2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

Introduction

The Government's financial condition can only be properly evaluated using a broad range of data—more than would usually be shown on a business balance sheet—and several complementary perspectives. This chapter presents a framework for such analysis. No single table in the chapter is the equivalent of a Federal balance sheet, but taken as a whole, the chapter provides an overview of the Government's resources, the current and future claims on them, and some idea of what the taxpayer gets in exchange for these resources. This is the kind of assessment for which a financial analyst would turn to a business balance sheet, modified to take into account the Government's unique roles and circumstances.

Because there are important differences between Government and business, and because there are serious limitations on the available data, this chapter's findings should be interpreted with caution; its conclusions are tentative and subject to future revision.

The presentation consists of three parts:

- Part I 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 analysis, but they are only a partial reflection of the full range of Government resources and responsibilities. Only those items actually owned by the Government are included in the table, but the Government is able to draw on other resources. It can tax and use other measures to meet future obligations. The liabilities shown in the table include the binding commitments that have resulted from prior Government action, but the Government's responsibilities are much broader than this.
- Part II presents possible paths for the Federal budget that extend beyond the ten-year budget window. Table 2–2 summarizes this information. This part is intended to show the Government's long-run financial burdens and the resources that it will have available to meet them. Some future claims on the Government deserve 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 changed between 1999 and 2001.
- Part III features information on economic and social conditions which the Government affects by its actions. Table 2–4 presents summary data for national wealth, while highlighting the Federal investments that have contributed to that wealth. Table 2–5 presents a small sample of economic and social indicators.

Relationship with FASAB Objectives

The framework presented here meets the stewardship objective [1] 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 presentation here explores an experimental approach for meeting this 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 and between the public and private sectors; but the standard budget presentation, with its focus on annual outlays, receipts, and the surplus/deficit, does not provide all the information needed for a full analysis of the Government's financial and investment decisions. A business is ultimately judged by the bottom line in its balance sheet, but for the national Government, the ultimate test is how its actions affect the country.

[1] *Objectives of Federal Financial Reporting,* Statement of Federal Financial Accounting Concepts Number 1, September 2, 1993. The other objectives are 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 in such a fashion. Why does the Government not manage its finances more like a business?

The Federal Government has fundamentally different objectives from a business enterprise. The primary goal of every business is to earn a profit, and the Federal Government leaves almost all activities at which a profit could be earned to the private sector. For the vast bulk of the Federal Government's operations, it would be difficult or impossible to charge prices—let alone prices that would cover expenses. The Government undertakes these activities not to improve its balance sheet, but to benefit the Nation—to foster not only monetary but also nonmonetary values.

For example, 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 if they are done successfully. The return on these investments shows up not as an increase in Government assets, but as an increase in the general state of knowledge and in the earning capacity of the country's citizens. A business's motives for investment are quite different; business invests to earn a profit for itself, not others, and if its investments are successful, their value will be reflected in its balance sheet. Because the Federal Government's objectives are different, its balance sheet behaves differently, and should be interpreted differently.

2. Table 2–1 seems to imply that the Government is insolvent. Is it?

No. Just as the Federal Government's responsibilities are of a different nature than those of a private business, so are its resources. Government 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. These powers, which include taxation, allow the Government to meet its present obligations and those that are anticipated from future operations even though the Government's assets are less than its liabilities.

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 or likely to become so. Where governments totter on the brink of insolvency, lenders are either unwilling to lend them money, or do so only in return for a substantial interest premium.

In recent years, the Government's net liabilities have leveled off and begun to shrink. By achieving a budget surplus, the Government has been able to repay some of its debts and reduce the balance between its liabilities and its assets.

3. Why does the Government not keep a proper set of books?

The Government is not a business, and accounting standards designed to illuminate how much a business earns and how much equity it has could provide misleading information if applied to the Government. In recent years, the Federal Accounting Standards Advisory Board (FASAB) has developed, and the Government has adopted, a conceptual accounting framework that reflects the Government's distinct functions and answers the questions for which Government should be accountable. This framework addresses budgetary integrity, operating performance, stewardship, and systems and controls. The Board has also developed, and the Government has

QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued

adopted, a full set of accounting standards. Federal agencies now issue audited financial reports that follow these standards; an audited Government-wide consolidated financial report was issued in 1999 and 2000. In short, the Government does follow generally accepted accounting principles for Federal entities, just as businesses do for private enterprises and State and local governments do for their activities.

This chapter is intended to address the "stewardship objective"—assessing the interrelated condition of the Federal Government and the Nation. The data in this chapter illuminate the tradeoffs and connections between making the Federal Government "better off" and making the Nation "better off." The Government does not have a "bottom line" comparable to the net worth of a business corporation, and some analysts have found the absence of a bottom line to be frustrating. But it would not help to pretend that such a number exists when clearly it does not.

4. Why is Social Security not shown as a liability in Table 2–1?

Future Social Security benefits are a political and moral responsibility of the Federal Government, but these benefits are not a liability in the usual sense. The Government has unilaterally decreased as well as increased Social Security benefits in the past, and future reforms could alter them again. When the amount in question can be changed unilaterally, it is not ordinarily considered a liability.

Other Federal programs exist that are similar to Social Security in the promises they make—Medicare, Medicaid, Veterans pensions, and Food Stamps—to name a few. Yet few would consider the future benefits expected under these programs to be Federal liabilities. It would be difficult, however, to justify a different accounting treatment for them, if Social Security were to be classified as a liability. There is no bright line dividing Social Security from other programs that promise benefits to people, and all such programs should be accounted for similarly.

Furthermore, if future Social Security benefits were to be treated as liabilities, logic would suggest that future payroll tax receipts that are earmarked to finance those benefits ought to be considered assets. Other tax receipts, however, are not counted as assets for good reasons, and drawing a line between Social Security taxes and other taxes would be questionable.

Under Generally Accepted Accounting Principles, Social Security is not considered to be a liability, so omitting it from Table 2–1 is consistent with the accounting standards developed for the Federal Government by the Federal Accounting Standards Advisory Board (FASAB).

5. It is all very well to run a budget surplus now, but can it be sustained? When the baby-boom generation retires, will the deficit not return even larger than ever before?

The aging of the U.S. population will become dramatically evident when the baby-boomers begin to retire in less than ten years. This demographic transition poses serious long-term problems for the Federal budget and its major entitlement programs. The current budget surplus, however, will help the country address these problems. The surplus means that there will be a significant decline in Federal net interest payments over the next several years. This is one key step towards keeping the budget in balance when the baby-boomers retire.

The second part of this chapter describes how the budget is likely to evolve under various possible alternative scenarios.

QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued

6. Would it be sensible for the Government to borrow to finance needed capital—permitting a deficit in the budget—so long as it was no larger than the amount spent on Federal investments?

The Government consumes capital each year in the process of providing goods and services to the public. If the Government financed new capital by borrowing, it should also plan to pay off this debt as the capital was used up. As discussed in Chapter 6 of Analytical Perspectives, net investment in physical capital owned by the Federal Government has often been negative recently, so little if any deficit spending would actually have been justified recently by this borrowing-for-investment criterion.

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 and 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. It is not clear whether this type of capital investment would fall under the borrowing-for-investment criterion. Certainly, these investments do not create Federally owned assets, even though they are part of national wealth.

There is another difficulty with the logic of borrowing to invest. Businesses expect investments to earn a return large enough to cover their cost. In contrast, the Federal Government does not generally expect to receive a direct payoff 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 surplus/deficit.

Finally, the Federal Government must pursue policies that support the overall financial and economic well-being of the Nation. The Government may deem it desirable to run a budget surplus, even if this means paying for its own investments from current revenues, instead of borrowing. Considerations in addition to the size of Federal investment must be weighed in choosing the right level of the surplus.

7. Is it appropriate to include the Social Security surplus when measuring the Government's consolidated budget surplus?

The Federal budget has many purposes. It should not be surprising that, with more than one purpose, the budget is presented in more than one way. None of these measures is always right, or always wrong; it depends upon the purpose to which the budget is put.

For the purpose of measuring the Government's effects on the economy, it would be misleading to omit Social Security or any other part of the budget, as all parts of the budget affect the economy. For purposes of fiscal discipline, leaving out particular Government activities could actually be dangerous. The principle of a "unified" all-inclusive budget has been used to forestall the practice of moving favored programs off-budget—which has been done to shield those programs from scrutiny and funding discipline.

For setting fiscal policy, however, an alternative to the unified budget is useful. In particular, the Congress has moved Social Security off-budget. The purpose of doing so was to stress the need to provide independent, sustainable funding for Social Security in the long term; and to show the extent to which the rest of the budget had relied on annual Social Security surpluses to make up for its own shortfall.

