

13. STEWARDSHIP

Introduction

The budget is an essential tool for allocating resources within the Federal Government and between the public and private sectors, but current outlays, receipts, and the deficit give at best a partial picture of the Government's financial condition. Indeed, changes in the annual budget deficit or surplus can be misleading. For example, the temporary shift from annual deficits to surpluses in the late 1990s did nothing to correct the long-term fiscal deficiencies in the major entitlement programs, which are the major source of the long-run shortfall in Federal finances. This would have been more apparent at the time if greater attention had been focused on long-term measures such as those presented in this chapter. As important as the current budget surplus or deficit is, other indicators are also needed to judge the Government's fiscal condition.

For the Federal Government, there is no single number that corresponds to a business's bottom line. The Government is judged by how its actions affect the country's security and well-being over time, and that cannot easily be summed up with a single statistic. Also, even though its financial condition is important, the Government is not expected to earn a profit. One measure of the Government's performance is the extent to which it collects the taxes that are owed to it, and another is whether it delivers value in spending the taxes that it collects. Both of those questions are addressed below. In general, the Government's financial status is best evaluated using a broad range of data and several complementary perspectives. This chapter presents a framework for such analysis. Because there are serious limitations on the available data and the future is uncertain, this chapter's findings and conclusions should be interpreted as tentative and subject to future revision.

The chapter consists of four parts:

- Part I explains how the separate pieces of analysis link together. Chart 13–1 is a schematic diagram showing the linkages.
- Part II presents estimates of the Government's assets and liabilities, which are shown in Table 13–1. This table is similar to a business balance sheet, but for that reason it cannot reveal some of the Government's unique financial features and needs to be supplemented by the information in Parts III and IV.
- Part III shows possible long-run paths for the Federal budget. These projections vary depending on alternative economic and demographic assumptions. The projections are summarized in Table 13–2 and in a related set of charts. Table 13–3 shows present value estimates of the funding shortfall in Social Security and Medicare. Together, these data indicate the scope of the Government's future responsibilities and the resources it will have available to discharge them under current law and policy. In particular, they show the looming long-run fiscal challenge posed by the Federal entitlement programs.
- Part IV returns the focus to the present. This part presents information on national economic and social conditions. It begins with an analysis of tax compliance, including what can be done to improve it, and what resources might be made available with new efforts to assure compliance. The private economy is the ultimate source of the Government's resources. Table 13–5 gives a summary of total national wealth, while highlighting the Federal investments that have contributed to that wealth. Table 13–6 shows trends in wealth and Table 13–7 presents a small sample of statistical indicators, which are intended to show how the Government's efforts to improve social and economic outcomes might be measured.

PART I—A FRAMEWORK TO EVALUATE FEDERAL FINANCES

No single framework can encompass all of the factors that affect the financial condition of the Federal Government, but the framework presented here is comprehensive and offers many insights into the financial implications of Federal policies. This framework includes information about Government assets and liabilities, but it also includes long-run projections of the entire budget showing where future fiscal strains are most likely to appear. It includes an analysis of the Government's potential revenue for a given tax structure and what can be done realistically through better education and more rigorous enforcement of the tax

law to reach that potential. Measures of national wealth, which support future income and tax receipts, are presented along with an array of economic and social indicators showing potential pressure points that may require future policy responses.

The Government's binding obligations—its liabilities—consist in the first place of Treasury debt. Other liabilities include the pensions and medical benefits owed to retired Federal employees and veterans. These employee obligations are a form of deferred compensation; they have counterparts in the business world, and would appear as liabilities 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. These Government liabilities are discussed further in Part II along with the Government's assets. The liabilities and assets are collected in Table 13-1. The liabilities shown in Table 13-1 are only a subset of the Government's overall financial responsibilities. Indeed, the full extent of the Government's fiscal exposure through programmatic commitments dwarfs the outstanding total of all acknowledged Federal liabilities. The commitments to Social Security and Medicare alone amount to many times the value of Federal debt held by the public.

In addition to Social Security and Medicare, the Government has a broad range of programs that dispense cash and other benefits to individual recipients. A few examples of such programs are Medicaid, food stamps, veterans' pensions, and veterans' health care. The Government also provides a wide range of public services that must be financed through the tax system. It is true that specific programs may be modified or even ended at any time by the Congress and the President, and changes in the laws governing these programs are a regular part of the legislative cycle. For this reason, these programmatic commitments do not constitute "liabilities." They are Federal responsibilities, however, and will have a claim on budgetary resources for the foreseeable future unless the law is changed. All of the Government's existing programs are reflected in the long-run budget projections in Part III. It would be misleading to leave out any of these programmatic commitments in projecting future claims on the Government or in calculating the Government's long-run fiscal balance.

