</b>	<b>2,362</b>	<b>2,573</b>	<b>3,268</b>	<b>4,126</b>	<b>4,927</b>	<b>5,132</b>	<b>5,380</b>	<b>5,486</b>	<b>5,532</b>	<b>5,620</b>	<b>5,658</b>	<b>5,629</b>
Balance .....	2	-149	-243	-378	-443	-1,080	-2,077	-2,338	-2,628	-2,851	-2,986	-3,161	-3,226	-3,263
Per Capita (in 1997 dollars) .....	12	-765	-1,184	-1,751	-1,938	-4,517	-8,286	-9,228	-10,259	-11,012	-11,426	-11,982	-12,117	-12,150
Ratio to GDP (in percent) .....	0.1	-4.6	-6.3	-8.7	-8.5	-17.8	-30.1	-33.9	-37.0	-39.2	-39.7	-41.3	-40.9	-39.8

\*This table shows assets and liabilities for the Government as a whole, including the Federal Reserve System. Therefore, it does not break out separately the assets held in Government accounts, such as social security, that are the obligation of specific Government agencies. Estimates for FY 1997 are extrapolated in some cases.



### Assets

The assets in Table 2-1 reflect a comprehensive list of the financial and physical resources owned by the Federal Government. The list corresponds to items that would appear on a typical balance sheet.

*Financial Assets:* According to the Federal Reserve Board's Flow-of-Funds accounts, the Federal Government's holdings of financial assets amounted to about \$500 billion at the end of FY 1997. Government-held mortgages and other loans (measured in constant dollars) reached a peak in the mid-1980s. Since then, the value of Federal loans has declined. The holdings of mortgages, in particular, have declined sharply over the last five years, as the holdings acquired from failed Savings and Loan institutions have been liquidated.

The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future losses and interest subsidy on these loans is over \$30 billion as of 1997. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Over time, variations in the price of gold have accounted for major swings in this category. Since the end of Fiscal Year 1980, gold prices have fallen and the real value of U.S. gold and foreign exchange holdings has dropped by 58 percent.

*Reproducible Capital:* The Federal Government is a major investor in physical capital. Government-owned

stocks of fixed capital amounted to over \$1.0 trillion in 1997 (OMB estimate). About two-thirds of this capital took the form of defense equipment or structures.

*Non-reproducible Capital:* The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings. Researchers in the private sector have estimated what they are worth and these estimates are extrapolated in Table 2-1. Private land values fell sharply in the early 1990s, although they have risen somewhat since 1993. It is assumed here that federal land shared in the decline and the subsequent recovery. Oil prices have fluctuated but are about the same now as they were in 1990.

*Total Assets:* The total real value of Government assets is lower now than at the end of the 1980s, principally because of declines in the real value of gold, land, and minerals. Even so, the Government's holdings are vast. At the end of 1997, the value of Government assets is estimated to have been about \$2.4 trillion.

### Liabilities

Table 2-1 includes only those liabilities that would appear on a business balance sheet. These include various forms of Federal debt, Federal pension obligations to its workers, and an imputed liability for Federal insurance and loan guarantee programs.

*Financial Liabilities:* Financial liabilities amounted to about \$4.0 trillion at the end of 1997. The largest

component was Federal debt held by the public, amounting to around \$3.4 trillion. This measure of Federal debt is net of the holdings of the Federal Reserve System (about \$400 billion at the end of FY 1997). Although independent in its policy deliberations, the Federal Reserve is part of the Federal Government, and its assets and liabilities are included here in the Federal totals. In addition to debt held by the public, the Government's financial liabilities include \$474 billion in currency and bank reserves, which are mainly obligations of the Federal Reserve System, and \$144 billion in miscellaneous liabilities.

*Guarantees and Insurance Liabilities:* The Federal Government has contingent liabilities arising from loan guarantees and insurance programs. When the Government guarantees a loan or offers insurance, initial outlays may be small or, if a fee is charged, they may even be negative; but the risk of future outlays associated with such commitments can be very large. In the past, the cost of such risks was not recognized until after a loss was realized. In Table 2-1 rough estimates are shown for the accrued liability resulting from such obligations. Of these, about half were for Federal loan guarantees, while the Pension Benefit Guarantee Corporation and other Federal insurance programs ac-

counted for most of the rest. The resolution of the many failures in the Savings and Loan and banking industries has helped to reduce the losses in this category by about half since 1990.

*Federal Pension Liabilities:* The Federal Government owes pension benefits to its retired workers and to current employees who will eventually retire. The amount of these liabilities is large. As of 1997, the discounted present value of the benefits is estimated to have been around \$1.6 trillion.<sup>3</sup>

#### **The Balance of Net Liabilities**

Because of its sovereign powers, the Government need not maintain a positive balance of net assets, and the rapid buildup in liabilities since 1980 has not damaged Federal creditworthiness. However, from 1980 to 1992, the balance between Federal liabilities and Federal assets did deteriorate at a very rapid rate. In 1980, the negative balance was less than 10 percent of GDP; by 1992 it was 37 percent of GDP. Between then and now, there has been little further increase. Last year, the net balance as a percentage of GDP fell for the second straight year; and it ended the year at under 40 percent of GDP. As the budget reaches balance, the ratio of net liabilities to GDP will continue to decline.

## **PART II—THE BALANCE OF RESOURCES AND RESPONSIBILITIES**

As noted in the preceding section, a business-type accounting of assets and liabilities misses the role of the Government's unique sovereign powers, including taxation, seigniorage, and regulation. Therefore, the best way to examine the balance between future Government obligations and resources is by projecting the budget. The budget offers the most comprehensive measure of the Government's financial burdens and its resources. By projecting total receipts and outlays, it is possible to examine whether there will be sufficient resources to support all of the Government's ongoing obligations.

This part of the presentation describes long-run projections of the Federal budget extending beyond the normal budget horizon. Forecasting the economy and the budget over such a long period is highly uncertain. Future budget outcomes depend on a host of unknowns—constantly changing economic conditions, unforeseen international developments, unexpected demographic shifts, the unpredictable forces of technological advance, and evolving political preferences. Those uncertainties increase the further ahead projections are pushed. Even so, long-run budget projections are needed to assess the full implications of current action or inaction, and to sound warnings about future problems that could be avoided by timely action. The Federal Government's responsibilities extend well beyond the next decade. There is no time limit on Government's

constitutional responsibilities, and programs like social security are clearly intended to continue indefinitely.

It is evident even now that there will be mounting challenges to the budget after the turn of the century. By 2008, the first of the huge baby-boom generation born after World War II will become eligible for early retirement under social security. In the years that follow there will be serious strains on the budget because of increased expenditures for both social security and Medicare. Long-range projections can help indicate how serious these strains might become and what is needed to withstand them.

The retirement of the baby-boomers dictates the timing of the problem, but the underlying cause is deeper. The growth of the U.S. population has been slowing down, and because of that and because people are living longer, a change is inevitably coming in the ratio of retirees to workers. The budgetary pressure from these trends is temporarily in abeyance. In the 1990s, the large baby-boom cohort has been moving into its prime earning years, while the retirement of the much smaller cohort born during the Great Depression has been holding down the rate of growth in the retired population. The suppressed budgetary pressures are likely to burst forth when the baby-boomers begin to retire. However, even after the baby-boomers have passed from the scene later in the century, a higher ratio of retirees to workers is expected to persist because of the underlying declines in fertility and mortality, with concomitant

<sup>3</sup>These pension liabilities are expressed as the actuarial present value of benefits accrued-to-date based on past and projected salaries. The cost of retiree health benefits is not included. The 1997 liability is extrapolated from recent trends.

problems for the retirement programs. These same problems are gripping other developed nations, even those that never experienced a baby-boom; in fact, those nations that did not have baby-booms are facing their demographic pressures already.

**The Long-Range Outlook for the Budget.**—Since this Administration first took office, there have been major changes in the long-run budget outlook. In January 1993, the deficit was clearly on an unsustainable trajectory. Had the policies then in place continued unchanged, the deficit would have steadily mounted not only in dollar terms, but relative to the size of the economy.<sup>4</sup> The deficit would have exceeded 10 percent of GDP by 2010—a level unprecedented for peacetime—and continued sharply upward, driving the debt to unsustainable levels.

The Omnibus Budget Reconciliation Act of 1993 (OBRA 1993) changed that. Not only did it reduce the near-term deficit, but, aided by the strong economy that it helped to create, it also reduced the long-term deficit. Prior to enactment of last year's Balanced Budget Agreement, the deficit was expected to remain at around 1.5 percent of GDP through 2010. But still, a longer-term budget problem remained. After 2010, the deficit was projected to begin an unsustainable rise that would reach 20 percent of GDP shortly after 2050 if uncorrected.

The Balanced Budget Agreement, enacted last year by the President and the Congress, took the next major step. The Agreement is now expected to eliminate the deficit in 1999, and the policies proposed in this Budget would, if continued in the long run, preserve a balanced budget for many years. Deficits will reemerge in the long run, though they would be relatively small as a percentage of the economy until well into the next century. Ultimately, as described in greater detail below, even these small deficits, pushed by demographic factors, could create compounding deficit pressures in the very long run.

This greatly improved long-run deficit outlook contrasts with the generally prevailing opinion among budget experts—at least prior to the enactment of last year's Balanced Budget Agreement—that the long-run outlook for the deficit is bleak. For example, the 1994 report of the Bipartisan Commission on Entitlement and Tax Reform found that there is a “long-term imbalance between the government's entitlement promises and the funds it will have available to pay for them.” The Congressional Budget Office has observed: “If the budgetary pressure from both demography and health care spending is not relieved by reducing the growth of expenditures or increasing taxes, deficits will mount and seriously erode future economic growth.”<sup>5</sup> On a narrower front, the annual trustees' reports for both

the social security and Medicare trust funds have for some time projected long-run actuarial deficiencies.