The data needed to judge its performance go beyond a simple measure of net assets. Consider, for example, Federal investments in education or infrastructure whose returns flow mainly to the private sector and which are often owned by households, private businesses or State and local governments. 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 does not accrue to the Federal Government.

A good starting point for analysis is Table 2–1, which shows the Government's assets and liabilities. This illustrative tabulation of net liabilities is 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. For many years, Government debts increased far more than did Government assets, although in recent years, Government budget surpluses have allowed the Government to reduce its debt and thereby lower its net liabilities.

Table 2–1 presents the Government's binding obligations—such as Treasury debt and the present discounted value of the pensions owed to Federal employees as deferred compensation. These obligations have counterparts in the business world, and would 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. These obligations form only a subset of the Government's financial responsibilities.

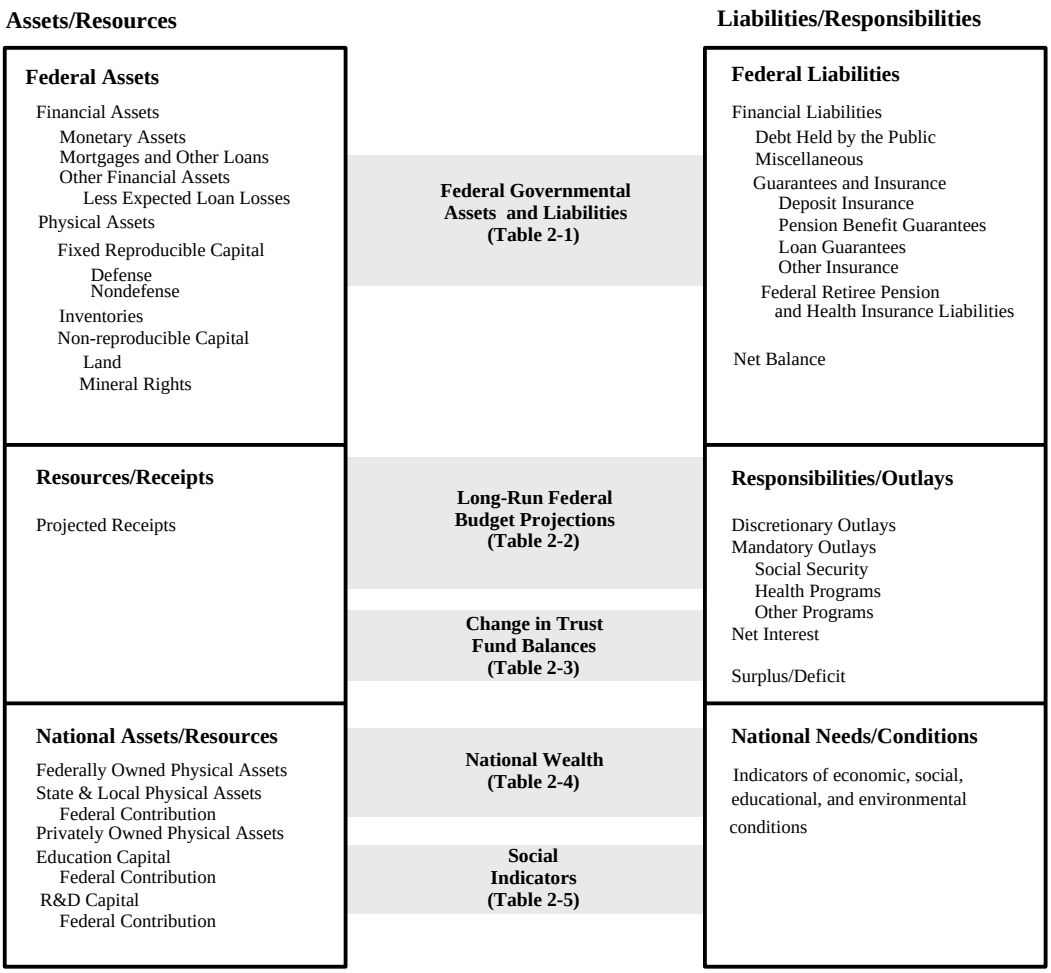
The Federal Government also has resources that go beyond the assets that would normally appear on a balance sheet. These include the Government's sovereign powers to tax, regulate commerce, and set monetary policy. The best way to analyze how the Government uses these powers is to make a long-run projection of the Federal budget (as is done in Part II of this chapter). The budget provides a comprehensive measure of the Government's annual cash flows. Projecting it forward shows how the Government is expected to use its powers to generate cash flows in the future.

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 Congress. Such changes are a regular part of the legislative cycle. It is likely, however, that many of these programs will remain Federal responsibilities in some form for the foreseeable future.

The numbers in the budget are silent on the issue of 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 economy and society. Some such data are currently available, but more measures need to be developed to obtain a full picture. Examples of what might be done are discussed below.

The presentation that follows consists of a series of tables and charts. Taken together, they are the functional equivalent of a business 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 are grouped in two broad categories—assets/resources and liabilities/responsibilities.

Chart 2-1. A Balance Sheet Presentation for the Federal Government



- Reading down the left-hand side of Chart 2–1 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 affects society or the economy.

PART I—THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2–1 summarizes what the Government owes as a result of its past operations netted against the value of what it owns for a number of years beginning in 1960. Assets and liabilities are measured in terms of constant FY 2000 dollars. Ever since 1960, Government liabilities have exceeded the value of assets (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 subsequently those prices declined.[2] Currently, the total real value of Federal assets is estimated to be about 27 percent greater than it was in 1960. Meanwhile, Federal liabilities have increased by 162 percent in real terms. The decline in the Federal net asset position was principally due to persistent Federal budget deficits and the relatively slow increase in Federal asset holdings.

Since the mid-1990s, the shift from budget deficits to budget surpluses has sharply reduced Federal net liabilities. Last year rising energy prices and increased land values also contributed to a rise in the real value of Federal assets, which pulled down net liabilities even further. Currently, the net excess of liabilities over assets is about $3.2 trillion, or $11,500 per capita, com-

[2] 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 run-up 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 2000 dollars)

	1960	1965	1970	1975	1980	1985	1990	1995	1998	1999	2000
ASSETS											
Financial Assets:											
Cash and Checking Deposits	42	61	38	30	46	30	41	42	49	64	56
Other Monetary Assets	1	1	1	1	2	2	2	1	4	5	6
Mortgages	27	26	39	40	74	76	97	67	47	80	77
Other Loans	100	137	172	171	218	288	204	159	178	187	189
less Expected Loan Losses	–1	–3	–4	–9	–17	–17	–19	–24	–47	–51	–37
Other Treasury Financial Assets	43	55	24	31	39	39	97	151	131	140	144
Total	212	277	269	265	362	419	422	397	361	425	435
Nonfinancial Assets:											
Fixed Reproducible Capital	996	997	1,040	944	912	1,056	1,110	1106	999	980	974
Defense	865	822	830	691	633	760	795	768	664	642	624
Nondefense	131	175	210	253	279	296	315	338	335	338	350
Inventories	263	228	212	189	232	267	236	167	139	138	135
Nonreproducible Capital	424	435	417	614	979	1,061	835	622	695	731	922
Land	92	128	161	253	321	338	346	258	333	360	399
Mineral Rights	332	308	256	361	658	724	489	364	362	370	523
Subtotal	1,683	1,660	1,669	1,747	2,122	2,385	2,180	1,895	1,833	1,849	2,031
Total Assets	**1,895**	**1,937**	**1,937**	**2,012**	**2,485**	**2,804**	**2,602**	**2,291**	**2,193**	**2,274**	**2,466**
LIABILITIES											
Financial Liabilities:											
Debt held by the Public	1,124	1,159	1,048	1,061	1,306	2,174	2,965	3,930	3,862	3,715	3,410
Trade Payables and Miscellaneous	15	21	23	31	55	82	117	90	75	73	73
Subtotal	1,139	1,180	1,070	1,092	1,361	2,255	3,082	4,021	3,937	3,788	3,484
Insurance Liabilities:											
Deposit Insurance	0	0	0	0	2	9	72	5	2	1	1
Pension Benefit Guarantee[1]	0	0	0	43	31	43	43	21	49	41	40
Loan Guarantees	0	0	2	6	12	11	16	29	35	35	37
Other Insurance	31	28	22	20	27	17	20	17	16	16	16
Subtotal	31	28	24	70	73	80	150	72	102	95	95
Federal Pension and Retiree Health Liabilities:											
Pension Liabilities	794	1,006	1,196	1,360	1,792	1,793	1,746	1,689	1,664	1,688	1,684
Retiree Health Insurance Benefits	190	241	287	326	430	430	419	405	376	376	384
Total	984	1,248	1,483	1,685	2,222	2,223	2,165	2,093	2,039	2,064	2,068
Total Liabilities	**2,154**	**2,456**	**2,578**	**2,847**	**3,655**	**4,559**	**5,398**	**6,187**	**6,079**	**5,947**	**5,646**
Balance	**–259**	**–519**	**–641**	**–835**	**–1,171**	**–1,755**	**–2,796**	**–3,895**	**–3,885**	**–3,673**	**–3,180**
Addenda:.											
Balance Per Capita (in 2000 dollars)	**–1,433**	**–2,670**	**–3,124**	**–3,867**	**–5,127**	**–7,338**	**–11,152**	**–14,771**	**–14,326**	**–13,422**	**–11,520**
Ratio to GDP (in percent)	**–10.1**	**–16.0**	**–16.6**	**–19.0**	**–22.3**	**–28.2**	**–38.9**	**–47.7**	**–42.0**	**–38.0**	**–31.6**

