

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 objective¹ 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.

¹ *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, seignorage 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>Federal Assets</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>Federal Governmental Assets and Liabilities (Table 2-1)</p>	<p>Federal Liabilities</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>Net Balance</p>
<p>Resources/Receipts</p> <p>Projected Receipts Addendum: Real GDP Projections</p>	<p>Long-Run Federal Budget Projections (Table 2-2)</p>	<p>Responsibilities/Outlays</p> <p>Discretionary Outlays Mandatory Outlays Social Security Health Programs Other Programs Net Interest</p> <p>Deficit</p>
	<p>Change in Trust Fund Balances (Table 2-3)</p>	
<p>National Assets/Resources</p> <p>Federally Owned Physical Assets State & Local Physical Assets Federal Contribution Privately Owned Physical Assets Education Capital Federal Contribution R&D Capital Federal Contribution</p>	<p>National Wealth (Table 2-4)</p>	<p>National Needs/Conditions</p> <p>Indicators of economic, social, educational, and environmental conditions to be used as a guide to Government investment and management.</p>
	<p>Social Indicators (Table 2-5)</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.² 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.

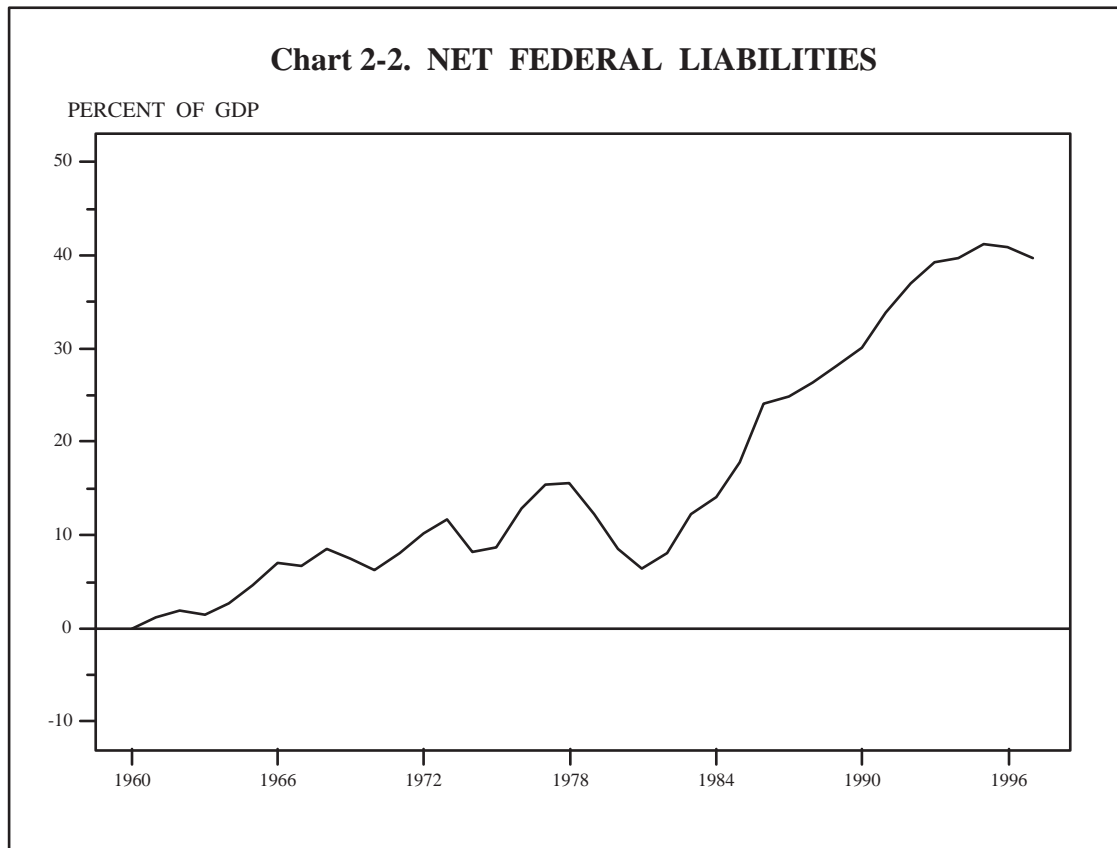
²This temporary improvement highlights the importance of the other tables in this presentation. What is good for the Federal Government as an asset holder is not necessarily favorable to the economy. The decline in inflation in the early 1980s reversed the speculative runup in gold and other commodity 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
ASSETS														
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 less Expected Loan Losses	127	163	211	211	290	356	289	293	270	240	228	201	176	160
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
Total Assets	2,081	2,151	2,119	2,195	2,825	3,046	2,851	2,794	2,752	2,636	2,546	2,459	2,433	2,366
LIABILITIES														
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	116	120	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
Total Liabilities	2,079	2,300	2,362	2,573	3,268	4,126	4,927	5,132	5,380	5,486	5,532	5,620	5,658	5,629
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 per- cent)	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.³