One sign that the consensus may be shifting as a result of recent policy actions is provided by the most recent of a series of reports from the General Accounting Office on the long-run budget outlook.<sup>6</sup> The GAO observes that, “Major progress has been made on deficit reduction... While our 1995 simulations showed deficits exceeding 20 percent of GDP by 2024 ..., our updated model results show that this point would not be reached until nearly 2050.” GAO continues to find that unsustainable deficits will emerge in the long run absent major entitlement reforms, but the date at which the deficit starts to rise is postponed significantly as a result of recent actions. That is similar to the analysis reported here, although the timing of the upswing in the deficit comes sooner in the GAO report.

**Economic and Demographic Projections.**—Long-run budget projections require a long-run demographic and economic forecast—even though any such forecast is highly uncertain and likely to be at least partly wrong. The forecast used here extends the Administration's medium-term economic projections described in the first chapter of this volume, augmented by the long-run demographic projections from the most recent Social Security Trustees' Report.

- Inflation, unemployment and interest rates are assumed to hold stable at their values in the last year of the Administration projections, 2.3 percent per year for the CPI, 5.4 percent for the unemployment rate, and 5.7 percent for the yield on 10-year Treasury notes.
- Productivity growth is assumed to continue at the same rate as it averages in the Administration's projections, approximately 1.3 percent per year.
- In line with the most recent projections of the Social Security Trustees, population growth is expected to slow over the next several decades. This is consistent with recent trends in the birth rate and an expected decline in the proportion of women in their childbearing years. The slowdown is expected to lower the rate of population growth from over 1 percent per year to about half that rate by the year 2020.
- Labor force participation is also expected to decline as the population ages and the proportion of retirees in the population increases. Over the next decade, however, the Administration projects a higher rate of labor force participation than in the latest Trustees' Report. That difference is preserved in the long-run projections below.
- The real rate of economic growth is determined by the expected growth of the labor force (assuming a stable unemployment rate) plus productivity growth. Because labor force growth is expected to slow and productivity growth is assumed to be constant, real GDP growth declines after 2008 from around 2.4 percent to 1.4 percent per year.

<sup>4</sup>Over long periods when the rate of inflation is positive, comparisons of dollar values are meaningless. Even the low rate of inflation assumed in this budget will reduce the value of a 1997 dollar by over 50 percent by 2030, and by 70 percent by the year 2050. For long-run comparisons, it is much more useful to examine the ratio of the deficit and other budget categories to the expected size of the economy as measured by GDP.

<sup>5</sup>Long-Term Budgetary Pressures and Policy Options, March 1997.

<sup>6</sup>Analysis of Long-Term Fiscal Outlook, October 1997.

Although this result is perfectly logical given population trends, it would result in a very low sustained rate of real economic growth by U.S. historical standards.

The economic projections described above are set by assumption and do not automatically change in response to changes in the budget outlook. This is unrealistic, but it simplifies comparisons of alternative policies. A more responsive (or dynamic) set of assumptions would serve mainly to strengthen the same conclusions reached by the current approach. In their investigations of the long-run outlook, both CBO and GAO have explored such feedback effects and found that they accelerate the destabilizing effects of sustained budget deficits.

**The Deficit Outlook.**—Chart 2-3 shows five alternative deficit projections: one based on the policies in place prior to enactment of OBRA 1993; another incorporating all of the subsequent changes in budget policy prior to passage of last year's Balanced Budget Agreement; and three alternative scenarios of the current policy projection. The chart clearly illustrates the dramatic improvement in the deficit that has already been achieved. If the budget is balanced in 1999 as is now expected, it will substantially ease the task of maintaining fiscal stability when the retirement bulge hits after 2008.

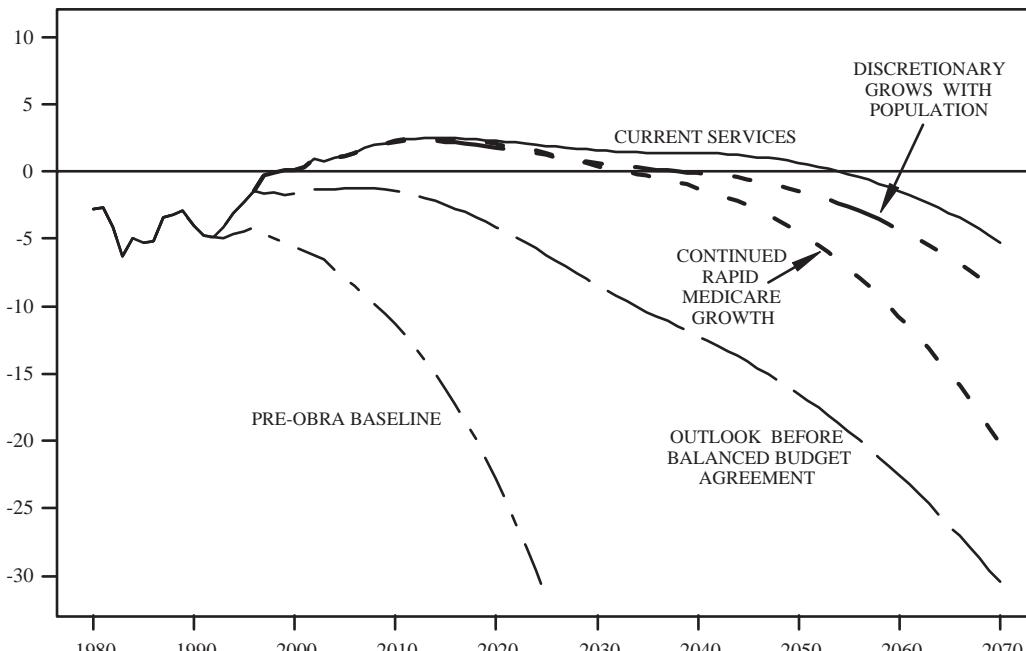
Table 2-2 shows long-range projections for the major categories of spending under current policy assumptions. The table shows that the entitlement programs are expected to absorb an increasing share of budget resources.

- Under current policy, social security benefits, driven by the retirement of the baby-boom generation, rise from 4.5 percent of GDP in 2000 to 6.3 percent in 2030 and to 6.5 percent by 2050.
- Medicare rises from 2.4 percent of GDP in 2000 to 4.6 percent in 2030 and 5.0 percent by 2050.
- Federal Medicaid spending goes up from 1.3 percent of GDP in 2000 to 3.2 percent in 2030 and 5.3 percent in 2050.
- Partially offsetting these increases in entitlement programs, discretionary spending falls as a share of GDP, from 6.3 percent in 2000 to 3.7 percent in 2030 and 2.8 percent in 2050, as real economic growth outpaces the growth in these programs (assumed to equal inflation).

Long-range projections such as these are subject to enormous uncertainty. Detailed analysis of the sensitivity of the results to key assumptions follows later, but Chart 2-3 highlights two of the key risks to the outlook. A projection of the conventional current-services budget shows small surpluses through 2054. However, the budget moves sharply to deficit thereafter as the fundamental demographic forces reassert themselves, and by 2070 the deficit exceeds the worst figures of the

Chart 2-3. LONG-RUN DEFICIT PROJECTIONS

SURPLUS (+)/DEFICIT (-) AS A PERCENT OF GDP



**Table 2-2. LONG-RUN BUDGET PROJECTIONS OF 1999 BUDGET POLICY**  
(Percent of GDP)

	1995	2000	2005	2010	2020	2030	2040	2050	2060	2070
<b>Current services:</b>										
Receipts .....	18.8	19.8	19.7	19.8	20.0	20.1	20.2	20.3	20.2	20.2
Outlays .....	21.1	19.7	18.5	17.5	17.7	18.5	18.8	19.6	21.7	25.5
Discretionary .....	7.6	6.3	5.5	4.9	4.2	3.7	3.2	2.8	2.5	2.2
Mandatory .....	10.3	10.8	11.1	11.6	13.9	16.1	17.2	18.4	20.2	22.3
Social security .....	4.6	4.5	4.5	4.7	5.6	6.3	6.4	6.5	6.7	6.8
Medicare .....	2.2	2.4	2.5	2.8	3.7	4.6	5.0	5.0	5.1	5.3
Medicaid .....	1.2	1.3	1.5	1.8	2.5	3.2	4.0	5.3	6.8	8.7
Other .....	2.3	2.6	2.6	2.3	2.1	2.0	1.8	1.6	1.6	1.5
Net interest .....	3.2	2.6	1.8	1.0	-0.5	-1.3	-1.5	-1.6	-1.0	1.0
Surplus or deficit (-) .....	-2.3	0.1	1.2	2.3	2.3	1.6	1.4	0.7	-1.4	-5.2
Federal debt held by the public .....	50.1	42.1	30.3	15.8	-9.2	-22.0	-26.8	-27.6	-15.6	18.9
Primary surplus or deficit (-) .....	0.9	2.7	3.0	3.3	1.8	0.3	-0.2	-0.9	-2.4	-4.3
<b>Continued rapid Medicare growth:</b>										
Receipts .....	18.8	19.8	19.7	19.8	20.0	20.1	20.2	20.3	20.2	20.2
Outlays .....	21.1	19.7	18.5	17.5	17.9	19.7	21.4	24.8	31.0	40.5
Discretionary .....	7.6	6.3	5.5	4.9	4.2	3.7	3.2	2.8	2.5	2.2
Mandatory .....	10.3	10.8	11.1	11.6	14.1	16.9	18.6	20.9	23.9	27.4
Social security .....	4.6	4.5	4.5	4.7	5.6	6.3	6.4	6.5	6.7	6.8
Medicare .....	2.2	2.4	2.5	2.8	3.9	5.4	6.4	7.5	8.9	10.4
Medicaid .....	1.2	1.3	1.5	1.8	2.5	3.2	4.0	5.3	6.8	8.7
Other .....	2.3	2.6	2.6	2.3	2.1	2.0	1.8	1.7	1.5	1.5
Net interest .....	3.2	2.6	1.8	1.0	-0.4	-0.9	-0.4	1.1	4.5	10.9
Surplus or deficit (-) .....	-2.3	0.1	1.2	2.3	2.1	0.4	-1.2	-4.5	-10.7	-20.2
Federal debt held by the public .....	50.1	42.1	30.3	15.8	-8.5	-15.5	-6.4	20.6	81.9	193.8
Primary surplus or deficit (-) .....	0.9	2.7	3.0	3.3	1.6	-0.5	-1.6	-3.4	-6.2	-9.3
<b>Discretionary grows with population:</b>										
Receipts .....	18.8	19.8	19.7	19.8	20.0	20.1	20.2	20.3	20.2	20.2
Outlays .....	21.1	19.7	18.5	17.6	18.1	19.5	20.3	21.7	24.5	29.3
Discretionary .....	7.6	6.3	5.5	4.9	4.5	4.2	3.7	3.4	3.0	2.7
Mandatory .....	10.3	10.8	11.1	11.6	13.9	16.1	17.2	18.4	20.2	22.3
Social security .....	4.6	4.5	4.5	4.7	5.6	6.3	6.4	6.5	6.7	6.8
Medicare .....	2.2	2.4	2.5	2.8	3.7	4.6	5.0	5.0	5.1	5.3
Medicaid .....	1.2	1.3	1.5	1.8	2.5	3.2	4.0	5.3	6.8	8.7
Other .....	2.3	2.6	2.6	2.4	2.2	2.0	1.7	1.6	1.6	1.5
Net interest .....	3.2	2.6	1.8	1.0	-0.3	-0.8	-0.6	-0.1	1.3	4.2
Surplus or deficit (-) .....	-2.3	0.1	1.2	2.2	1.8	0.6	-0.1	-1.4	-4.3	-9.0
Federal debt held by the public .....	50.1	42.1	30.3	15.9	-6.7	-13.9	-10.7	-0.8	24.7	76.2
Primary surplus or deficit (-) .....	0.9	2.7	3.0	3.2	1.5	-0.2	-0.7	-1.5	-2.9	-4.8