* This table shows assets and liabilities for the Government as a whole excluding the Federal Reserve System.

[1] The model and data used to calculate this liability were revised for 1996–1999.

pared with net liabilities of $3.9 trillion (FY 2000 dollars) and $14,800 per capita (FY 2000 dollars) in 1995.

Assets

The assets in Table 2–1 are a comprehensive list of the financial and physical resources owned by the Federal Government.

Financial Assets: According to the Federal Reserve Board's Flow-of-Funds accounts, the Federal Government's holdings of financial assets amounted to $0.4 trillion at the end of FY 2000. 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. Holdings of mortgages rose sharply in the late 1980s and then declined in the 1990s, as the Government acquired mortgages from failed savings and loan institutions and then liquidated them.

The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future losses and interest subsidies on these loans is about $40 billion as of 2000. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Reproducible Capital: The Federal Government is a major investor in physical capital and computer software. Government-owned stocks of such capital amounted to about $1.0 trillion in 2000 (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 (and of course, in a realistic sense, much of these resources could or would never be sold). 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, but they have risen since 1993. It is assumed here that Federal land shared in the decline and the subsequent recovery. Oil prices declined in 1997–1998 but rebounded sharply in 1999–2000 causing the estimated value of Federal mineral deposits to fluctuate. (The estimates omit other types of valuable assets owned by the Government, such as works of art and historical artefacts, because the valuation of many of these assets would have little realistic basis, and because, as part of the Nation's historical heritage, most of these objects would never be sold.)

Total Assets: The total real value of Government assets is lower now than at the end of the 1980s, mainly because of declines in defense capital, although Government asset values have risen strongly since 1998. Even so, the Government's holdings are vast. At the end of 2000, the value of Government assets is estimated to have been about $2.5 trillion.

Liabilities

Table 2–1 covers all those liabilities that would also appear on a business balance sheet and only those liabilities. These include various forms of Federal debt, Federal pension and health insurance obligations to civilian and military retirees, and the estimated liability arising from Federal insurance and loan guarantee programs.

Financial Liabilities: Financial liabilities amounted to about $3.5 trillion at the end of 2000. The single largest component was Federal debt held by the public, amounting to around $3.4 trillion. In addition to debt held by the public, the Government's financial liabilities include approximately $0.1 trillion 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, cash disbursements may initially be small or, if a fee is charged, the Government may even collect money; but the risk of future cash payments associated with such commitments can be large. The figures reported in Table 2–1 are estimates of the current discounted value of prospective future losses on outstanding guarantees and insurance contracts. The present value of all such losses taken together is less than $0.1 trillion. The resolution of the many failures in the savings and loan and banking industries has helped to reduce the liabilities in this category by about half since 1990.

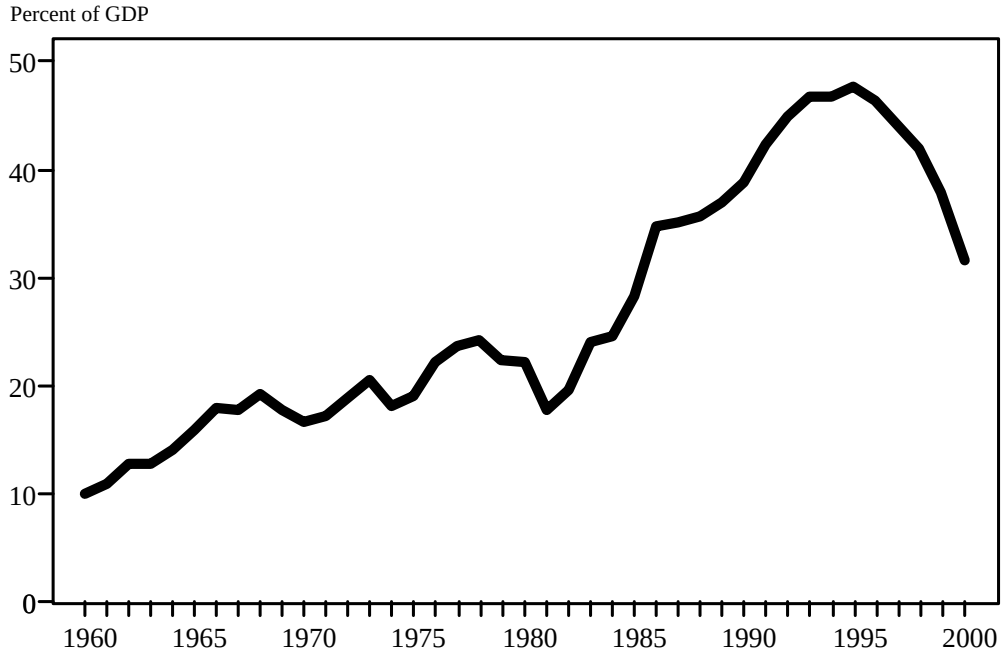
Federal Pension and Retiree Health Liabilities: The Federal Government owes pension benefits as a form of deferred compensation to retired workers and to current employees who will eventually retire. It also provides its retirees with subsidized health insurance through the Federal Employees Health Benefits program. The amount of these liabilities is large. The discounted present value of the benefits is estimated to have been around $2.1 trillion at the end of FY 2000.[3]

The Balance of Net Liabilities

Because of its sovereign powers, the Government need not maintain a positive balance of net assets; the buildup in net liabilities since 1960 did not damage Federal creditworthiness. By 1995 net liabilities had reached 48 percent of GDP. Since then, the net balance as a percentage of GDP has fallen for five straight years. The real value—adjusted for inflation—of net liabilities has also fallen by $0.7 trillion (FY 2000 dollars), reflecting the shift from budget deficits to surpluses, and a recent recovery in some Federal asset prices. If the budget surplus is maintained, as projected in the President's Budget, the net balance will continue to improve.

[3] The pension liability is the actuarial present value of benefits accrued-to-date based on past and projected salaries. The 2000 liability is extrapolated from recent trends. The retiree health insurance liability is based on actuarial calculations of the present value of costs for existing programs. It has only been estimated on a consistent basis since 1997. For earlier years the liability was assumed to grow in line with the pension liability, which may differ significantly from what the actuaries would calculate for this period.

Chart 2-2. Net Federal Liabilities



PART II—THE BALANCE OF RESOURCES AND RESPONSIBILITIES

This part of the presentation describes long-run projections of the Federal budget that extend beyond the normal 5 to 10 year 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 into the future the projections are pushed. Long-run budget projections can be useful, however, in sounding warnings about future problems. Federal responsibilities extend well beyond the next decade. There is no time limit on the Government's constitutional responsibilities, and programs like Social Security are intended to continue indefinitely.

The Threat to the Budget from the Impending Demographic Transition: It is evident even now that there will be mounting challenges to the budget early in this century. In 2008, the first of the huge baby-boom generation born after World War II will reach age 62 and 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 Social Security and for the Government's health programs which serve the elderly—Medicare and increasingly Medicaid. Long-range projections can help define how serious these strains might become, and what would be needed to withstand them.

The U.S. population has been aging for decades, but the impending demographic shift is now just over the horizon. The baby-boom cohort has moved into its prime earning years, while the much smaller cohort born during the Great Depression has been retiring. Together these shifts in the population have held down the rate of growth in the number of retirees relative to the labor force. The suppressed budgetary pressures are likely to burst forth when the baby-boomers begin to retire at the end of this decade.