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, seignorage, 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

³These 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.⁴ 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.”⁵ 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.⁶ 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, 2008—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.

⁴Over 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.

⁵Long-Term Budgetary Pressures and Policy Options, March 1997.

⁶Analysis 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

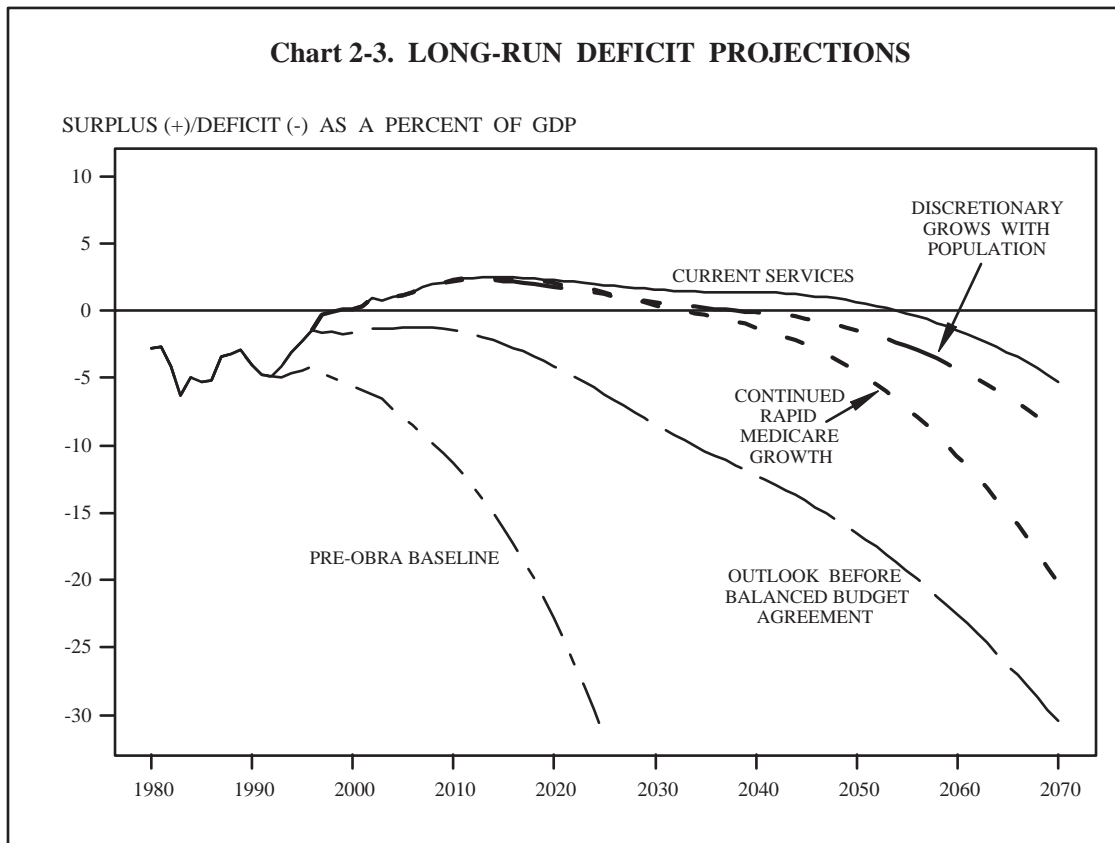


Table 2-2. LONG-RUN BUDGET PROJECTIONS OF 1999 BUDGET POLICY
(Percent of GDP)