1980s, at over five percent of GDP. Furthermore, if discretionary spending were to keep pace with population growth as well as inflation—as might be required for the delivery of government services to that growing population, or because of threats to national security—the budget would continue in surplus through only 2032, and the deficit would reach nine percent of GDP by 2070. Finally, if the slowdown in Medicare costs currently projected for the early years of the next century by the Health Care Financing Administration (HCFA) were not to materialize, budget surpluses would disappear after 2038, and the deficit would grow to over 20 percent of GDP by 2070.

The long-run deficit outlook is much improved because of the actions taken by this Administration in cooperation with the Congress. Eliminating the budget deficit is expected to set the budget on a solid footing for many years to come. If these projections are correct, a balanced budget would not be transitory. Assuming a continuation of the Administration's economic and technical assumptions, the budget remains in balance

for several decades. However, the underlying problems are not fully eliminated. Table 2-2 shows that a primary, or non-interest, deficit reappears around 2035 even under the current-services case. Although the underlying imbalance is small, it is sufficient to begin a slow but irreversibly increasing spiral. The recurrence of the primary deficit means that eventually the pressure of rising entitlement claims will drive the unified deficit and Federal debt sharply higher relative to GDP.<sup>7</sup>

The keys to these projections are the economic assumptions, which have already been discussed, plus technical assumptions about Medicare and discretionary spending. The main reason why other analysts have reached different conclusions about the deficit is because of differences with these or other assumptions. The basic results shown here are highly sensitive to

<sup>7</sup>The primary or non-interest surplus is the difference between all outlays, excluding interest, and total receipts. It can be positive even when the total budget is in deficit. A relatively small primary surplus can stabilize the budget even when the total budget is in deficit, and similarly, even a small primary deficit can destabilize a budget. The mathematics are inexorable.

changes in these underlying assumptions. While Table 2-2 projects a budget that remains under control for several decades before underlying problems reemerge, small variations in assumptions can produce considerably more pessimistic—or even more optimistic—outcomes. Various alternative economic and technical assumptions are discussed below. Each alternative focuses on one of the key uncertainties in the outlook. Generally, the scenarios highlight negative possibilities rather than positive ones to explore all of the major risks in the outlook.

1. *Discretionary Spending:* By convention, the current-services estimates of discretionary spending rise with the rate of inflation. This assumption, or any other, is essentially arbitrary, because discretionary spending is always determined annually through the legislative process, and no formula can dictate future spending in the absence of legislation. This assumption implies that the real value of Federal services is unchanging over time, which has the implication that the size of the Federal establishment would shrink relative to the size of the economy.<sup>8</sup> It also presupposes that the Nation's defense needs will not vary from their current projected levels. The relative decline in discretionary spending frees 4.1 percent of GDP for use in other ways in these projections.

Some budget analysts have assumed alternatively that discretionary spending would hold constant as a share of GDP in the long run; this requires it to increase in real terms whenever there is real economic growth. That is a more generous assumption for Government spending than the current services assumption used by OMB or CBO. It might be argued that with rising population and growth in real per capita incomes, the public demand for Government services—more national parks, better transportation, additional Federal support for scientific research—will increase as well. Provision of public person-to-person services might imply that spending should grow with population as well as prices. And if Government salaries keep in step with those in the private sector by rising slightly faster than overall inflation, then total spending growing only as fast as inflation implies a shrinking Federal work force. However, such demands might be met within constant real dollar spending through increased productivity in the Federal sector, such as has allowed the recent reduction of the Federal workforce by more than 316,000. Spending for provision of "public goods" that naturally apply to the entire population—such as national defense or information (like the Weather Service)—need not increase just because the economy and the population grow. Furthermore, an assumption of a constant discretionary spending share of GDP would be in sharp contrast with recent experience; since its peak in 1968, the discretionary spending share of GDP

has been cut virtually in half (from 13.6 percent to 6.9 percent in 1997).

Thus, there are arguments on both sides; for purposes of analysis, the projections in Table 2-2 show both the standard current services assumptions, with discretionary spending increasing in step with inflation, and an alternative assumption that allows discretionary spending to increase for population growth in addition to general inflation. Chart 2-4 adds a third assumption, under which discretionary spending grows still more rapidly, to maintain a constant percentage of GDP (which is the assumption used by GAO, and is reported as an alternative by CBO).

2. *Health Spending:* Some of the most volatile elements in recent budgets have been Federal health spending for Medicare and Medicaid. Expenditures for these programs have grown much faster than those of other entitlements, including Social Security. After the last year of the standard budget estimates in 2008, real per capita growth rates for Medicare benefits in the current services case are based on the projections in the latest report of the Medicare Trustees, which slow down markedly after 2015. Thus, while spending for Medicare (and Medicaid) is assumed to continue to grow more rapidly than the overall economy, real spending on a per capita basis is expected to stabilize at lower than the historical rates of increase. Also, for Medicare, the savings in the Balanced Budget Agreement are assumed to lower the level of spending permanently relative to earlier baselines; that is, the Trustees' prior growth estimates take off from the new lower base. However, when the Trustees made their projections last summer, they did not include the spending restraint in Medicare now anticipated over the next few years as a result of the Balanced Budget Agreement. Had they done so, it is conceivable that they would also have included a catch-up after 2002 that would have raised the long-run average growth rate assumed here. For that reason, the assumptions used in the current-services case could prove to be optimistic.

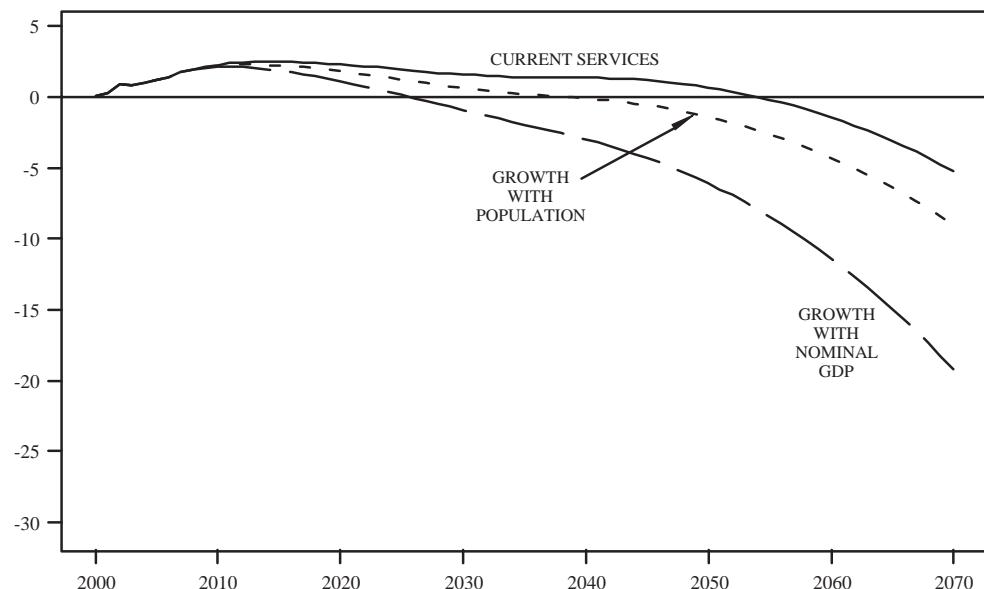
Chart 2-5 shows the current-services case, and the case (shown in Chart 2-3) under which Medicare cost growth continues without slowing after the end of the 10-year budget window in 2008. It also shows a still more pessimistic scenario, under which both Medicare and Medicaid per capita growth rates accelerate by one percentage point per year, and a more optimistic scenario, under which Medicare and Medicaid per capita growth rates slow to the rate of growth of GDP per capita.