The pressures are expected to persist even after the baby-boomers are no longer here. The Social Security actuaries project that the ratio of workers to Social Security beneficiaries will fall from around 3½ currently to around 2 as the baby-boomers retire, and because of lower fertility and improved mortality, that ratio is not expected to rise again. With fewer workers to pay taxes that support the retired population, the budgetary pressures on the Federal retirement pro-

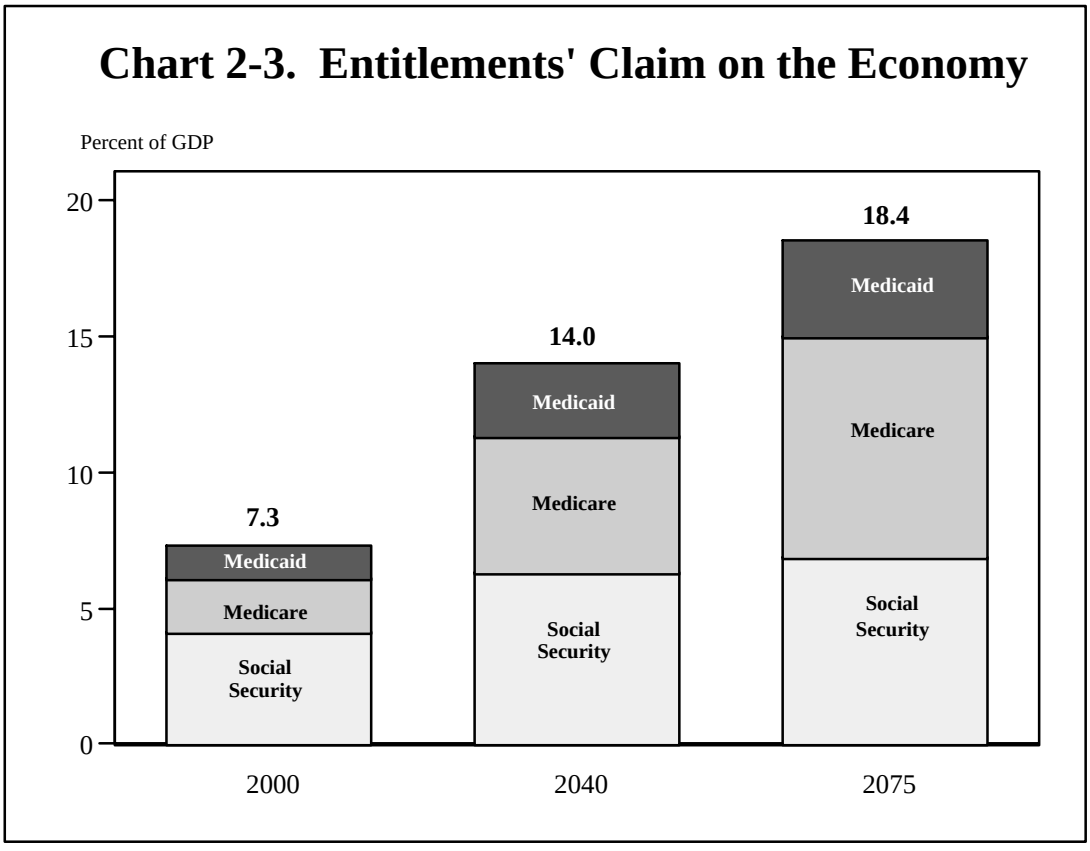
grams will persist. The problem posed by the demographic transition is a permanent one.

Another way to see the problem is to examine the projected spending on Social Security, Medicare, and Medicaid. Currently, these programs account for 46 percent of non-interest Federal spending; up from 30 percent in 1980. By 2040, when most of the remaining baby-boomers will be in their 80s, these three programs could easily account for more than two-thirds of non-interest Federal spending. At the end of the projection period, the figure rises to over 75 percent of non-interest spending. In other words, under an extension of current budget policy, almost all of the budget would go to these three programs alone. That would considerably reduce the flexibility of the budget, and the Government's ability to respond to new challenges.

Measured relative to the size of the economy, the three major entitlement programs now amount to 7 percent of GDP.[4] By 2040, this share doubles to 14 percent, and in 2075 it is projected to reach 18 percent of GDP. Current projections suggest, absent structural changes in the programs, that the Federal Government will eventually have to find 11 percent of GDP to cover future benefits.

The Shortfall in Social Security: Social Security is intended to be self-financing. Workers and employers pay taxes earmarked for the Social Security trust funds, and the funds disburse benefits. In recent years, the funds have been increasing in size as a result of a growing Social Security surplus. At the end of FY 2000, the combined Old Age, Survivors and Disability Insurance (OASDI) trust funds had reached $1 trillion. The demographic transition, however, is expected to reverse the buildup of the trust funds under current law. The program's actuaries project that by 2016, taxes flowing into the funds will fall short of program benefits and expenses.[5] The funds are projected to continue to grow for some years beyond this point because of positive interest income, but by 2025, the trust funds will peak and begin to be drawn down; by 2038, when the youngest baby-boomers will be in their 70s, the actuaries project that the OASDI trust funds will be exhausted. That would not mean that Social Security benefits would cease, because taxes are projected to cover about 70 percent of benefits at that point, but the program could no longer sustain promised benefits out of earmarked tax receipts alone (see accompanying box for a fuller discussion).

Chart 2-3. Entitlements' Claim on the Economy



[4] 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 2000 dollar by almost 50 percent by 2030, and by 65 percent by 2050. For long-run comparisons, it is much more useful to examine the ratio of the surplus/deficit and other budget totals to the expected size of the economy as measured by GDP.

[5] The long-range projections discussed in this chapter are based on an extension of the Administration's economic projections from the budget, which is different from the economic assumptions used by the actuaries. Under the extended Administration projections this point would be reached in 2019, not 2016, and the other key dates would come later also.

Social Security: The Long-Range Challenge

For 65 years, Social Security has provided retirement security and disability insurance for tens of millions of Americans through a self-financing system. The principle of self-financing is important because it compels corrections to the system in the event of projected financial imbalances.

Although Social Security is running surpluses today, OMB projects it will begin running cash deficits within 20 years. Social Security's spending path is unsustainable, driven largely by the demographic trends of lower fertility rates and longer life spans. These trends indicate that the number of workers available to support each retiree will decline from 3.4 today to an estimated 2.1 in 2030. As a result, the Government will not be able to meet current-law benefit obligations at current payroll tax rates. At present, the Social Security system faces a closed-group actuarial deficit of $8.7 trillion.

The size of Social Security's shortfall cannot be known with any precision. Under the Social Security Trustees' 2001 intermediate-cost economic and demographic assumptions, the gap between Social Security receipts and outlays in 2040 will be 1.7 percent of GDP. Under their high-cost assumptions, the shortfall in that year would be 72 percent larger, or 2.9 percent of GDP.

Long-range uncertainty underscores the importance of creating a system that is financially stable and self-contained. Otherwise, if pessimistic assumptions turn out to be accurate, the demands created by Social Security could compromise the rest of the budget and the Nation's economic health.

Moreover, the current structure of Social Security leads to substantial generational inequities in the average rate of return people can expect from the program. While previous generations fared well, individuals born today on average can expect to earn less than a two percent rate of return on their payroll tax contributions. This estimate may overstate the rate of return, because it assumes no changes in current-law taxes or benefits even though meeting the projected financing shortfall through benefit cuts or additional revenues would further reduce Social Security's implicit rate of return for future cohorts. A 1995 analysis found that the cohort born in 2000 would experience a 1.7 percent rate of return before accounting for Social Security's shortfall, and a 1.5 percent rate of return after adjusting revenues to keep the system solvent.

One way to address the issues of uncertainty and declining rates of return, while protecting national savings, would be to allow individuals to keep some of their payroll taxes in personal retirement accounts. Giving workers the ability and the control to build wealth for their own retirement would lessen the pressure of adverse demographic trends on the long-range budget. Such accounts would reduce the need for a rapidly growing Government outlay by creating opportunities for younger workers to enjoy the fruits of higher rates of return in private equity markets. Personal retirement accounts could boost national savings, because they would be designed as investment vehicles. The current Social Security program, by contrast, is in essence a tax-and-transfer system that may or may not enhance national savings. The program's contribution to savings depends on Social Security's own financial status at any given point in time, as well as the extent to which the rest of the budget relies on Social Security surpluses to fund ongoing programs.