	1995	2000	2005	2010	2020	2030	2040	2050	2060	2070
Current services:										
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
Continued rapid Medicare growth:										
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
Discretionary grows with population:										
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.⁷

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

⁷The 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.⁸ 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 workforce. 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

⁸This 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

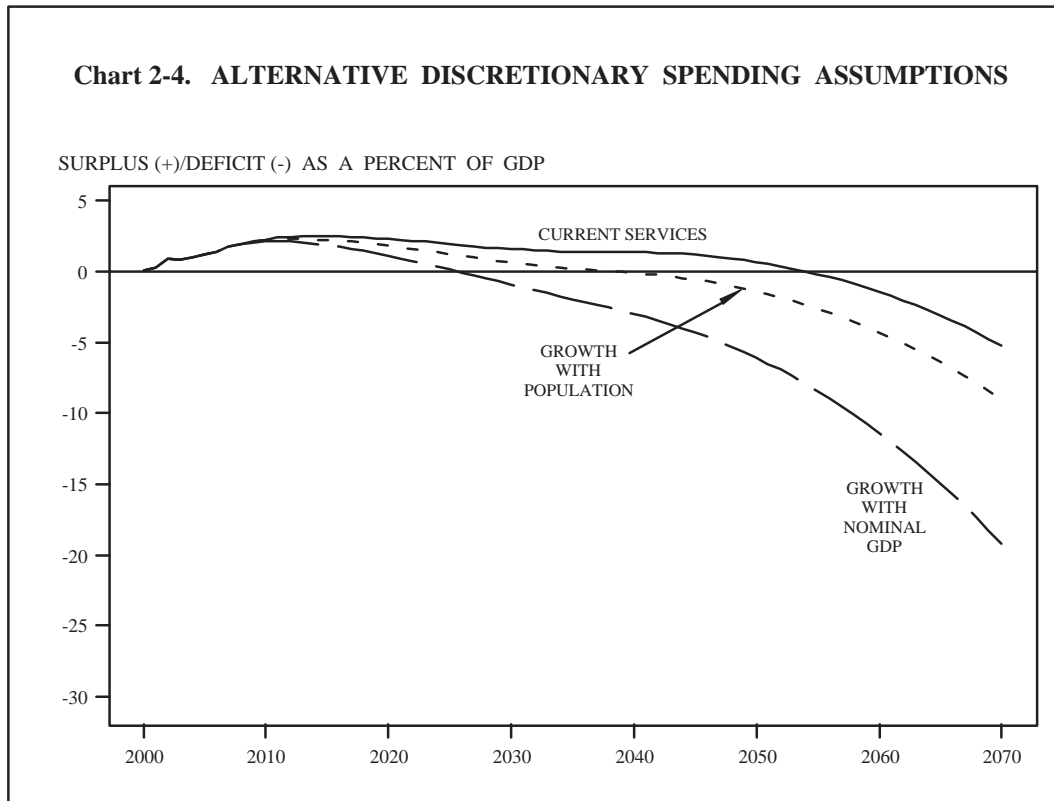
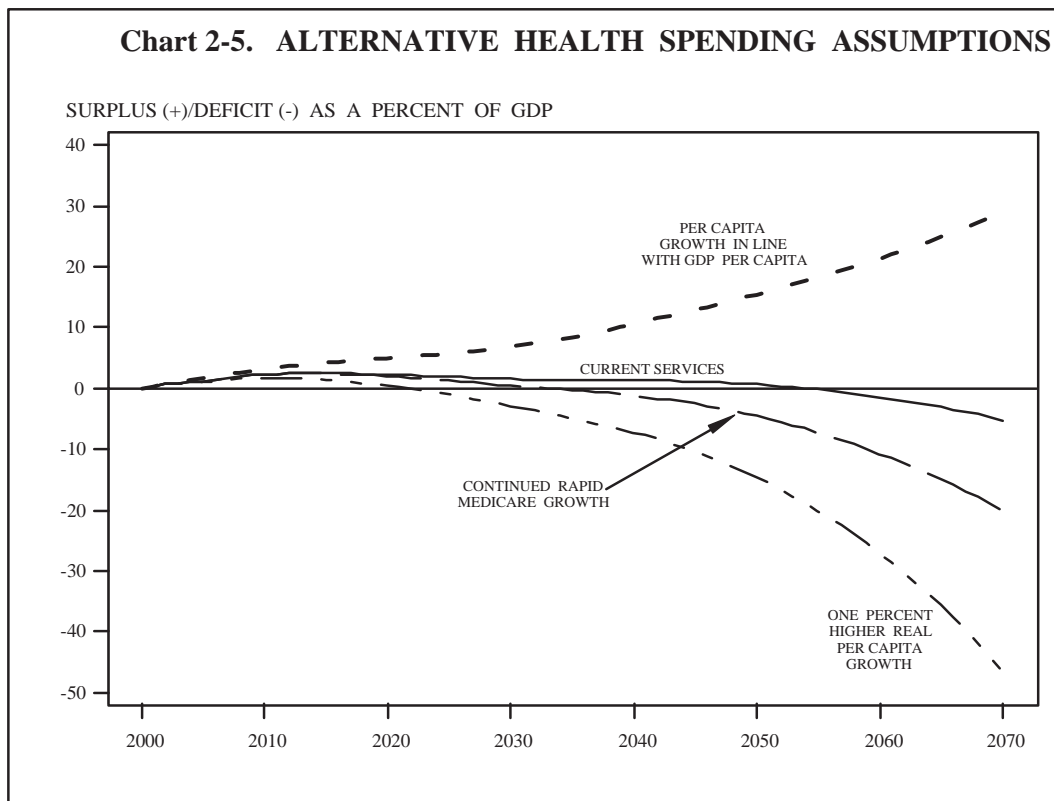