3. *Productivity:* Productivity growth in the U.S. economy slowed down after 1973. The slowdown is responsible for the slower rise in U.S. real incomes since that time. Productivity growth is affected by changes in the budget deficit which influence national saving, but many other factors influence it as well. The deficit in turn is affected by changes in productivity growth, which affect the size of the economy and hence future receipts. Two alternative scenarios illustrate what would happen to the budget deficit if productivity

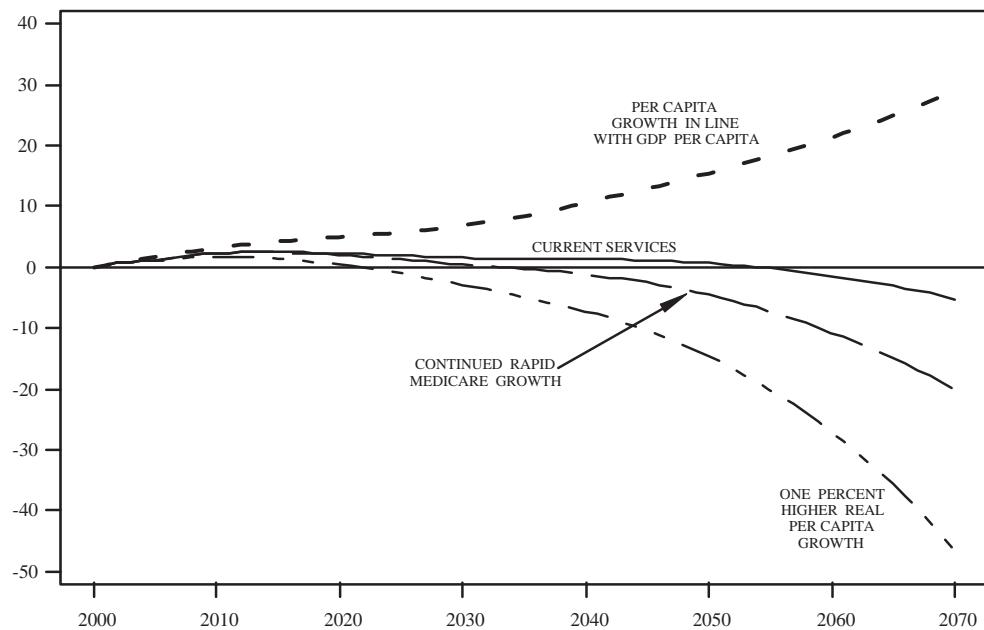
<sup>8</sup>This is not precisely accurate. The real cost of providing the services would be unchanged, but the quantity of Federal services might or might not decline, depending on productivity. A significant portion of discretionary spending is Federal payroll costs. In a period of moderately rising real wages as assumed in the budget assumptions and in the Trustees' report, these costs would rise somewhat faster than inflation unless the number of employees were scaled back, which might or might not be offset by productivity gains.

**Chart 2-4. ALTERNATIVE DISCRETIONARY SPENDING ASSUMPTIONS**

SURPLUS (+)/DEFICIT (-) AS A PERCENT OF GDP

**Chart 2-5. ALTERNATIVE HEALTH SPENDING ASSUMPTIONS**

SURPLUS (+)/DEFICIT (-) AS A PERCENT OF GDP



growth were either higher or lower than assumed. A higher rate of growth would make the task of preserving a balanced budget much easier; lower productivity growth would have the opposite effect. Chart 2-6 shows how the deficit varies with changes of one-half percentage point of average productivity growth.

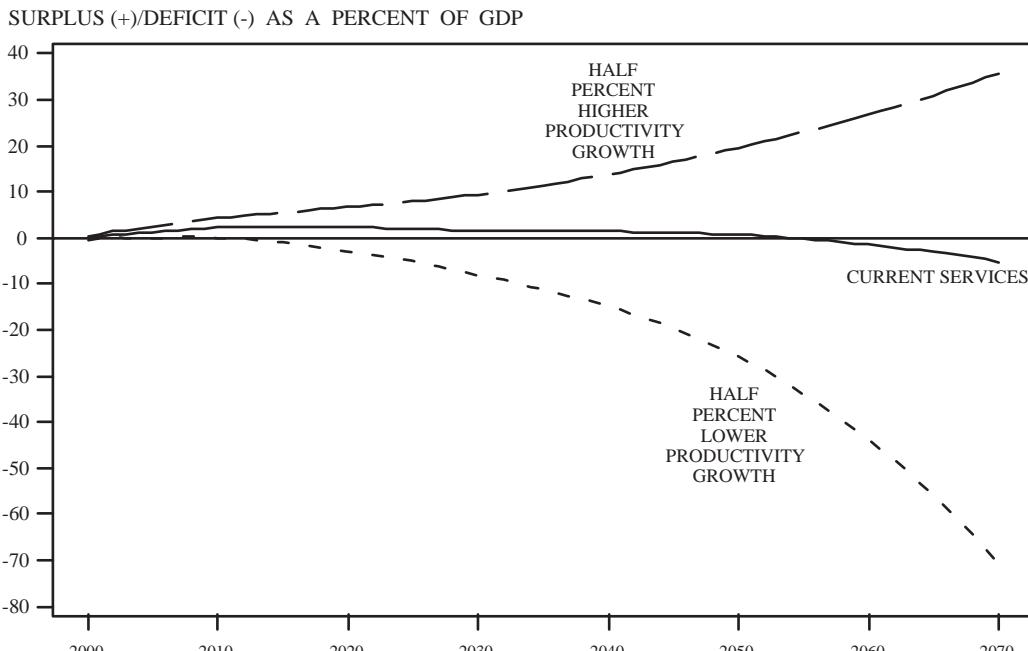
**4. Population:** In the long run, changing demographic patterns dictate the behavior of the projections. Changes in population growth feed into real economic growth through the effect on labor supply and employment. Changing demographics also affect entitlement spending, contributing to the surge of spending expected for social security and Medicare. The key assumptions underlying the demographic projections are fertility, mortality and immigration.

- The main reason for the expected slowdown in population growth is the expected continuation of a low fertility rate. Since 1990, the number of births per woman in the United States has averaged between 2.0 and 2.1. This is slightly below the replacement rate needed to maintain a constant population. The fertility rate was even lower in the 1970s and 1980s. The demographic projections assume that fertility will average around 1.9 births per woman in the future. Fertility is hard to predict. Both the baby boom in the 1950s and the baby bust in the 1970s came as surprise to demographers. A return to the higher fertility rates of the past is possible, but so is another

drop in fertility. Although the fertility rate has never fallen below 1.7 in U.S. history, such low rates have been observed recently in some European countries. Chart 2-7 shows the effects of alternative fertility assumptions on the deficit; higher fertility would contribute eventually to a larger labor force, and hence increase incomes and revenues, and reduce the deficit.

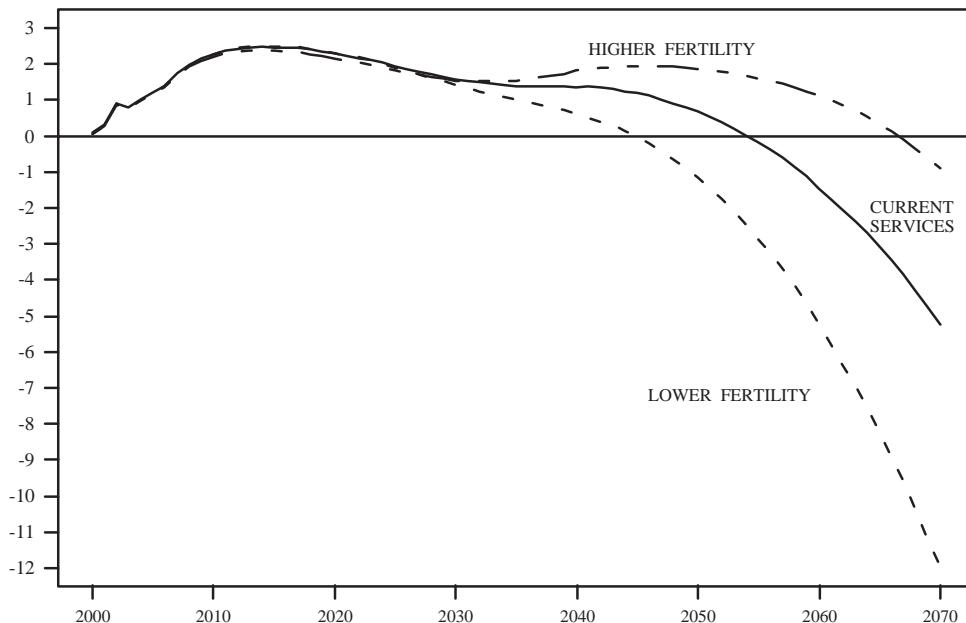
- The aging of the U.S. population is due to both lower fertility, which reduces the number of children per adult, and lengthening lifespans. Since 1970, the average lifespan for U.S. women has increased from 74.9 years to 79.3 years, and it is projected to rise to 82.9 years by 2050. Men do not live as long as women on average, but their lifespan has also increased from 67.1 years in 1970 to 72.6 years in 1995, and it is expected to reach 77.5 years by 2050. Longer lifespans mean that more people will live to receive social security and Medicare benefits, and will receive them for a longer time. If the U.S. population were to experience no further improvements in mortality, the shorter lifespans would help to lower the deficit. Conversely, if the population lives even longer than now expected, the outlook for the deficit would worsen. This is illustrated in Chart 2-8.
- The final demographic factor influencing long-run projections is the rate of immigration. The United