The Federal Government has many assets. These include financial assets, such as loans and mortgages which have been acquired through various credit programs. They also include the plant and equipment used to produce Government services. The Government also owns a substantial amount of land. Such assets would normally be shown on a balance sheet. The Government has other resources in addition to these. These additional resources include most importantly the Government's sovereign power to tax.

Because of its unique responsibilities and resources, the most revealing way to analyze the future strains on the Government's fiscal position is to make a long-run projection of the entire Federal budget. Part III of this chapter presents a set of such projections under different assumptions about policy and future economic and demographic conditions. Over long periods of time, the spending of the Government must be financed by the taxes and other receipts it collects. Although the Government can borrow for temporary periods, it must pay interest on any such borrowing, which adds to future spending. In the long run, a solvent Government must pay for its programmatic spending out of its receipts. The projections in Part III show that under an extension of the estimates in this Budget, long-run bal-

ance in this sense is not achieved, mostly because projected spending for Social Security, Medicare, and Medicaid grows faster than the revenue available to pay for it.

The long-run budget projections and the table of assets and liabilities are silent on the questions of whether the Government is collecting the full amount of taxes owed, whether the public is receiving value for its taxes paid, and whether Federal resources are being used effectively. Information on those points requires performance measures for Government programs supplemented by appropriate information about conditions in the economy and society. Recent changes in budgeting practices have contributed to the goal of providing more information about Government programs and will permit a closer alignment of the cost of programs with performance measures. These changes have been described in detail in previous Budgets. They are reviewed in Chapter 2 of this volume, and in the accompanying material that describes results obtained with the Program Assessment Rating Tool (PART). This Stewardship chapter complements the detailed exploration of Government performance with an assessment of the overall impact of Federal policy as reflected in general measures of economic and social well-being such as those shown in Table 13-7.

Relationship with FASAB Objectives

The framework presented here meets the stewardship objective for Federal financial reporting recommended by the Federal Accounting Standards Advisory Board (FASAB) and adopted for use by the Federal Government in September 1993.¹

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 current presentation is an experimental approach for fulfilling this objective at the Federal Government-wide level. It is intended to meet the broad interests of economists and others in evaluating trends over time, including both past and future trends. The annual *Financial Report of the United States Government* presents related information, but from a different perspective. The *Financial Report* includes a balance sheet. The assets and liabilities on that balance sheet are all based on transactions and other events that have already occurred. In some cases, the assets and liabilities are evaluated differently than those reported in Part II of this chapter. The *Financial Report* also in-

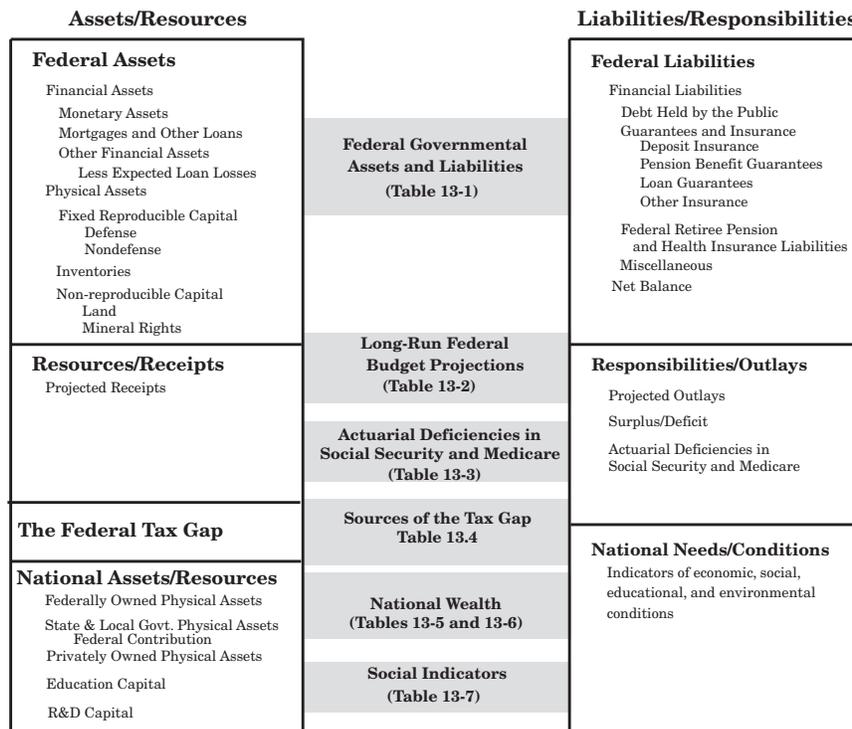
¹Statement of Federal Financial Accounting Concepts, Number 1, Objectives of Federal Financial Reporting, September 2, 1993. Other objectives are budgetary integrity, operating performance, and systems and controls.