Chart 2-5. ALTERNATIVE HEALTH SPENDING ASSUMPTIONS



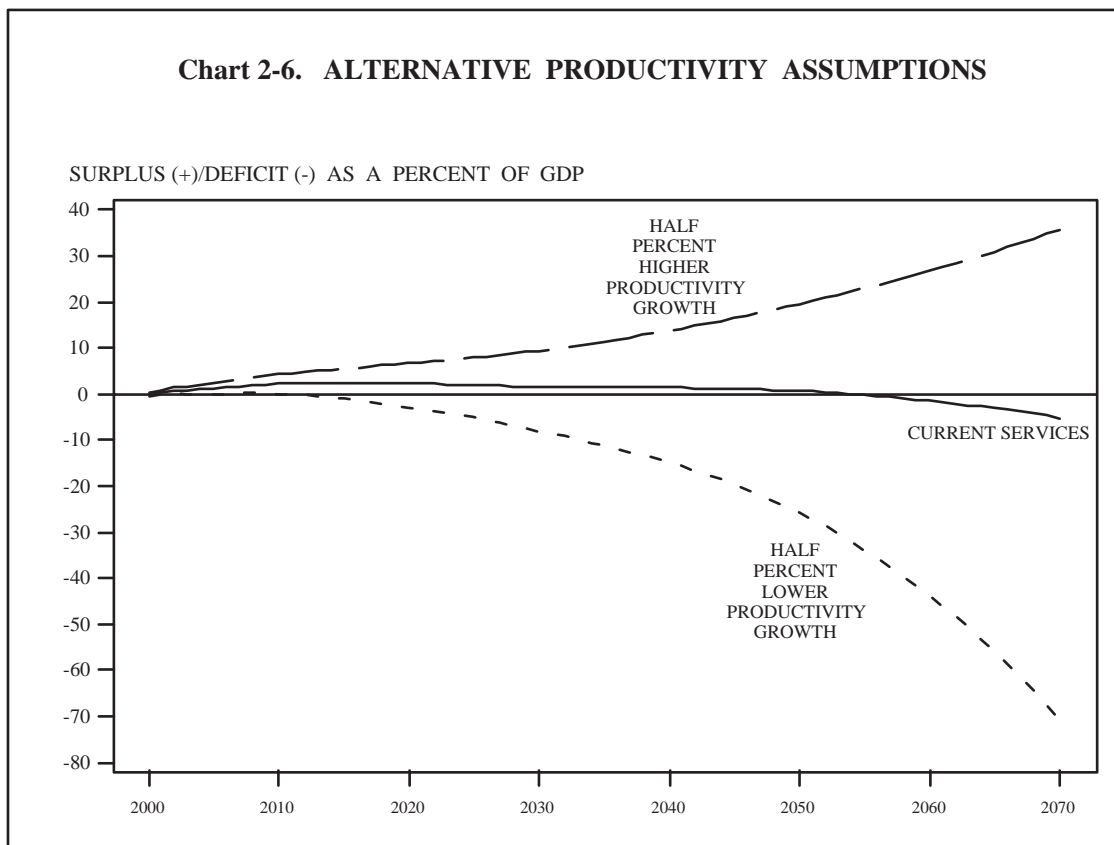
growth were either higher or lower than assumed. A higher rate of growth would make the task of preserving a balanced budget much easier; lower productivity growth would have the opposite effect. Chart 2-6 shows how the deficit varies with changes of one-half percentage point of average productivity growth.