Chart 2-6. ALTERNATIVE PRODUCTIVITY ASSUMPTIONS

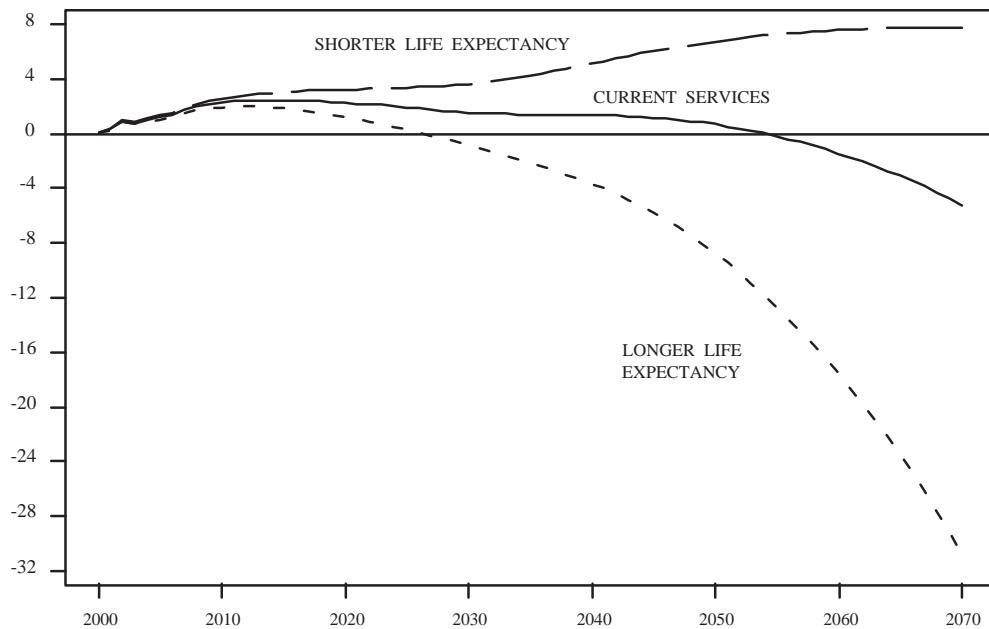


**Chart 2-7. ALTERNATIVE FERTILITY ASSUMPTIONS**

SURPLUS (+)/DEFICIT (-) AS A PERCENT OF GDP

**Chart 2-8. ALTERNATIVE MORTALITY ASSUMPTIONS**

SURPLUS (+)/DEFICIT (-) AS A PERCENT OF GDP



States is an open society. In the 19th century, a huge wave of immigration helped build the country; and the last two decades of the 20th century have witnessed another burst of immigration. The annual net flow of legal immigrants has been averaging around 850,000 since 1992. This is the highest absolute rate in U.S. history, but as a percentage of population it is only about a third as high as immigration was in 1901–1910. Chart 2–9 illustrates the effects on the deficit of varying immigration assumptions. In general, faster immigration yields a larger work force, and lower deficits.

**5. What To Do With the Budget Surpluses:** The current projections show the budget running surpluses for several decades. These surpluses pay down the debt held by the public, after which, by the conventions of current-services budget projections, policy continues unchanged, and so negative debt accumulates for a time (though demographic pressures soon erode that negative debt again). Thus, the surpluses sharply reduce net interest expenses in future years, closing the virtuous cycle of deficit reduction and balanced budgets. If these surpluses were “spent” by increased spending or reduced taxes, it would worsen the outlook significantly. Chart 2–10 shows two alternative scenarios: one in which spending or tax cuts using the surpluses were purely temporary, and a second in which the additional budgetary costs grew with inflation over time. If the

spending or tax cuts were purely temporary, the period of budget surpluses would be shortened by 30 years, with deficits recurring in 2025; by 2070, the deficit would grow to 10.8 percent of GDP. If the budgetary costs grew with inflation, however, budget surpluses would extend barely beyond the budget window, with deficits recurring in 2012. By 2070, the deficit would grow to an unsustainable 17.9 percent of GDP.

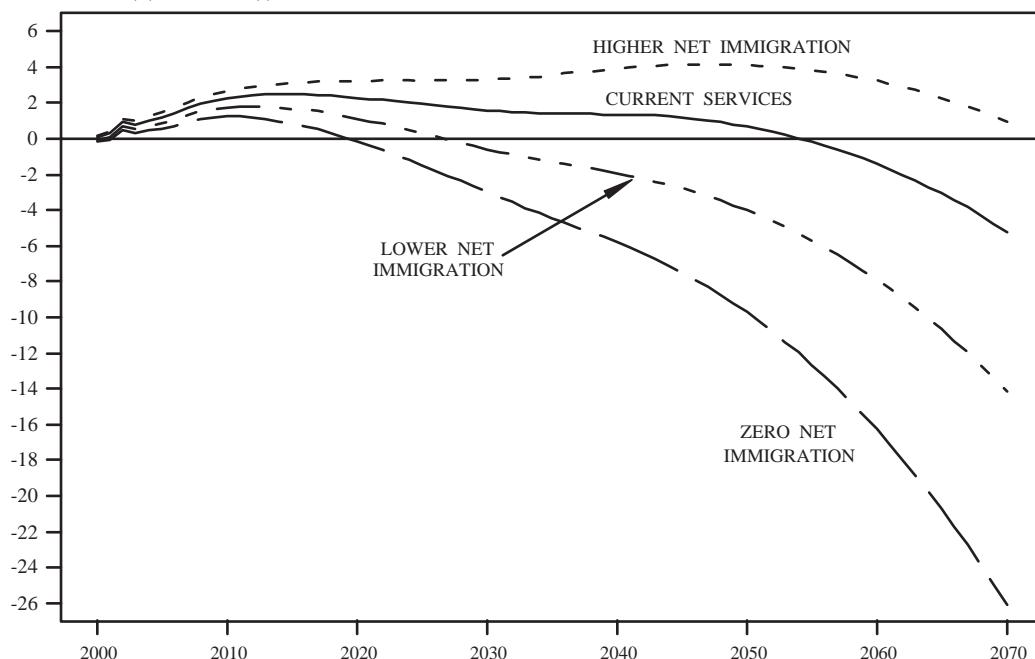
**Conclusion.**—Under President Clinton, the long-run outlook for the budget deficit has improved significantly. When this Administration took office, the deficit was projected to begin spiraling out of control early in the next century, reaching levels never seen before (except temporarily during major wars). The outlook now is drastically different. Under current policy assumptions, a period of balanced budgets is expected to begin in 1999. This period is eventually followed by a return to deficits of a size that would demand the attention of policymakers.

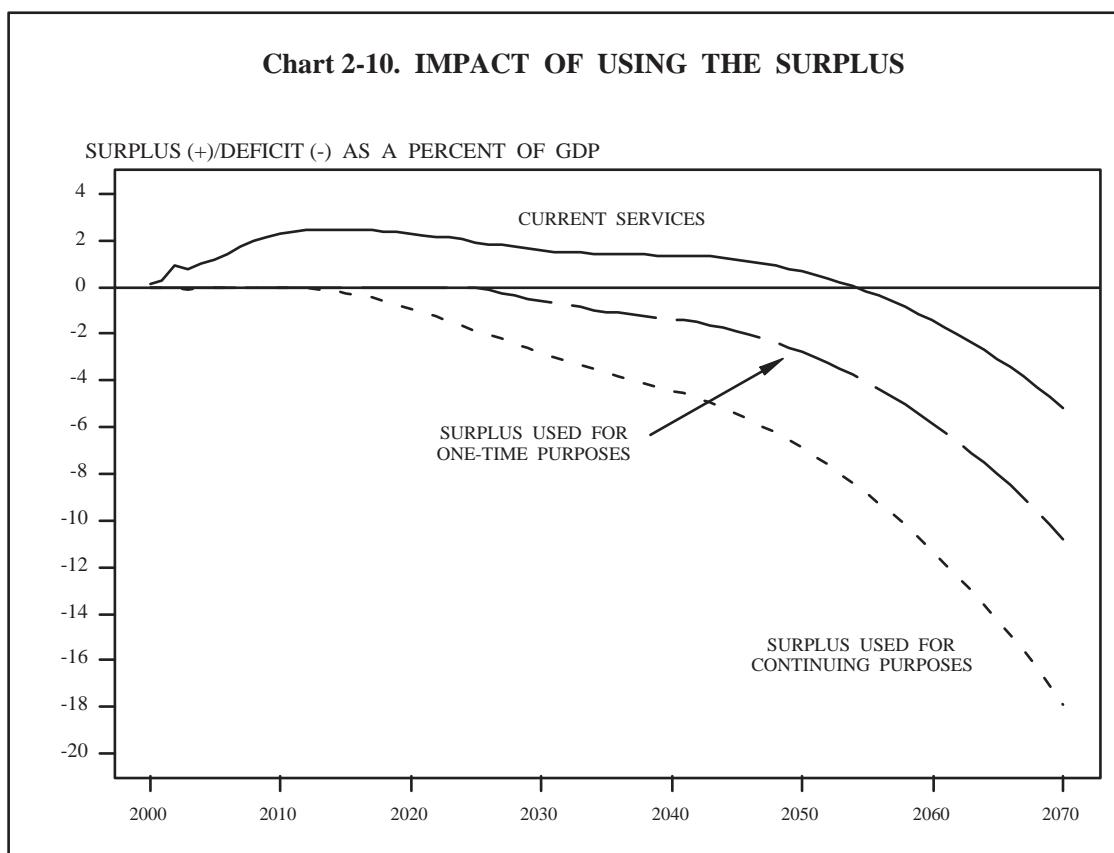
Both social security and Medicare continue to confront long-run deficits in their respective Trust Funds, which must be addressed. But the favorable outlook for the unified budget should make it easier to address these difficult problems.

The budget outlook is based on many assumptions regarding demographic patterns, economic conditions, and budget policy. Under alternative assumptions, the budget outlook could be either more or less favorable,

Chart 2-9. ALTERNATIVE IMMIGRATION ASSUMPTIONS

SURPLUS (+)/DEFICIT (-) AS A PERCENT OF GDP





and the degree of uncertainty increases with time. A key policy assumption is that budget discipline is maintained. This favorable outlook could easily be altered by future policy action, or by unforeseen events.