Medicare: The Long-Range Challenge

According to the Medicare Trustees most recent 2001 report, the Hospital Insurance (HI) trust fund will go bankrupt in 2029, and spending will exceed taxes into the fund in 2016. The long-run outlook for the HI Trust Fund is measured by the actuarial balance. The actuarial balance reflects the financing changes needed (e.g., benefit cuts, tax increase), expressed in terms of the tax rate increase required today to balance the HI Trust Fund over the next 75 years. In 2001, Trustees are projecting an actuarial deficit of –1.97 percent. This is a 63 percent increase in the deficit over last year's estimate (–1.21 percent), due largely to the Trustee's acknowledgment that Medicare per capita expenditures will grow faster than they had previously assumed, outpacing per capita GDP growth by a full percent.

But, Medicare actually has two trust funds, not one: the HI and the SMI trust funds. Like HI, growth in per beneficiary SMI expenditures are projected to outpace per capita GDP growth by a full percent. In the short run, a comprehensive analysis of the Medicare program that takes into account both of these trust funds reveals that there is already a Medicare deficit, not a surplus. In fact, over the next ten years 2002–2011, the Medicare program will require annual transfers from the general revenue fund totaling $1.2 trillion to meet program expenditures.

The long-range projections of combined Medicare spending reveal substantial spending growth. Not only are per capita expenditures increasing rapidly, but the number of beneficiaries is skyrocketing as well. Between 2010 and 2030, the number of persons age 65 and older will increase from 39.7 million to 69.1 million. As a result of this combination of factors, total Medicare expenditures are projected to quadruple as a percentage of GDP, from 2 percent in 2000 to 8 percent in 2075.

The Administration is committed to working with Congress to reform Medicare in a manner which improves the long-term solvency of the entire program without raising Medicare payroll taxes.

And in Medicare: Medicare faces a similar problem. Income to Medicare's Hospital Insurance (HI) trust fund is projected to exceed outgo until 2016, but the HI fund is projected to reach zero in 2029, nine years earlier than the OASDI trust funds. Unlike Social Security, Medicare has never been completely self-financed. In addition to the HI program, Medicare also consists of Supplementary Medical Insurance (SMI), which covers medical bills outside of the hospital. SMI is funded by a combination of premiums charged to the beneficiaries, which cover about one-quarter of benefits, and general revenue. Even if the HI trust fund were to remain solvent indefinitely, Medicare as a whole would continue to be subsidized by the rest of the budget. As Medicare costs rise, the subsidy increases, but even today Medicare is not self-financing (see accompanying box for a fuller discussion).

An Improved Long-Range Outlook.—At the beginning of the 1990s, when these long-run budget projections were first developed, the deficit was on an unstable trajectory. Given then-current economic projections and policies, the deficit was projected to mount steadily not only in dollar terms, but relative to the size of the economy. This pattern of rising deficits would have driven Federal debt held by the public to unsustainable levels. Policy actions during the 1990s reduced the deficits, and the strong economy that emerged in the second half of the 1990s did even more to eliminate them.

The unified budget is now projected to be in surplus for the next ten years. Even excluding the Social Security surplus, the rest of the budget is also projected to be in surplus over the same period. If realized, these surpluses will reduce the amount of Federal debt outstanding and lower the Government's net interest payments. In FY 2000, net interest amounted to 2.3 percent of GDP; under current estimates, that could be cut to around 0.3 percent of GDP by 2010.

If the policies and assumptions in the budget are extended beyond the ten-year budget window, the unified budget could continue in surplus for many more years. However, there is a wide range of uncertainty around such long-range projections. As discussed below, they are affected by many hard-to-foresee economic and demographic factors, as well as by future policy decisions.

Economic and Demographic Assumptions.—Even though any such forecast is highly uncertain, long-run budget projections require starting with specific economic and demographic projections. The assumptions used as a starting point extend the Administration's medium-term economic projections, augmented by the long-run demographic projections from the 2000 Social Security Trustees' Report.

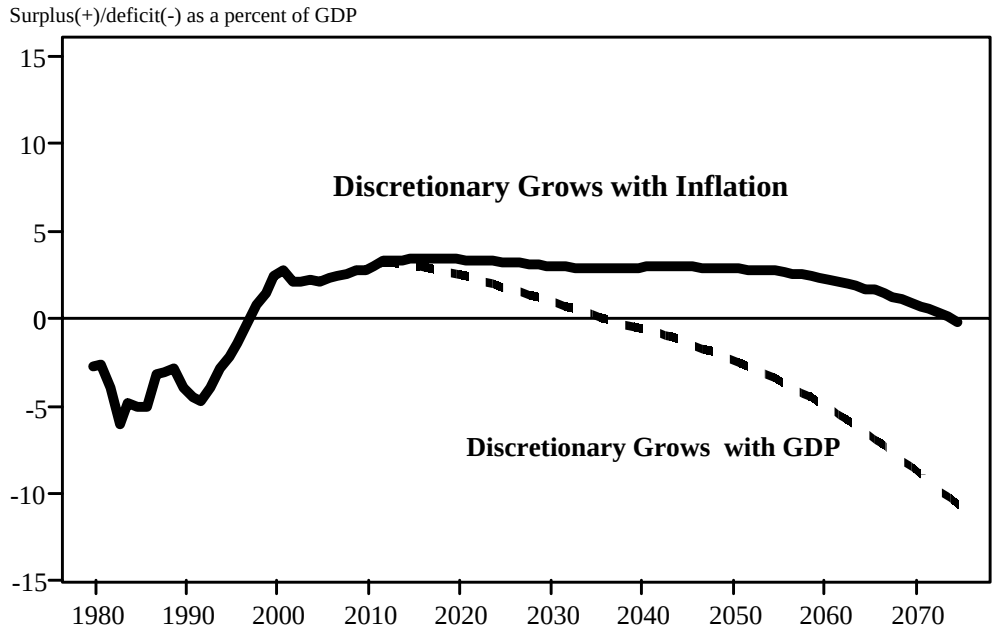
- Inflation, unemployment and interest rates hold stable at 2.5 percent per year for CPI inflation, 4.6 percent for the unemployment rate, and 5.7 percent for the yield on 10-year Treasury notes.
- Productivity growth as measured by real GDP per hour continues at the same constant rate as in

the Administration's medium-term projections—2.1 percent per year.
- In line with the projections of the Social Security Trustees, U.S. population growth is expected to slow from 1 percent per year in the 1990s to about half that rate by 2030.
- Labor force participation declines as the population ages and the proportion of retirees increases.
- Real GDP growth declines gradually after 2011 from around 3 percent per year to an average annual rate of 2.3 percent, because labor force growth is expected to slow while productivity growth is assumed to be constant.

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.

Alternative Budget Projections.—Chart 2–4 below shows budget projections under alternative assumptions about discretionary spending. These projections generally assume that mandatory spending proceeds according to current law and proposed policy, without new programs or enhancements of existing programs except for those proposed in the budget. Under each of these alternatives, the major entitlement programs are expected to absorb an increasing share of budget resources.
- Social Security benefits, driven by the retirement of the baby-boom generation, rise from 4.1 percent of GDP in 2000 to 6.3 percent in 2040. They continue to rise after that but more gradually, eventually reaching 6.8 percent of GDP by 2075.[6]
- Medicare outlays net of premiums rise from 2.0 percent of GDP in 2000 to 5.0 percent of GDP in 2040, and 8.1 percent by 2075.
- Federal Medicaid spending goes up from 1.2 percent of GDP in 2000 to 2.7 percent in 2040 and to 3.5 percent of GDP in 2075.
- If discretionary spending is held constant in real terms, it would fall as a share of GDP from 6.3 percent in 2000 to 3.1 percent in 2040, and to 1.9 percent in 2075. Alternatively, discretionary spending may be fixed as a share of GDP at the level reached in 2011, when the budget window closes, maintaining a constant 5 percent share of GDP through 2075.

Chart 2-4. Long-Run Budget Projections



[6] These benefit estimates reflect the economic assumptions described above, which differ somewhat from the assumptions in the Social Security Trustees' Report. The benefit estimates were prepared by the Social Security actuaries using OMB economic assumptions.