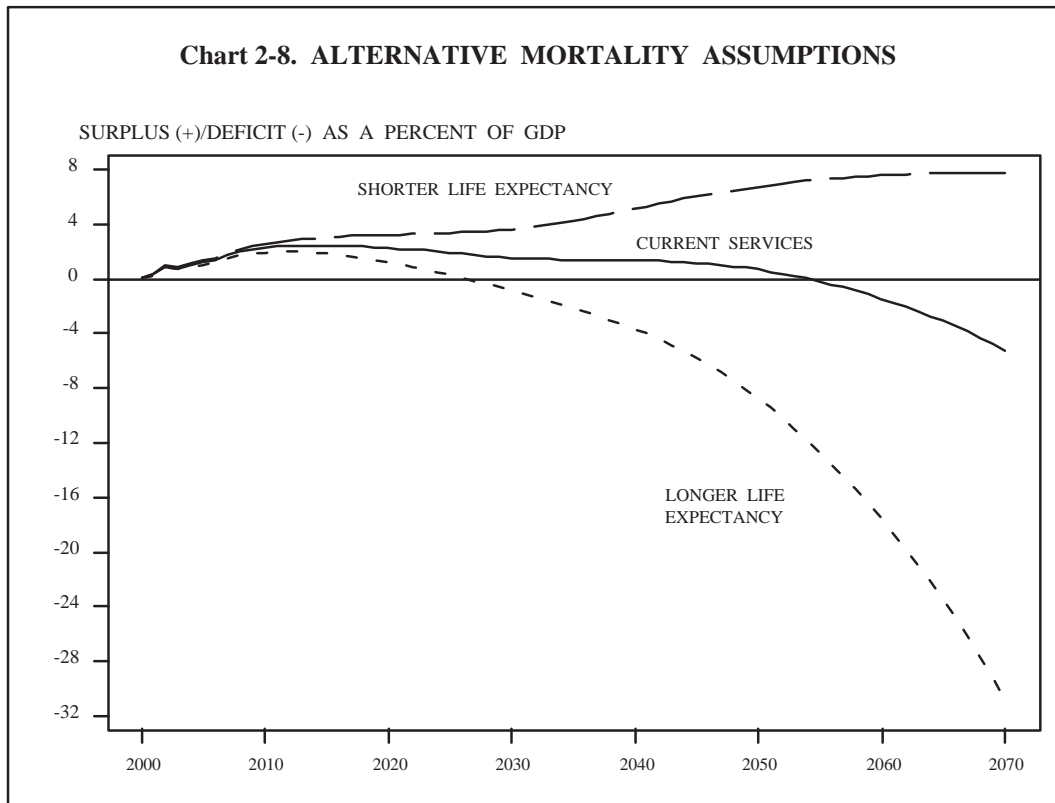
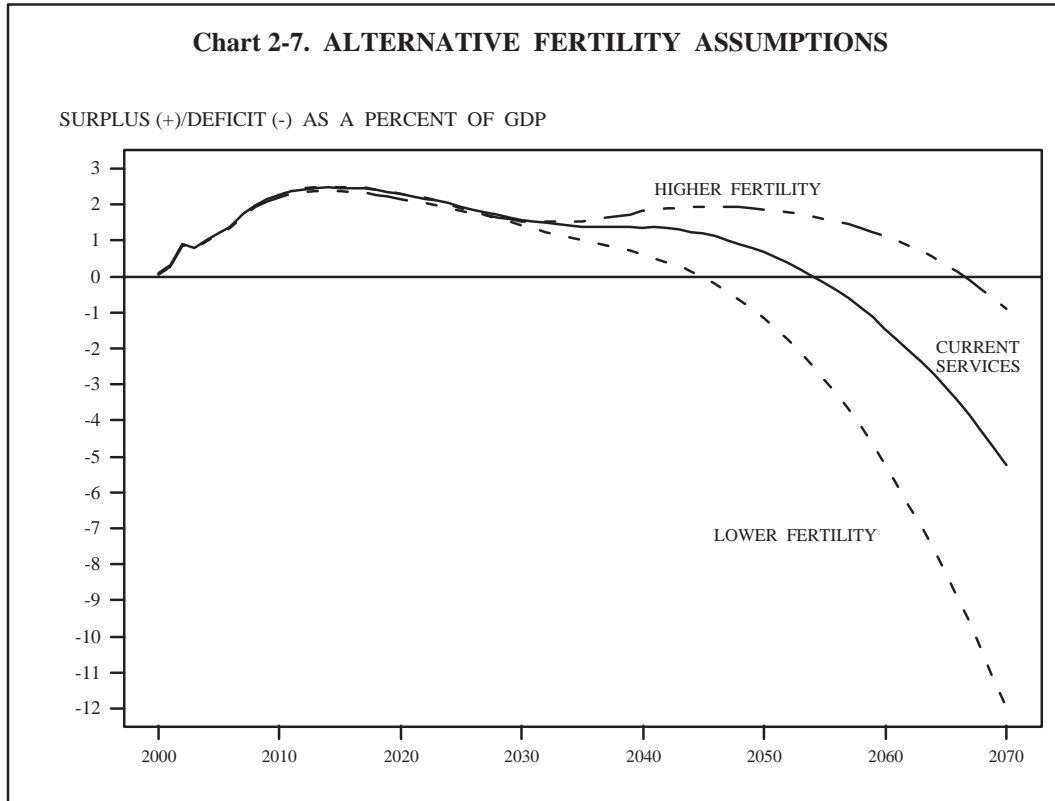
4. *Population:* In the long run, changing demographic patterns dictate the behavior of the projections. Changes in population growth feed into real economic growth through the effect on labor supply and employment. Changing demographics also affect entitlement spending, contributing to the surge of 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





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.