cludes a statement of social insurance that reviews a substantial body of information on the condition and sustainability of the Government’s social insurance programs. This year, the *Report* included for the first time a brief discussion of the long-run budget outlook for the Government as a whole, which is similar to the long-run projections discussed in this chapter. This is a useful development and will help to inform readers of the Government’s fiscal sustainability in a way not possible with more limited analysis.

Connecting the Dots: The presentation that follows is constructed around a series of tables and charts. The schematic diagram, Chart 13–1, shows how the different pieces fit together. The tables and charts should be viewed as an ensemble, the main elements of which are grouped in two broad categories—assets/resources and liabilities/responsibilities.

- The left-hand side of Chart 13–1 shows the full range of Federal resources, including assets the Government owns, tax receipts it can expect to collect based on current and proposed laws, the tax gap, and national wealth, including the trained skills of the national work force, that provide the base for Government revenues.
- The right-hand side reveals the full range of Federal obligations and responsibilities, beginning with the Government’s acknowledged liabilities from past actions, such as the debt held by the public, and including future budget outlays needed to maintain present policies and trends. This column ends with a set of indicators highlighting areas where Government activity affects society or the economy.

Chart 13-1. The Financial Condition of the Federal Government and the Nation



QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S STEWARDSHIP**1. According to Table 13-1, the Government's liabilities exceed its assets. No business could operate in such a fashion. Why does the Government not manage its finances more like a business?**

The Federal Government has different objectives from a business firm. The goal of every business is to earn a profit, and as a general rule the Federal Government properly leaves activities at which a profit could be earned to the private sector. For the vast bulk of the Federal Government's operations, it would be difficult or impossible to charge prices that would cover expenses. The Government undertakes these activities not to improve its balance sheet, but to benefit the Nation.

For example, the Government invests in education and research, but it earns no direct return from these investments. People are enriched by these investments, but the returns do not show up as an increase in Government assets but rather as an increase in the general state of knowledge and in the capacity of the country's citizens to earn a living and lead a fuller life. Business investment motives are quite different; business invests to earn a profit for itself, not others, and if its investments are successful, their value will be reflected in its balance sheet. Because the Federal Government's objectives are different, its balance sheet behaves differently, and should be interpreted differently.

2. Table 13-1 seems to imply that the Government is insolvent. Is it?

No. Just as the Federal Government's responsibilities are different from those of private business, so are its resources. Government solvency must be evaluated in different terms.

What Table 13-1 shows is that those Federal obligations that are most comparable to the liabilities of a business corporation exceed the estimated value of the assets actually owned by the Federal Government. The Government, however, has access to other resources through its sovereign powers. These powers, which include taxation, will allow the Government to meet its present obligations and those that are anticipated from future operations even though the Government's current assets are less than its current liabilities.

Private financial markets clearly recognize this reality. The Federal Government's implicit credit rating is among the best in the world; lenders are willing to lend it money at interest rates substantially below those charged to private borrowers. This would not be true if the Government were really insolvent or likely to become so in the near future. Where governments totter on the brink of insolvency, lenders are either unwilling to lend them money, or do so only in return for a substantial interest premium.

QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S STEWARDSHIP

3. *Why are Social Security and Medicare not shown as Government liabilities in Table 13-1?*

Future Social Security and Medicare benefits may be considered as promises or responsibilities of the Federal Government, but these benefits are not a liability in a legal or accounting sense. The Government has unilaterally decreased as well as increased these benefits in the past, and future reforms could alter them again. These benefits are reflected in this presentation of the Government's finances in two ways: as part of the overall budget projections in Table 13-2, and in the actuarial deficiency estimates in Table 13-3.

Other Federal programs make similar promises to those of Social Security and Medicare—Medicaid, for example. Few have suggested counting future benefits expected under these programs as Federal liabilities, yet it would be difficult to justify a different accounting treatment for them if Social Security or Medicare were to be classified as a liability. There is no bright line dividing Social Security and Medicare from other programs that promise benefits to people, and all the Government programs that do so should be accounted for similarly.