Table 2–2. LONG–RUN BUDGET PROJECTIONS OF 2002 BUDGET POLICY

(Percent of GDP)

	2000	2005	2010	2020	2030	2040	2050	2060	2075
Discretionary Grows with Inflation									
Receipts	20.6	19.2	18.6	18.6	18.7	18.7	18.8	18.8	18.7
Outlays	18.2	17.1	15.8	15.2	15.6	15.8	15.9	16.5	18.9
Discretionary	6.3	5.9	5.2	4.3	3.7	3.1	2.7	2.3	1.9
Mandatory	9.7	10.0	10.3	12.1	14.1	15.2	16.1	17.2	19.2
Social Security	4.1	4.1	4.2	5.3	6.2	6.3	6.3	6.5	6.8
Medicare	2.0	2.2	2.3	3.1	4.1	5.0	5.8	6.6	8.1
Medicaid	1.2	1.4	1.7	2.1	2.4	2.7	3.0	3.2	3.5
Other	2.4	2.2	2.0	1.7	1.4	1.2	1.0	0.9	0.8
Net Interest	2.3	1.1	0.3	–1.2	–2.1	–2.5	–2.9	–2.9	–2.2
Surplus/Deficit(–)	2.4	2.1	2.8	3.4	3.0	2.9	2.9	2.3	–0.2
Primary Surplus/Deficit (–)	4.7	3.3	3.1	2.1	0.9	0.4	0.0	–0.6	–2.3
Federal Debt Held by Public	34.7	17.5	2.3	–25.5	–42.3	–50.8	–56.8	–58.2	–41.7
Discretionary Grows with GDP									
Receipts	20.6	19.2	18.6	18.6	18.7	18.7	18.8	18.8	18.7
Outlays	18.2	17.1	15.8	16.1	17.7	19.3	21.1	23.7	29.5
Discretionary	6.3	5.9	5.2	5.0	5.0	5.0	5.0	5.0	5.0
Mandatory	9.7	10.0	10.3	12.1	14.1	15.2	16.1	17.2	19.2
Social Security	4.1	4.1	4.2	5.3	6.2	6.3	6.3	6.5	6.8
Medicare	2.0	2.2	2.3	3.1	4.1	5.0	5.8	6.6	8.1
Medicaid	1.2	1.4	1.7	2.1	2.4	2.7	3.0	3.2	3.5
Other	2.4	2.2	2.0	1.7	1.4	1.2	1.0	0.9	0.8
Net Interest	2.3	1.1	0.3	–1.1	–1.4	–0.9	0.0	1.5	5.3
Surplus/Deficit(–)	2.4	2.1	2.8	2.5	1.0	–0.5	–2.3	–4.8	–10.8
Primary Surplus/Deficit (–)	4.7	3.3	3.1	1.5	–0.4	–1.5	–2.3	–3.3	–5.5
Federal Debt Held by Public	34.7	17.5	2.3	–21.8	–27.5	–17.8	1.3	31.7	108.0

There is an important caveat to these results, however. The Federal Government is assumed to acquire financial assets once the publicly held Federal debt has been run down. This would be a unique departure for the Government, and it would encounter significant obstacles. Under current policy, the Government's investment options would be quite limited. Moreover, if the Federal Government were to own a large share of the Nation's financial assets, the economy's dynamism could be undermined by the Government's influence over what had been private economic choices. This could reduce the efficiency of the capital markets and lower the long-term rate of economic growth. These negative effects are not considered in these simulations.

Overall, it seems unlikely that the Government would ever accumulate a large net stock of assets, but these long-range projections show what could happen absent policy changes, and they indicate that policy makers will soon need to consider the issue of Government ownership of private assets. If spending was increased or taxes adjusted from year-to-year in order to avoid Government's accumulation of private assets, the budget could remain in balance through 2050, assuming real discretionary spending is held constant in the long run. Alternatively, if discretionary spending grows with GDP in the long run, the budget is projected to stay in balance until 2028, while avoiding a buildup of assets.

The Effects of Alternative Economic and Technical Assumptions.—The results discussed above are sensitive to changes in underlying economic and technical assumptions. Some of the most important of these alternative economic and technical assumptions and their effects on the budget outlook are discussed below. Each highlights one of the key uncertainties in the outlook.

1. *Health Spending:* OMB's long-range projections for Medicare follow the latest projections of the Medicare actuaries reflected in the Medicare Trustees' Report. For many years, those projections included a slowdown in the rate of growth of real per capita Medicare spending in the long run. Recently, the Technical Review Panel on the Medicare Trustees' Reports has recommended raising the long-run projected growth rate in real per capita Medicare costs, and the Medicare Trustees adopted this assumption in their 2001 report. The Panel recommended projections in which "age-and gender-adjusted, per-beneficiary spending growth exceeds the growth of per-capita GDP by 1 percentage point per year."[7] In Chart 2–4, real per capita Medicare benefits are assumed to rise at this rate, which is about 60 percent greater than assumed in previous Medicare Trustees' Reports.

Eventually, the rising trend in health care costs for both Government and the private sector will have to end, but it is hard to know when and how that will happen. "Eventually" could be a long way off. Improved health and increased longevity are highly valued, and society may be willing spend a larger share of income on them than it has heretofore. There are many reasonable alternative health cost and usage projections, as well as variations in the demographic projections to which they can be applied. Innovations in health care

[7] Technical Review Panel on the Medicare Trustees' Reports, "Review of Assumptions and Methods of the Medicare Trustees' Financial Projections," December 2000.

are proceeding rapidly, and they have diverse effects on the projection of costs. Likewise, the effects of greater longevity on Medicare and especially Medicaid costs are uncertain.

2. *Discretionary Spending:* The assumption used to project discretionary spending is essentially arbitrary, because discretionary spending is determined annually through the legislative process, and no formula can dictate future spending in the absence of legislation. Alternative assumptions are made for discretionary spending. In one case, discretionary spending is held constant in real terms, growing only with projected inflation. Alternatively, discretionary spending is assumed to keep pace with the growth in GDP. Growth with inflation implies that the real value of Federal services is unchanging over time, which has the implication that the size of Federal discretionary spending would shrink relative to the size of the economy. The second alternative for current policy considered in Chart 2-4 and Table 2–2 allows discretionary spending to increase with GDP. This implies that discretionary spending increases in real terms whenever there is positive real economic growth.

3. *Productivity:* The rate of future productivity growth is perhaps the most powerful of the uncertainties affecting the long-run budget outlook. Productivity in the U.S. economy slowed markedly and unexpectedly after 1973. This slowdown was responsible for a slower rise in U.S. real incomes for the next two decades. Recently, productivity growth has increased. Since 1995, productivity has grown about as fast as it did during the 25-year period prior to 1973. The revival of productivity growth is one of the most welcome developments of the last several years. A higher rate of growth makes the task of preserving a balanced budget much easier; a lower productivity growth rate has the opposite effect. Although the long-run growth rate of productivity is inherently uncertain, productivity growth in the United States has averaged about 2 percent per year for over a century, and is projected to continue at that rate in these projections.

4. *Population:* The key assumptions underlying the model's demographic projections concern fertility, immigration, and mortality.

- The demographic projections assume that fertility will average around 1.95 births per woman in the future, slightly below the replacement rate needed to maintain a constant population.
- The rate of immigration is assumed to average around 900,000 per year in these projections. Higher immigration relieves some of the pressure on population from low fertility.
- Mortality is projected to decline. The average female lifespan is projected to rise from 79.5 years to 85.0 years by 2075. Men do not live as long as women on average, but their lifespan is also projected to increase, from 73.8 years in 2000 to 80.9 years by 2075. A Technical Panel to the Social Security Trustees reported that the improvement in longevity might be greater than this. If so, growth of the three big entitlement programs could be even faster.

Conclusion.—Since the early 1990s, the long-run budget outlook has improved significantly, but the outlook remains highly uncertain. Under some scenarios, the unified budget surplus could continue for many years, but with alternative assumptions, the deficit returns much sooner. Although there is an extended period of budget surpluses under most current projections, how big the surpluses will be and how long they will last remain quite uncertain. Under an adverse combination of assumptions, the fiscal picture could deteriorate, leading to an unsustainable debt build-up. With more favorable assumptions, however, there would be a constantly rising unified budget surplus through the 75-year projection period. The enormous range of possible outcomes highlights the sensitivity of long-term projections to specific assumptions and cautions against undue reliance on any particular projection path.

While the overall budget outlook has improved, the entitlement programs are still expected to give rise to budget strains. Fundamental changes are needed to preserve the basic promises embodied in Social Security and Medicare.