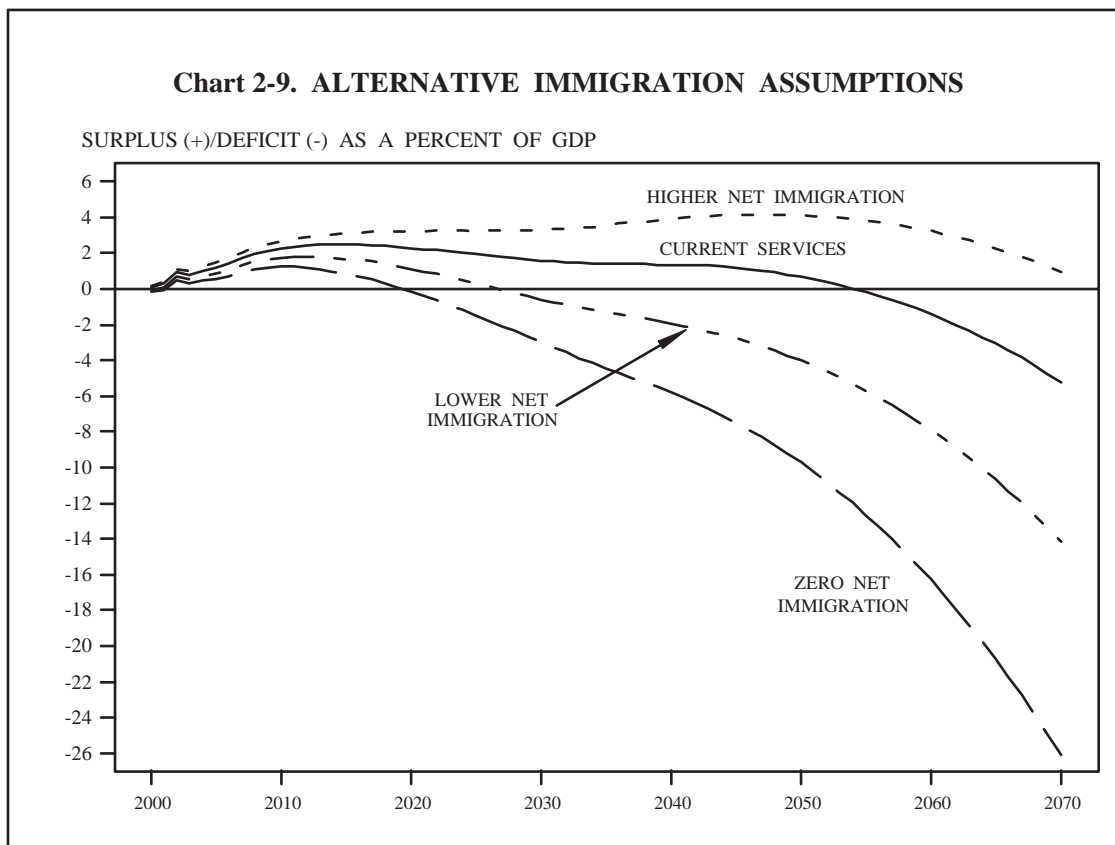
5. *What To Do With the Budget Surpluses:* The current projections show the budget running surpluses for several decades. These surpluses pay down the debt held by the public, after which, by the conventions of current-services budget projections, policy continues unchanged, and so negative debt accumulates 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