Also, if future Social Security and Medicare benefits were treated as liabilities, then payroll tax receipts earmarked to finance those benefits ought to be treated as assets. This treatment would be essential to gauge the size of the future claim. Tax receipts, however, are not generally considered to be Government assets, and for good reason: the Government does not own the wealth on which future taxes depend. Including taxes on the balance sheet would be wrong for this reason, but excluding taxes from the balance sheet would overstate the drain on net assets from Social Security and Medicare benefits. Furthermore, treating taxes for Social Security or Medicare differently from other taxes would be highly questionable.

Finally, under Generally Accepted Accounting Principles (GAAP), Social Security is not considered to be a liability, so not counting it as such in this chapter is consistent with accounting standards.

4. *Why doesn't the Federal Government follow normal business practice in its bookkeeping?*

The Government is not a business, and accounting standards designed to illuminate how much a business earns and how much equity it has could provide misleading information if applied naively to the Government. The Government does not have a "bottom line" comparable to that of a business corporation, but the Federal Accounting Standards Advisory Board (FASAB) has developed, and the Government has adopted, a conceptual accounting framework that reflects the Government's distinct functions and answers many of the questions for which Government should be accountable. This framework addresses budgetary integrity, operating performance, stewardship, and systems and controls. FASAB has also developed, and the Government has adopted, a full set of accounting standards. Federal agencies now issue audited financial reports that follow these standards, and an audited Government-wide financial report is issued as well. In short, the Federal Government does follow generally accepted accounting principles (GAAP) just as businesses and State and local governments do, although the relevant principles differ depending on the circumstances. This chapter is intended to address the "stewardship objective"—assessing the interrelated condition of the Federal Government and the Nation.

PART II—THE FEDERAL GOVERNMENT’S ASSETS AND LIABILITIES

Table 13–1 looks at the Government’s assets and liabilities retrospectively, summarizing what the Government owes as a result of its past operations netted against the value of what it owns. The table gives some perspective by showing these net asset figures for a number of years beginning in 1960. To ensure comparability across time, the assets and liabilities are measured in terms of constant FY 2007 dollars and the balance is also shown as a ratio to GDP. Govern-

ment liabilities have exceeded the value of assets (see chart 13–2) over this entire period, but in the late 1970s a speculative run-up in the prices of oil and other real assets temporarily boosted the value of Federal holdings. When those prices subsequently declined, real Federal asset values declined and only recently have they regained the level they had reached in the mid-1980s.

Chart 13-2. Net Federal Liabilities



Currently, the total real value of Federal assets is estimated to be 78 percent greater than it was in 1960. Meanwhile, Federal liabilities have increased by 257 percent in real terms. The decline in the Federal net asset position has been partly due to persistent Federal budget deficits that have boosted debt held by the public in most years since 1960. Other factors have also been important such as large increases in health benefits promised for Federal retirees and the sharp rise in veterans’ disability compensation. The relatively slow growth in Federal asset values has also reduced the Government’s net asset position.

The shift from budget deficits to budget surpluses in the late 1990s temporarily checked the decline in Federal net assets. Currently, the net excess of liabilities over assets is about \$7.2 trillion or about \$23,800 per capita. As a ratio to GDP, the excess of liabilities over assets reached a peak of 57 percent in 1995; it declined to 45 percent in 2000; it rose to 54 percent in 2005; and it has declined slightly since then to around 52 percent of GDP at the end of 2007. The average since 1960 has been 44 percent (see Table 13–1).

Assets

Table 13–1 offers a comprehensive list of the financial and physical resources owned by the Federal Government.

Financial Assets: According to the Federal Reserve Board’s Flow-of-Funds accounts, the Federal Government’s holdings of financial assets amounted to \$613 billion at the end of 2007. Government-held mortgages (measured in constant dollars) reached a peak in the early 1990s as the Government acquired mortgages from savings and loan institutions that had failed. The Government subsequently liquidated most of the mortgages it acquired from these bankrupt savings and loans. Meanwhile, Government holdings of other loans have been declining in real terms since the mid-1980s. The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future losses and interest subsidies on these loans was around \$44 billion as of year-end 2007. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Table 13-1. GOVERNMENT ASSETS AND LIABILITIES*