**Actuarial Balance in the Social Security and Medicare Trust Funds.**—The Trustees for the Social Security and Hospital Insurance Trust Funds issue annual reports that include projections of income and outgo for these funds over a 75-year period. These projections are based on different methods and assumptions than the long-run budget projections presented above, although the budget projections do rely on the social security assumptions for population growth and labor force growth after the year 2008. Even with these differences, the message is similar: The retirement of the baby-boom generation coupled with expected high rates of growth in per capita health care costs will exhaust the Trust Funds unless further remedial action is taken.

The Trustees' reports feature the 75-year actuarial balance of the Trust Funds as a summary measure of their financial status. For each Trust Fund, the balance is calculated as the change in receipts or program benefits, expressed as a percentage of taxable payroll, that would be needed to preserve a small positive balance in the Trust Fund at the end of 75 years.

Table 2-3 shows the changes in the 75-year actuarial balances of the social security and Medicare Trust

Funds since 1996. There were only relatively small changes in the projected balances last year. The modest improvement in the Hospital Insurance fund was estimated prior to the passage of the Balanced Budget Agreement, which made numerous changes in Medicare. Prior to the Agreement the HI Trust Fund was expected to reach zero in 2001. The reforms in the Agreement have extended the projected life of the Trust Fund until 2010.

Achieving a positive 75-year balance may not be sufficient to put the Trust Funds on a self-sustaining basis. For example, raising the social security payroll tax by 2.2 percentage points would eliminate the 75-year actuarial imbalance in the Social Security Trust Fund, as seen from Table 2-3. However, even with the higher taxes, the income to the Fund would be insufficient to cover program outgo after 2020. Beyond that point the Trust Fund assets would have to be drawn down. Even though at the end of 75 years there would still be a small positive balance in the Trust Fund, one year later the balance would be gone. Based on the 75-year balance measure, some have claimed that social security could be "fixed" by a relatively small 2.2 percentage point change in payroll taxes. That statement ignores the fact that if social security were fixed in this way, it would remain fixed for only one year.

**Table 2-3. CHANGE IN 75-YEAR ACTUARIAL BALANCE FOR OASDI AND HI TRUST FUNDS  
(INTERMEDIATE ASSUMPTIONS)**

(As a percent of taxable payroll)

	OASI	DI	OASDI	HI
Actuarial balance in 1996 Report .....	-1.85	-0.34	-2.19	-4.52
Changes in balance due to changes in:				
Valuation period .....	-0.07	-0.01	-0.08	-0.09
Economic and demographic assumptions .....	0.03	0.00	0.03	0.20
Technical and other assumptions .....	0.03	-0.04	0.01	0.09
Total Changes .....	-0.01	-0.05	-0.04	0.20
Actuarial balance in 1997 Report .....	-1.84	-0.39	-2.23	-4.32

### PART III—NATIONAL WEALTH AND WELFARE

Unlike a private corporation, the Federal Government routinely invests in ways that do not add directly to its assets. For example, Federal grants are frequently used to fund capital projects by State or local governments for highways and other purposes. Such investments are valuable to the public, which pays for them with taxes, but they are not owned by the Federal Government and would not show up on a conventional balance sheet.

The Federal Government also invests in education and research and development (R&D). These outlays contribute to future productivity and are analogous to an investment in physical capital. Indeed, economists have computed stocks of human and knowledge capital to reflect the accumulation of such investments. Nonetheless, these capital stocks are not owned by the Federal Government, nor would they usually appear on a balance sheet.

To show the importance of these kinds of issues, Table 2-4 presents a national balance sheet. It includes estimates of national wealth classified in three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories, and these contributions are shown in the table. Data in this table are especially uncertain, because of the assumptions needed to prepare the estimates.

Federal investments are responsible for about 7 percent of total national wealth. This may seem like a small fraction, but it represents a large volume of capital—\$4.4 trillion. The Federal contribution is down from around 8 percent at the end of the 1980s, and from around 12 percent in 1960. Much of this reflects the shrinking size of the defense capital stocks, which have gone down from 13 percent of GDP to 9 percent in the last few years.

#### **Physical Assets**

The physical assets in the table include stocks of plant and equipment, office buildings, residential structures, land, and government's physical assets such as military hardware, office buildings, and highways. Automobiles and consumer appliances are also included in this category. The total amount of such capital is

vast, around \$26 trillion in 1997; by comparison, GDP was only about \$8 trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus \$0.6 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed about one-sixth of the physical capital held by other levels of government.

#### ***Education Capital***

Economists have developed the concept of human capital to reflect the notion that individuals and society invest in people as well as in physical assets. Investment in education is a good example of how human capital is accumulated.

This table includes an estimate of the stock of capital represented by the Nation's investment in education. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over. The idea is to measure how much it would cost to reeducate the U.S. workforce at today's prices. The estimate attempts to measure the replacement value of education rather than its original cost. This is more meaningful economically, and is comparable to the measures of physical capital presented earlier.

Although this is a relatively crude measure, it does provide a rough order of magnitude of the current value of the investment in education. According to this measure, the stock of education capital amounted to \$31 trillion in 1997, of which about 3 percent was financed by the Federal Government. It exceeds the total value of the Nation's private stock of physical capital. The main investors in education capital have been State and local governments, parents, and students themselves (who forgo earning opportunities in order to acquire education).

Even broader concepts of human capital have been suggested. Not all useful training occurs in a schoolroom or in formal training programs at work. Much informal learning occurs within families or on the job, but measuring its value is very difficult. However, labor compensation amounts to about two thirds of national income, and thinking of this income as the product of human capital suggests that the total value of

**Table 2-4 NATIONAL WEALTH**  
(As of the end of the fiscal year, in trillions of 1997 dollars)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
<b>ASSETS</b>														
Publicly Owned Physical Assets:														
Structures and Equipment .....	2.1	2.4	2.9	3.5	3.7	3.9	4.2	4.3	4.3	4.4	4.5	4.6	4.7	4.7
Federally Owned or Financed .....	1.2	1.3	1.5	1.5	1.5	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Federally Owned .....	1.1	1.1	1.1	1.0	0.9	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1
Grants to State and Local Governments .....	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Funded by State and Local Governments .....	0.9	1.1	1.5	2.0	2.1	2.1	2.3	2.3	2.3	2.4	2.5	2.6	2.6	2.6
Other Federal Assets .....	0.8	0.7	0.7	0.9	1.5	1.5	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9
Subtotal .....	2.9	3.2	3.6	4.4	5.2	5.4	5.5	5.4	5.4	5.4	5.5	5.5	5.6	5.6
Privately Owned Physical Assets:														
Reproducible Assets .....	6.8	7.8	9.6	12.2	15.7	16.5	18.5	18.3	18.4	18.8	19.5	19.9	20.4	21.0
Residential Structures .....	2.6	3.0	3.6	4.6	6.2	6.5	7.3	7.2	7.3	7.5	7.8	8.0	8.2	8.5
Nonresidential Plant and Equipment .....	2.7	3.1	3.9	5.1	6.4	7.1	7.7	7.7	7.7	7.8	8.0	8.2	8.4	8.7
Inventories .....	0.7	0.7	0.9	1.1	1.3	1.2	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.3
Consumer Durables .....	0.8	0.9	1.2	1.4	1.6	1.8	2.2	2.2	2.2	2.3	2.3	2.4	2.5	2.5
Land .....	2.0	2.4	2.8	3.8	5.6	6.2	6.0	5.6	4.9	4.7	4.7	4.6	4.6	4.6
Subtotal .....	8.8	10.2	12.4	16.0	21.2	22.7	24.5	23.8	23.3	23.5	24.1	24.5	25.0	25.6
Education Capital:														
Federally Financed .....	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Financed from Other Sources .....	6.4	8.3	11.0	12.8	15.7	18.8	23.9	24.7	25.4	26.2	26.9	28.0	29.0	30.3
Subtotal .....	6.4	8.4	11.3	13.2	16.1	19.4	24.6	25.5	26.2	27.0	27.8	28.9	29.9	31.3
Research and Development Capital:														
Federally Financed R&D .....	0.2	0.3	0.5	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9
R&D Financed from Other Sources .....	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.2
Subtotal .....	0.3	0.5	0.8	0.9	1.0	1.3	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1
Total Assets .....	18.4	22.3	28.1	34.5	43.5	48.8	56.2	56.4	56.6	57.7	59.2	60.8	62.5	64.5
Net Claims of Foreigners on U.S. ....	-0.1	-0.2	-0.2	-0.0	-0.3	0.0	0.8	0.8	0.9	1.1	1.3	1.4	1.9	2.2
Balance .....	18.5	22.5	28.2	34.5	43.8	48.8	55.4	55.6	55.7	56.6	57.9	59.5	60.6	62.3
Per Capita (thousands of dollars) .....	102.5	115.8	137.7	159.7	191.9	203.9	221.2	219.6	217.5	218.8	221.6	225.4	227.7	231.9
Ratio to GDP .....	723.2	693.2	733.6	789.0	841.7	803.1	803.6	807.7	783.5	779.3	770.1	776.7	769.2	760.6
<b>ADDENDA:</b>														
Total Federally Funded Capital .....	0.5	0.6	0.8	1.2	2.2	3.2	3.9	4.1	4.1	4.3	4.4	4.5	4.7	4.8
Percent of National Wealth .....	12.1	11.2	10.1	9.5	9.3	9.3	8.5	8.4	8.4	8.2	8.1	7.9	7.8	7.7

human capital might be two times the estimated value of physical capital. Thus, the estimates offered here are in a sense conservative, because they reflect only the costs of acquiring formal education and training.

#### **Research and Development Capital**

Research and development can also be thought of as an investment, because R&D represents a current expenditure that is made in the expectation of earning a future return. After adjusting for depreciation, the flow of R&D investment can be added up to provide an estimate of the current R&D stock.<sup>9</sup> That stock is estimated to have been about \$2.0 trillion in 1997. Although this is a large amount of research, it is a relatively small portion of total National wealth. About half of this stock was funded by the Federal Government.

<sup>9</sup>R&D depreciates in the sense that the economic value of applied research and development tends to decline with the passage of time, as still newer ideas move the technological frontier.