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 2011. 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 from 1999 to 2001. There were improvements in the consolidated OASDI trust fund and a deterioration in the HI trust fund. The changes were due to revisions in the actuarial assumptions. In the case of the OASDI funds, a small improvement in the economic assumptions was made, along with a similar change in the technical assumptions. For the HI program the Trustees revised their economic and technical assumptions. The change in economic and demographic assumptions made a small improvement in the actuarial balance, but this was more than offset by the large change in technical

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

(As percent of taxable payroll)

	OASI	DI	OASDI	HI
Actuarial balance in 1999 Trustees' Report	–1.70	–0.36	–2.07	–1.46
Changes in balance due to changes in:.				
Legislation	0.00	0.00	0.00	–0.02
Valuation period	–0.06	–0.01	–0.07	–0.03
Economic and demographic assumptions	0.06	0.01	0.07	0.10
Technical and other assumptions	0.18	–0.01	0.17	0.20
Total Changes	0.18	–0.01	0.17	0.25
Actuarial balance in 2000 Trustees' Report	–1.53	–0.37	–1.89	–1.21
Changes in balance due to changes in:.				
Legislation	0.00	0.00	0.00	–0.03
Valuation period	–0.06	–0.01	–0.07	–0.04
Economic and demographic assumptions	0.10	0.01	0.11	0.08
Technical and other assumptions	–0.04	0.04	0.00	–0.77
Total Changes	–0.01	0.04	0.03	–0.76
Actuarial balance in 2001 Trustees' Report	–1.53	–0.33	–1.86	–1.97

assumptions. The Trustees adopted the recommendations of their Technical Review Panel and boosted the growth rate of real per capita Medicare spending substantially. The actuarial deficiency in Medicare now exceeds the deficiency calculated for Social Security.

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 for the Government.

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, such hypothetical capital stocks are obviously not owned by the Federal Government, nor would they appear on a balance sheet as a Government asset.

To show the importance of these kinds of issues, Table 2–4 presents a national balance sheet. It includes estimates of national wealth classified into three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories of capital, and these contributions are shown separately in the table. Data in this table are especially uncertain, because of the strong assumptions needed to prepare the estimates.

The conclusion of the table is that 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—$5 trillion. The Federal contribution is down from around 9 percent in the mid-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 12 percent of GDP to 7 percent since the end of the Cold War.

Physical Assets:

The physical assets in the table include stocks of plant and equipment, office buildings, residential structures, land, and the 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, around $39 trillion in 2000, consisting of $33 trillion in private capital and $6 trillion in public capital; by comparison, GDP was about 10 trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus $1 trillion in accumulated grants to State and local Governments for capital projects. The Federal Government has financed about one-fourth 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 formal education and training. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over; in other words, the idea

Table 2–4. NATIONAL WEALTH

(As of the end of the fiscal year, in trillions of 2000 dollars)

	1960	1965	1970	1975	1980	1985	1990	1995	1998	1999	2000
ASSETS											
Publicly Owned Physical Assets:											
Structures and Equipment	2.0	2.2	2.8	3.4	3.6	3.8	4.2	4.6	4.9	5.0	5.0
Federally Owned or Financed	1.1	1.2	1.4	1.4	1.5	1.8	1.9	2.0	1.9	1.9	2.0
Federally Owned	1.0	1.0	1.0	0.9	0.9	1.1	1.1	1.1	1.0	1.0	1.0
Grants to State and Local Governments	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.0
Funded by State and Local Governments	0.8	1.0	1.4	1.9	2.1	2.1	2.3	2.6	2.9	3.1	3.0
Other Federal Assets	0.7	0.7	0.6	0.8	1.2	1.3	1.1	0.8	0.8	0.9	1.1
Subtotal	2.7	2.9	3.4	4.2	4.8	5.1	5.2	5.4	5.7	5.9	6.0
Privately Owned Physical Assets:											
Reproducible Assets	6.9	7.9	9.6	12.3	15.8	16.9	19.1	20.8	23.0	24.0	25.1
Residential Structures	2.6	3.1	3.7	4.7	6.3	6.6	7.5	8.4	9.4	9.9	10.3
Nonresidential Plant and Equipment	2.8	3.1	3.9	5.1	6.5	7.2	8.0	8.8	9.7	10.1	10.6
Inventories	0.6	0.7	0.8	1.0	1.3	1.2	1.3	1.3	1.4	1.4	1.5
Consumer Durables	0.8	1.0	1.2	1.4	1.7	1.8	2.3	2.4	2.5	2.6	2.7
Land	2.0	2.4	2.7	3.5	5.4	6.2	6.4	4.7	6.1	6.6	7.3
Subtotal	8.9	10.2	12.4	15.8	21.2	23.1	25.4	25.6	29.1	30.6	32.5
Education Capital:											
Federally Financed	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	1.0	1.0	1.1
Financed from Other Sources	6.0	7.6	10.3	12.7	16.5	19.9	25.6	28.3	32.3	34.4	36.3
Subtotal	6.1	7.7	10.5	13.0	16.9	20.5	26.4	29.1	33.3	35.4	37.4
Research and Development Capital:											
Federally Financed R&D	0.2	0.3	0.5	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.0
R&D Financed from Other Sources	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.1	1.3	1.3	1.4
Subtotal	0.3	0.5	0.8	0.9	1.0	1.3	1.6	2.0	2.2	2.3	2.4
Total Assets	**17.9**	**21.4**	**27.1**	**33.9**	**44.0**	**50.0**	**58.7**	**62.0**	**70.3**	**74.2**	**78.3**
Net Claims of Foreigners on U.S. (+)	–0.1	–0.2	–0.2	–0.1	–0.3	0.0	0.8	1.5	2.5	3.4	3.4
Balance	**18.0**	**21.6**	**27.2**	**34.0**	**44.3**	**50.0**	**57.9**	**60.5**	**67.8**	**70.8**	**74.9**
ADDENDA:.											
Per Capita Balance (thousands of dollars)	99.4	111.2	132.7	157.3	194.1	209.1	230.9	229.5	250.0	258.8	271.4
Ratio of Balance to GDP (in percent)	7.0	6.7	7.1	7.7	8.4	8.0	8.0	7.4	7.3	7.3	7.4
Total Federally Funded Capital (trillions 2000 $)	2.1	2.3	2.7	3.1	3.8	4.3	4.5	4.5	4.7	4.8	5.1
Percent of National Wealth	11.4	10.7	9.8	9.1	8.5	8.7	7.8	7.4	6.9	6.8	6.8

is to measure how much it would cost to reeducate the U.S. workforce at today's prices (rather than at its original cost). This is more meaningful economically than the historical cost, 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 for the current value of the investment in education. According to this measure, the stock of education capital amounted to $37 trillion in 2000, of which about 3 percent was financed by the Federal Government. It is nearly equal to 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 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 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.[8] That stock is estimated to have been about $2 trillion in 2000. Although this is a large amount of research, it is a relatively small portion of total National wealth. Of this stock, about 40 percent 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 an-

[8] 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.

other cancel out. This means they do not belong in Table 2–4, which is intended to show National totals only, but it does not mean they are unimportant. 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 rising deficit in the U.S. current account, but even so, the size of this debt remains small compared with the total stock of U.S. assets. It amounted to 4 percent of total assets 2–4 in 2000.

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, Federal net liabilities, as reported in Table 2–1, amount to about 4 percent of net 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 FY 2000 was about $75 trillion. Since 1980, it has increased in real terms at an average annual rate of 2.7 percent per year—only slightly more than half as fast as it averaged from 1960 to 1980—4.6 percent per year. Public physical capital formation has slowed even more drastically. Since 1980, public physical capital has increased at an annual rate of only 1.1 percent, compared with 3.0 percent over the previous 20 years.

The net stock of private nonresidential plant and equipment grew 2.4 percent per year from 1980 to 2000, compared with 4.4 percent in the 1960s and 1970s; and the stock of business inventories increased even less, just 0.7 percent per year on average since 1980. However, private nonresidential fixed capital has increased much more rapidly since 1995—3.9 percent per year—reflecting the recent investment boom.

The accumulation of education capital, as measured here, has also slowed down since 1980, but not as much. It grew at an average rate of 5.2 percent per year in the 1960s and 1970s, about 0.9 percentage point faster than 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 both the extra resources devoted to schooling in this period, and the fact that such resources were increasing in economic value. R&D stocks have grown at about 4.3 percent per year since 1980, the fastest growth rate for any major category of investment over this period, but slower than the growth of R&D in the 1960s and 1970s.

Other Federal Influences on Economic Growth

Federal investment decisions, as reflected in Table 2–4, obviously are important, but the Federal Government also contributes to wealth in ways that cannot be easily captured in a formal presentation. The Federal Reserve's monetary policy affects the rate and direction of capital formation in the short run, and Federal regulatory and tax policies also affect how capital is invested, as do the Federal Government's policies on credit assistance and insurance.

Social Indicators

There are certain broad responsibilities that are unique to the Federal Government. Especially important are 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 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 to varying degrees by many Government policies and programs, as well as by external factors beyond the Government's control. They do not measure the outcomes of Government policies, because they generally do not show 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. 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.