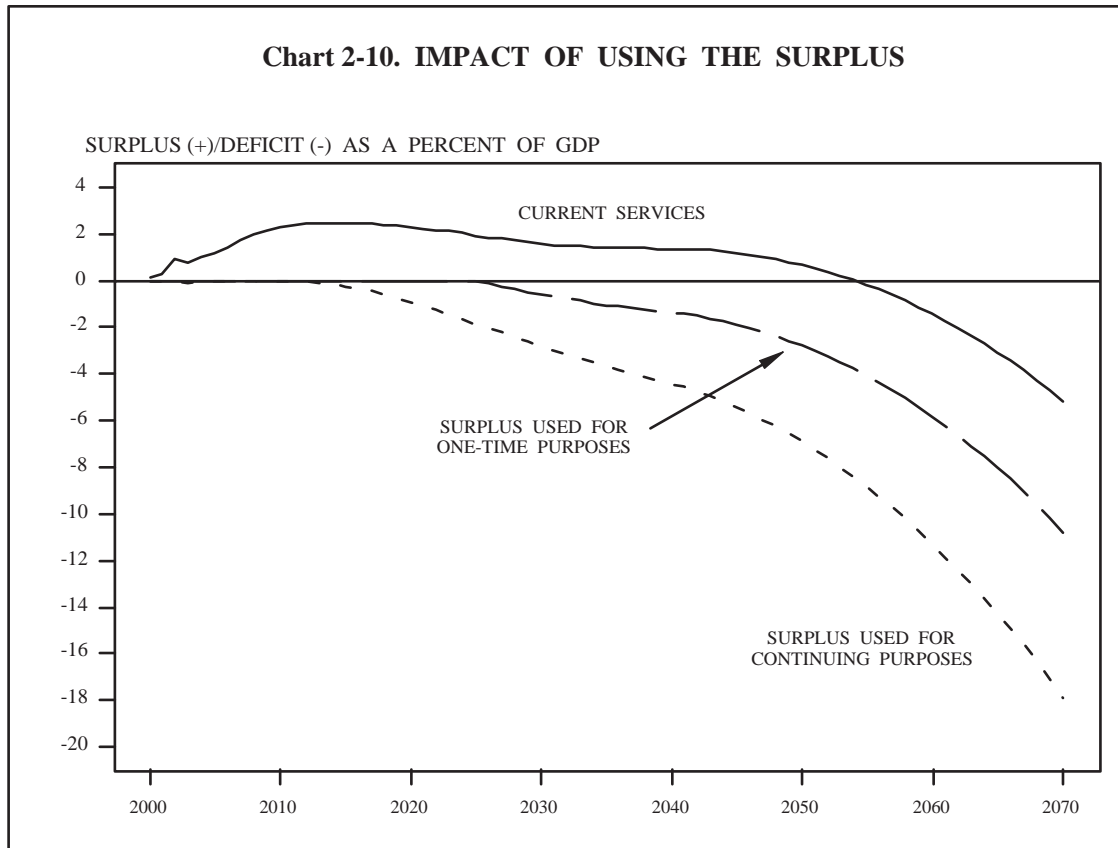
spending or tax cuts were purely temporary, the period of budget surpluses would be shortened by 30 years, with deficits recurring in 2025; by 2070, the deficit would grow to 10.8 percent of GDP. If the budgetary costs grew with inflation, however, budget surpluses would extend barely beyond the budget 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,





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 school-room 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
ASSETS														
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
ADDENDA:														
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.⁹ 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.

⁹R&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
Economic:															
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 (%) ¹	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
	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
Wealth creation	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
Innovation	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
Social:															
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) ²	160	199	364	482	597	557	732	758	758	747	714	685	634	597
	Murder rate (per 100,000 population) ²	5	5	8	10	10	8	9	10	9	10	9	8	7	7
	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
Health and illness	Infant mortality (per 1,000 live births) ³	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
	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
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	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: ⁴														
	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
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	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

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, the figures for 1997 are preliminary estimates based on partial reporting.³ The figure for 1997 is based on preliminary data through April.⁴ 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 recisely 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*.