#### **Liabilities**

When considering how much the United States owes as a Nation, the debts that Americans owe to one another cancel out. This means they do not belong in Table 2-4, but it does not mean they are unimportant. An unwise buildup in debt, most of which was owed to other Americans, was partly responsible for the recession of 1990–1991 and the sluggishness of the early stages of the recovery that followed. The only debt that appears in Table 2-4 is the debt that Americans owe to foreign investors. America's foreign debt has been increasing rapidly in recent years, because of the continuing imbalance in the U.S. current account, but even so the size of this debt is small compared with the total stock of U.S. assets. It amounted to about 3½ percent of national wealth in 1997.

Most Federal debt does not appear in Table 2-4 because it is held by Americans; only that portion of the Federal debt held by foreigners is included. However, comparing the Federal Government's net liabilities with

total national wealth gives another indication of the relative magnitude of the imbalance in the Government's accounts. Currently, the Federal net asset imbalance, as estimated in Table 2-1, amounts to 5.2 percent of total U.S. wealth as shown in Table 2-4.

### **Trends in National Wealth**

The net stock of wealth in the United States at the end of 1997 was about \$62 trillion. Since 1980, it has increased in real terms at an annual rate of 2.0 percent per year—less than half the 4.4 percent real growth rate it averaged from 1960 to 1980. Public capital formation slowed down even more between the two periods. Since 1980, public capital has increased at an annual rate of only 0.5 percent, compared with 2.9 percent over the previous 20 years.

The net stock of private nonresidential plant and equipment grew 1.8 percent per year from 1980 to 1997 compared with 4.4 percent in the 1960s and 1970s, and the stock of business inventories increased less than 0.1 percent per year. However, private nonresidential fixed capital has increased more rapidly since 1992—2.4 percent per year—reflecting the recent investment boom.

The accumulation of education capital, as measured here, has also slowed down since 1980, but not nearly as much. It grew at an average rate of 4.7 percent per year in the 1960s and 1970s, about the same as the average rate of growth in private physical capital during the same period. Since 1980, education capital has grown at a 4.0 percent annual rate. This reflects the extra resources devoted to schooling in this period, and the fact that such resources were rising in relative value. R&D stocks have grown at about the same rate as education capital since 1980.

### **Other Federal Influences on Economic Growth**

Many Federal policies contributed to the slowdown in capital formation that occurred after 1980. Federal investment policies obviously were important, but the Federal Government also contributes to wealth in ways that cannot be easily captured in a formal presentation. Monetary and fiscal policies affect the rate and direction of capital formation. Regulatory and tax policies affect how capital is invested, as do the Federal Government's credit assistance policies.

One important channel of influence is the Federal budget deficit, which determines the size of the Federal Government's borrowing requirement. Smaller deficits in the 1980s would have resulted in a smaller gap between Federal liabilities and assets than is shown in Table 2-1. It is also likely that, had the more than \$3 trillion in added Federal debt since 1980 been avoided, a significant share of these funds would have gone into private investment. National wealth might have been 2 to 4 percent larger in 1997 had fiscal policy avoided the buildup in the debt.

### **Social Indicators**

There are certain broad responsibilities that are unique to the Federal Government. Especially impor-

tant is the Government's role in fostering healthy economic conditions, promoting health and social welfare, and protecting the environment. Table 2-5 offers a rough cut of information that can be useful in assessing how well the Federal Government has been doing in promoting these general objectives.

The indicators shown here are only a limited subset drawn from the wide array of available data on conditions in the United States. In choosing indicators for this table, priority was given to measures that were consistently available over an extended period. Such indicators make it easier to draw valid comparisons and evaluate trends. In some cases, however, this meant choosing indicators with significant limitations.

The individual measures in this table are influenced in varying degrees by many Government policies and programs, as well as by external factors beyond the Government's control. They are not outcome indicators, because they do not measure the direct results of Government activities, but they do provide a quantitative measure of the progress or lack of progress in reaching some of the ultimate values that government policy is intended to promote.

Such a table can serve two functions. First, it highlights areas where the Federal Government might need to modify its current practices or consider new approaches. Where there are clear signs of deteriorating conditions, corrective action might be appropriate. Second, the table provides a context for evaluating other data on Government activities. For example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective.

An example of this occurs during economic recessions when reductions in tax collections lead to increased government borrowing that adds to Federal liabilities. This decline in Federal net assets, however, provides an automatic stabilizer for the private sector. State and local governments and private budgets are strengthened by allowing the Federal budget to go deeper into deficit. More stringent Federal budgetary controls could be used to hold down Federal borrowing during such periods, but only at the risk of aggravating the downturn and weakening the other sectors.

The Government cannot avoid making such trade-offs because of its size and the broad ranging effects of its actions. Monitoring these effects and incorporating them in the Government's policy making is a major challenge.

### **An Interactive Analytical Framework**

No single framework can encompass all of the factors that affect the financial condition of the Federal Government. Nor can any framework serve as a substitute for actual analysis. Nevertheless, the framework presented here offers a useful way to examine the financial aspects of Federal policies. Increased Federal support for investment, the reduction in Federal absorption of saving through deficit reduction, and other Administration policies to enhance economic growth are expected

Table 2-5. ECONOMIC AND SOCIAL INDICATORS

General categories	Specific measures	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
<b>Economic:</b>															
Living Standards .....	Real GDP per person (1992 dollars) .....	12,512	14,792	16,521	17,896	20,252	22,345	24,559	24,058	24,447	24,738	25,352	25,630	25,998	26,833
	Average annual percent change .....	0.3	5.0	-1.1	-1.6	-1.4	2.8	0.3	-2.0	1.6	1.2	2.5	1.1	1.4	3.2
	Median income (1994 dollars):														
	All households .....	NA	NA	33,181	32,943	33,763	34,439	35,945	34,705	34,261	33,922	34,158	35,082	35,492	NA
	Married couple families .....	28,617	33,330	39,951	41,506	44,118	45,350	47,893	47,225	46,847	46,695	47,598	48,452	49,707	NA
	Female householder, no spouse present .....	14,461	16,203	19,348	19,107	19,841	19,918	20,325	19,228	19,039	18,940	19,307	20,272	19,911	NA
	Income share of middle three quintiles (%) .....	54.0	53.9	53.6	53.8	53.6	52.2	51.2	51.4	51.0	48.9	49.0	49.1	48.9	NA
	Poverty rate (%) <sup>1</sup> .....	22.2	17.3	12.6	12.3	13.0	14.0	13.5	14.2	14.8	15.1	14.5	13.8	13.7	NA
Economic security .....	Inflation and unemployment:														
	Civilian unemployment (%) .....	5.5	4.5	4.9	8.5	7.1	7.2	5.5	6.7	7.4	6.8	6.1	5.6	5.4	5.0
	CPI-U (year over year % change) .....	1.7	1.6	5.7	9.1	13.5	3.6	5.4	4.2	3.0	3.0	2.6	2.8	3.0	2.3
Employment prospects .....	Increase in total payroll employment (millions) .....	-0.5	2.9	-0.5	0.4	0.2	2.5	0.3	-0.8	1.1	2.8	3.9	2.2	2.5	3.2
Wealth creation .....	Managerial or professional jobs (% of civilian employment) .....	NA	NA	NA	NA	NA	24.1	25.8	26.3	26.2	26.8	27.5	28.3	28.8	29.1
Innovation .....	Net national saving rate (% of GDP) .....	10.8	12.5	8.7	6.7	7.5	6.2	4.4	4.3	3.1	3.4	4.3	5.1	5.7	6.4
	Patents issued to U.S. residents (thousands) .....	42.0	53.9	50.1	51.4	40.8	43.4	53.0	57.8	58.8	61.2	64.3	64.5	69.4	NA
	Multifactor productivity (average annual percent change)	0.4	3.0	-0.2	0.8	-2.3	0.5	-0.2	-1.0	1.5	0.5	0.7	NA	NA	NA
<b>Social:</b>															
Families .....	Children living with female Householder, no spouse present (% of all children) .....	9	10	12	16	18	21	22	22	23	23	23	23	24	NA
Safe communities .....	Violent crime rate (per 100,000 population) <sup>2</sup> .....	160	199	364	482	597	557	732	758	758	747	714	685	634	597
	Murder rate (per 100,000 population) <sup>2</sup> .....	5	5	8	10	10	8	9	10	9	10	9	8	7	7
Health and illness .....	Juvenile crime (murders and nonnegligent manslaughter per 100,000 persons age 14-17) .....	NA	NA	NA	NA	13	10	24	27	26	30	29	24	NA	NA
	Infant mortality (per 1,000 live births) <sup>3</sup> .....	26.0	24.7	20.0	16.1	12.6	10.6	9.2	8.9	8.5	8.4	8.0	7.6	7.2	6.3
	Low birthweight (<2,500 gms) babies (%) .....	7.7	8.3	7.9	7.4	6.8	6.8	7.0	7.1	7.1	7.2	7.3	7.3	7.4	NA
	Life expectancy at birth (years) .....	69.7	70.2	70.8	72.6	73.7	74.7	75.4	75.5	75.8	75.5	75.7	75.8	76.1	NA
	Cigarette smokers (% population 18 and over) .....	NA	42.4	39.5	36.4	33.2	30.1	25.5	25.6	26.5	25.0	NA	NA	NA	NA
Learning .....	Bed disability days (average days per person) .....	6.0	6.2	6.1	6.6	7.0	6.1	6.2	6.5	6.3	6.7	6.2	NA	NA	NA
	High school graduates (% of population 25 and older) .....	44.6	49.0	55.2	62.5	68.6	73.9	77.6	78.4	79.4	80.2	80.9	81.7	81.7	NA
	College graduates (% of population 25 and older) .....	8.4	9.4	11.0	13.9	17.0	19.4	21.3	21.4	21.4	21.9	22.2	23.0	23.6	NA
	National assessment of educational progress: <sup>4</sup>														
	Mathematics—high school seniors .....	NA	NA	NA	302	300	301	305	306	307	307	306	307	307	NA
	Science—high school seniors .....	NA	NA	305	293	286	288	290	292	294	294	294	295	296	NA
Participation .....	Voting for President (% eligible population) .....	62.8	NA	NA	NA	52.8	NA	NA	NA	55.1	NA	NA	NA	48.9	NA
	Voting for Congress (% of eligible population) .....	58.5	NA	43.5	NA	47.6	NA	33.1	NA	50.8	NA	37.4	NA	45.7	NA
	Individual charitable giving per capita (1997 dollars) .....	210	251	301	320	349	367	448	448	441	439	434	465	NA	NA
<b>Environment:</b>															
Air quality .....	Population living in counties with ozone levels exceeding the standard (millions) .....	NA	NA	NA	NA	NA	76	63	70	43	51	50	71	NA	NA
Water quality .....	Population served by secondary treatment or better (millions) .....	NA	NA	NA	NA	NA	134	155	157	159	162	164	166	168	NA

<sup>1</sup>The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.<sup>2</sup>Not all crimes are reported, and the fraction that go unreported may have varied over time; the figures for 1997 are preliminary estimates based on partial reporting.<sup>3</sup>The figure for 1997 is based on preliminary data through April.<sup>4</sup>Some data from the national educational assessments have been interpolated.

to promote national wealth and improve the future financial condition of the Federal Government. As that occurs, the efforts will be revealed in these tables.