It is worth noting that, in recent years, many of the indicators in this table have turned around. The improvement in economic conditions has been widely noted, but there have also been some significant social improvements. Perhaps, most notable has been the turnaround in the crime rate. Since reaching a peak in the early 1990s, the violent crime rate has fallen by over 25 percent. The turnaround has been especially dramatic in the murder rate, which was lower in 1999 than at any time since the 1960s.

An Interactive Analytical Framework

No single framework can encompass all of the factors that affect the financial condition of the Federal Gov-

Table 2–5. ECONOMIC AND SOCIAL INDICATORS

General categories	Specific measures	1960	1965	1970	1975	1980	1985	1990	1995	1998	1999	2000
Economic:												
Living Standards	Real GDP per person (1996 dollars)	13,145	15,587	17,445	18,909	21,523	23,971	26,832	28,673	31,470	32,512	33,837
	average annual percent change (5-year trend)	0.7	3.5	2.3	1.6	2.6	2.2	2.3	1.3	2.3	2.9	3.4
	Median Income (1999 dollars):											
	All Households	N/A	N/A	35,232	34,980	35,850	36,568	38,168	37,251	39,744	40,816	N/A
	Married Couple Families	30,386	35,390	42,420	44,072	46,844	48,153	50,853	51,447	55,377	56,676	N/A
	Female Householder, No Spouse Present	15,356	17,206	20,545	20,288	21,069	21,150	21,583	21,526	22,652	23,732	N/A
	Income Share of Lower 60% of All Families	34.8	35.2	35.2	35.2	34.5	32.7	32.0	30.3	29.8	29.8	N/A
	Poverty Rate (%) [1]	22.2	17.3	12.6	12.3	13.0	14.0	13.5	13.8	12.7	11.8	N/A
Economic Security	Civilian Unemployment (%)	5.5	4.5	4.9	8.5	7.1	7.2	5.5	5.6	4.5	4.2	4.0
	CPI-U (% Change)	1.7	1.6	5.8	9.1	13.5	3.5	5.4	2.8	1.6	2.1	3.4
Employment	Increase in Total Payroll Employment Previous 12 Months (millions)	0.4	2.2	–0.1	0.5	–0.3	2.0	0.4	0.4	1.9	1.9	1.3
	Managerial or Professional Jobs (% of civilian employment)	N/A	N/A	N/A	N/A	N/A	24.1	25.8	28.3	29.6	30.3	30.2
Wealth Creation	Net National Saving Rate (% of GDP)	10.2	12.1	8.2	6.6	7.5	6.1	4.6	4.7	6.6	6.0	5.6
Innovation	Patents Issued to U.S. Residents (thousands)	42.3	54.1	50.6	51.5	41.7	45.1	53.0	64.5	90.7	94.1	91.2
	Multifactor Productivity (average annual percent change)	0.8	2.8	0.8	1.1	0.8	0.6	0.5	0.6	1.1	N/A	N/A
Environment:.												
Air Quality	Nitrogen Oxide Emissions (thousand short tons)	14,140	16,579	20,928	22,632	24,384	23,198	24,049	24,921	24,454	N/A	N/A
	Sulfur Dioxide Emissions (thousand short tons)	22,227	26,750	31,161	28,011	25,905	23,658	23,660	19,181	19,647	N/A	N/A
	Lead Emissions (thousand short tons)	N/A	N/A	221	160	74	23	4	4	4	N/A	N/A
Water Quality	Population Served by Secondary Treatment or Better (mils)	N/A	N/A	N/A	N/A	N/A	134	155	166	N/A	N/A	N/A
Social:												
Families	Children Living with Mother Only (% of all children)	9.2	10.2	11.6	16.4	18.6	20.2	21.6	24.0	23.6	22.4	N/A
Safe Communities	Violent Crime Rate (per 100,000 population) [2]	160	199	364	482	597	557	732	685	568	525	N/A
	Murder Rate (per 100,000 population) [2]	5	5	8	10	10	8	9	8	6	6	N/A
	Murders/Manslaughter (per 100,000 Persons Age 14 to 17)	N/A	N/A	N/A	11	13	10	24	24	13	11	N/A
Health	Infant Mortality (per 1000 Live Births)	26.0	24.7	20.0	16.1	12.6	10.6	9.2	7.6	7.2	7.1	N/A
	Low Birthweight [<2,500 gms] Babies (%)	7.7	8.3	7.9	7.4	6.8	6.8	7.0	7.3	7.6	7.6	N/A
	Life Expectancy at birth (years)	69.7	70.2	70.8	72.6	73.7	74.7	75.4	75.8	76.7	N/A	N/A
	Cigarette Smokers (% population 18 and older)	N/A	41.9	39.2	36.3	33.0	29.9	25.3	24.6	24.0	N/A	N/A
Learning	High School Graduates (% of population 25 and older)	44.6	49.0	55.2	62.5	68.6	73.9	77.6	81.7	82.8	83.4	N/A
	College Graduates (% of population 25 and older)	8.4	9.4	11.0	13.9	17.0	19.4	21.3	23.0	24.4	25.2	N/A
	National Assessment of Educational Progress [3]:											
	Mathematics High School Seniors	N/A	N/A	N/A	302	300	301	305	307	308	308	N/A
	Science High School Seniors	N/A	N/A	305	293	286	288	290	295	295	295	N/A
Participation	Individual Charitable Giving per Capita (2000 dollars)	225	270	323	343	374	385	427	410	526	N/A	N/A
	(by presidential election year)	(1960)	(1964)	(1968)	(1972)	(1976)	(1980)	(1984)	(1988)	(1992)	(1996)	(2000)
	Voting for President (% eligible population)	62.8	61.9	60.9	55.2	53.5	52.8	53.3	50.3	55.1	49.0	52.0

N/A = Not applicable.

[1] The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.

[2] Not all crimes are reported, and the fraction that go unreported may have varied over time.

[3] Some data from the national educational assessments have been interpolated.

ernment. 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 promotion of national saving through fiscal policy, 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 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.

Physical Assets:

Fixed Reproducible Capital: Estimates were developed for the OMB historical data base for physical capital outlays and software purchases. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. Data are presented in Chapter 6 of this volume.

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 from the Agriculture Department for farm land; the value of Federal oil deposits was extrapolated using 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.

Insurance Liabilities: Sources of data are the OMB Pension Guarantee Model and OMB estimates based on program data. Historical data on liabilities for deposit insurance were also drawn from CBO's study, The Economic Effects of the Savings and Loan Crisis, issued January 1992.

Pension Liabilities: For 1979–1999, 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 extrapolations. The estimate for 2000 is a projection. The health insurance liability was estimated by the program actuaries for 1997–2000, and extrapolated back for earlier years.

Long-Run Budget Projections

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

Demographic and Economic Projections: For the years 2001–2011, the assumptions are identical to those used in the budget. These budget assumptions reflect the President's policy proposals. The economic assumptions in the budget are extended by holding constant inflation, interest rates, and unemployment at the levels assumed in the final year of the budget. Population growth and labor force growth are extended using the intermediate assumptions from the 2000 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.

Budget Projections: For the period through 2011, 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 is projected to grow at the rate of inflation or at the rate of growth in nominal GDP. Social Security is projected by the Social Security actuaries using these long-range assumptions. Federal pensions are derived from the most recent actuarial forecasts available at the time the budget was prepared, repriced using Administration inflation assumptions. Medicaid outlays are based on the economic and demographic projections in the model. 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 Federal investment flows described in Chapter 6. Federal grants for State and local Government capital are 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 revised capital stock data prepared by the Bureau of Economic Analysis extrapolated for 2000.

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 extrapolated for 2000 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. Estimates of students' forgone earnings are based on the year-round, full-time earnings of 18–24 year olds with selected educational attainment levels. These year-round earnings are reduced by 25 percent because students are usually out of school three months of the year. For high school students, these adjusted earnings are further reduced by the unemployment rate for 16–17 year olds; for college students, by the unemployment rate for 20–24 year olds. Yearly earnings by age and educational attainment are from *Money Income in the United States,* series P60, published by the Bureau of the Census.

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 because these outlays are classified elsewhere as investment in physical 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. Depart-

ment 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,* Lexington Books, 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 estimated stock of 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 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 estimated based on data from the National Science Foundation, Surveys of Science Resources. The industry-financed R&D stock component is estimated 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. The data are all publicly available, and can be found in such general sources as the annual *Economic Report of the President* and the *Statistical Abstract of the United States,* or from the agencies' Web sites.