#### TECHNICAL NOTE: SOURCES OF DATA AND METHOD OF ESTIMATING

##### Federally Owned Assets and Liabilities

###### Assets

**Financial Assets:** The source of data is the Federal Reserve Board's Flow-of-Funds Accounts. Two adjustments were made to these data. First, U.S. Government holdings of financial assets were consolidated with the holdings of the monetary authority, i.e., the Federal Reserve System. Second, the gold stock, which is valued in the Flow-of-Funds at a constant historical price, is revalued using the market value for gold.

##### Physical Assets

**Fixed Reproducible Capital:** Estimates were developed from the OMB historical data base for physical capital outlays. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. The source data are in current dollars. To estimate investment flows in constant dollars, it is necessary to deflate the nominal investment series. This was done using price deflators for Federal purchases of durables and structures from the National Income and Product Accounts. These price deflators are

available going back as far as 1940. For earlier years, deflators were based on historical statistics for constant price public capital formation. The capital stock series were adjusted for depreciation on a straight-line basis, assuming useful lives of 46 years for water and power projects; 40 years for other direct Federal construction; and 16 years for major nondefense equipment and for defense procurement.

*Fixed Nonreproducible Capital:* Historical estimates for 1960–1985 were based on estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, “Government Saving, Capital Formation and Wealth in the United States, 1947–1985,” published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University of Chicago Press, 1989).

Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and in the Producer Price Index for Crude Energy Materials. The Bureau of Economic Analysis is in the process of preparing satellite accounts to accompany the National Income and Product Accounts that will report on changes in mineral deposits for the Nation as a whole, but this work is not yet completed.

### **Liabilities**

*Financial Liabilities:* The principal source of data is the Federal Reserve’s Flow-of-Funds Accounts.

*Contingent Liabilities:* Sources of data are the OMB Deposit Insurance Model and the OMB Pension Guarantee Model. Historical data on contingent liabilities for deposit insurance were also drawn from the Congressional Budget Office’s study, *The Economic Effects of the Savings and Loan Crisis*, issued January 1992.

*Pension Liabilities:* For 1979–1996, the estimates are the actuarial accrued liabilities as reported in the annual reports for the Civil Service Retirement System, the Federal Employees Retirement System, and the Military Retirement System (adjusted for inflation). Estimates for the years before 1979 are not actuarial; they are extrapolations. The estimate for 1997 is a projection.

### **Long-Run Budget Projections**

The long-run budget projections are based on long-run demographic and economic projections. A spreadsheet model of the Federal budget developed at OMB computes the budgetary implications of this forecast.

*Demographic and Economic Projections:* For the years 1998–2008 the assumptions are identical to those used in the budget. As always, these budget assumptions reflect the President’s policy proposals. The long-run projections extend these budget assumptions by holding constant inflation, interest rates, and unemployment at the levels assumed in the final year of the budget. Population growth and labor force participation are extended using the intermediate assumptions from the 1997 social security trustees’ report. The projected rate of growth for real GDP is built up from the labor force assumptions and an assumed rate of productivity growth. The assumed rate of productivity growth is held

constant at the average rate of growth implied by the budget’s economic assumptions. Income shares of GDP are held constant at their levels in the last year of the Administration forecast with one exception: wages and salaries decline gradually as a share of GDP through 2028.

*Budget Projections:* For the budget period, the projections follow the budget. Beyond the budget horizon, receipts are projected using simple rules of thumb linking income taxes, payroll taxes, excise taxes, and other receipts to projected tax bases derived from the economic forecast. Outlays are computed in different ways. Discretionary spending grows at the rate of inflation. Social security, Medicare, and Federal pensions are projected using the most recent actuarial forecasts available at the time the budget was prepared. These projections are repriced using Administration inflation assumptions. Other entitlement programs are projected based on rules of thumb linking program spending to elements of the economic and demographic forecast such as the poverty rate.

Surpluses after 2008 were assumed to be used to reduce taxes or increase spending, leaving the budget precisely in balance.

*Alternative Scenarios:* The alternative budget scenarios are intended to illustrate the impact of variations in key assumptions underlying the projections.

- *Discretionary.* The alternatives for discretionary spending assume that discretionary budget authority after 2008 grows with inflation and total population growth, or with nominal GDP growth.
- *Health care costs.* The high scenario for health care costs assumes that Medicare and Medicaid real spending per beneficiary grows one percent faster than in the basic projections, while the low cost scenario assumes that real spending per beneficiary grows at the rate of real GDP per capita. The scenario eliminating the Medicare trustees’ assumed slowdown in costs holds real growth per beneficiary at an average of 2.4 percent annually for Medicare Parts A and B combined.
- *Productivity.* The scenarios for productivity growth assume that productivity grows one-half percentage point faster or slower than in the basic projections.
- *Fertility.* The scenarios for fertility assume that the total fertility rate rises to 2.2 or falls to 1.6, consistent with the social security trustees’ range for fertility in their high and low cost assumptions.
- *Life expectancy.* The scenarios for life expectancy are consistent with the high and low life expectancy assumptions in the long run population projections published by the Bureau of the Census. The high scenario assumes that life expectancy rises to 86.4 years for males and 92.3 years for females in 2050. The low scenario assumes that life expectancy falls slightly to 70.9 years for males and 78.8 years for females in 2050.

- *Immigration.* The scenarios for higher and lower immigration assume that net immigration is 1,350,000 persons per year and 450,000 persons per year, 50 percent higher and lower than the 900,000 persons assumed in the basic projections.

### National Balance Sheet Data

*Publicly Owned Physical Assets:* Basic sources of data for the federally owned or financed stocks of capital are the investment flows described in Chapter 6. Federal grants for State and local government capital were included together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local government capital come from the unrevised capital stock data prepared by the Bureau of Economic Analysis.

*Privately Owned Physical Assets:* Data are from the Flow-of-Funds national balance sheets and from the private net capital stock estimates prepared by the Bureau of Economic Analysis. Values for 1997 were extrapolated using investment data from the National Income and Product Accounts.

*Education Capital:* The stock of education capital is computed by valuing the cost of replacing the total years of education embodied in the U.S. population 16 years of age and older at the current cost of providing schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' forgone earnings, i.e., it reflects the opportunity cost of education.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions and for research and development conducted at colleges and universities because these outlays are classified elsewhere as investment in physical capital and investment in R&D capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate education spending in HHS, Defense and Agriculture; and most outlays for vocational training.

Data on investment in education financed from other sources come from educational institution reports on the sources of their funds, published in U.S. Department of Education, *Digest of Education Statistics*. Nominal expenditures were deflated by the implicit price deflator for GDP to convert them to constant dollar values. Education capital is assumed not to depreciate, but to be retired when a person dies. An education capital stock computed using this method with

different source data can be found in Walter McMahon, "Relative Returns To Human and Physical Capital in the U.S. and Efficient Investment Strategies," *Economics of Education Review*, Vol. 10, No. 4, 1991. The method is described in detail in Walter McMahon, *Investment in Higher Education*, 1974.

*Research and Development Capital:* The stock of R&D capital financed by the Federal Government was developed from a data base that measures the conduct of R&D. The data exclude Federal outlays for physical capital used in R&D because such outlays are classified elsewhere as investment in federally financed physical capital. Nominal outlays were deflated using the GDP deflator to convert them to constant dollar values.

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent on the outstanding balance for applied research and development. Basic research is assumed not to depreciate. The 1993 Budget contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and nondefense components (see *Budget for Fiscal Year 1993*, January 1992, Part Three, pages 39–40).

A similar method was used to estimate the stock of R&D capital financed from sources other than the Federal Government. The component financed by universities, colleges, and other nonprofit organizations is based on data from the National Science Foundation, *Surveys of Science Resources*. The industry-financed R&D stock component is from that source and from the U.S. Department of Labor, *The Impact of Research and Development on Productivity Growth*, Bulletin 2331, September 1989.

Experimental estimates of R&D capital stocks have recently been prepared by BEA. The results are described in "A Satellite Account for Research and Development," *Survey of Current Business*, November 1994. These BEA estimates are lower than those presented here primarily because BEA assumes that the stock of basic research depreciates, while the estimates in Table 2–3 assume that basic research does not depreciate. BEA also assumes a slightly higher rate of depreciation for applied research and development, 11 percent, compared with the 10 percent rate used here.

### Social Indicators

The main sources for the data in this table are the Government statistical agencies. Generally, the data are publicly available in the President's annual *Economic Report* and the *Statistical Abstract of the United States*.