(As of the end of the fiscal year, in billions of 2007 dollars)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2006	2007
ASSETS												
Financial Assets:												
Cash and Checking Deposits	49	71	44	36	55	36	49	50	67	37	52	77
Other Monetary Assets	2	1	1	2	2	2	2	1	7	2	5	1
Mortgages	32	31	46	48	89	90	115	80	91	81	83	83
Other Loans	118	162	203	205	263	341	242	194	225	211	202	205
less Expected Loan Losses	-1	-3	-5	-11	-20	-20	-23	-29	-44	-43	-48	-44
Other Treasury Financial Assets	71	89	78	70	99	146	233	280	255	326	309	290
Subtotal	271	351	367	350	488	596	618	577	602	614	603	613
Nonfinancial Assets:												
Fixed Reproducible Capital:	1,185	1,176	1,223	1,186	1,124	1,271	1,318	1,325	1,162	1,162	1,178	1,222
Defense	1,022	960	970	886	795	925	949	927	759	733	745	775
Nondefense	164	216	253	300	328	346	369	398	403	429	433	447
Inventories	310	268	250	224	276	316	280	216	221	287	288	277
Nonreproducible Capital:	159	210	251	411	607	685	581	430	717	1,117	1,211	1,311
Land	109	151	190	301	385	399	411	306	475	743	824	919
Mineral Rights	51	59	61	110	223	286	170	124	242	374	387	392
Subtotal	1,655	1,654	1,724	1,821	2,007	2,272	2,179	1,970	2,101	2,566	2,677	2,809
Total Assets	1,925	2,006	2,090	2,171	2,495	2,868	2,798	2,547	2,703	3,180	3,280	3,423
LIABILITIES												
Debt held by the Public	1,352	1,390	1,237	1,257	1,563	2,585	3,522	4,681	4,076	4,852	4,945	5,035
Insurance and Guarantee Liabilities:												
Deposit Insurance					2	11	85	6	1	1	1	2
Pension Benefit Guarantee				51	37	51	51	24	48	87	76	83
Loan Guarantees	*	1	3	8	15	13	18	35	44	51	49	69
Other Insurance	37	33	26	24	32	20	24	21	19	43	20	17
Subtotal	37	34	29	82	86	94	178	86	113	181	146	171
Pension and Post-Employment Health Liabilities:												
Civilian and Military Pensions	1,021	1,283	1,534	1,739	2,138	2,121	2,073	2,010	2,107	2,292	2,372	2,415
Retiree Health Insurance Benefits	209	263	314	356	438	434	424	420	467	1,188	1,160	1,145
Veterans Disability Compensation	224	282	337	374	383	316	285	346	661	1,186	1,181	1,128
Subtotal	1,454	1,828	2,186	2,468	2,959	2,872	2,783	2,777	3,234	4,666	4,713	4,688
Environmental and Disposal Liabilities	80	99	119	134	161	191	226	295	360	274	313	342
Other Liabilities:												
Trade Payables and Miscellaneous	32	40	50	62	97	127	174	144	125	238	248	255
Benefits Due and Payable	24	29	39	41	53	58	70	81	93	124	132	134
Subtotal	57	68	89	103	149	185	244	226	218	361	381	389
Total Liabilities	2,980	3,420	3,660	4,045	4,919	5,928	6,953	8,064	8,002	10,335	10,497	10,625
Net Assets (Assets Minus Liabilities)	-1,054	-1,414	-1,569	-1,874	-2,424	-3,060	-4,155	-5,517	-5,299	-7,155	-7,216	-7,202
Addenda:												
Net Assets Per Capita (in 2007 dollars)	-5,847	-7,289	-7,665	-8,691	-10,630	-12,814	-16,582	-20,663	-18,734	-24,064	-24,039	-23,768
Ratio to GDP (in percent)	-35.1	-37.5	-34.8	-36.6	-39.6	-41.9	-48.6	-57.2	-44.9	-53.9	-53.1	-51.6

* This table shows assets and liabilities for the Government as a whole excluding the Federal Reserve System. Data for 2007 are extrapolated in some cases.

Reproducible Capital: The Federal Government is a major investor in physical capital and computer software. Government-owned stocks of such capital have remained fairly stable measured in constant (year 2000) dollars for most of the last 45 years (OMB estimate) at around \$1.2 trillion. This capital consists of defense equipment and structures, including weapons systems, as well as nondefense capital goods. Currently, less than two-thirds of the capital is defense equipment or structures. In 1960, defense capital was over 80 percent of the total. In the 1970s, there was a substantial decline in the real value of U.S. defense capital and there was another large decline in the 1990s after the end of the Cold War. Meanwhile, nondefense Federal capital has increased at an average annual rate of around 2.2 percent. The Government also holds inventories of defense goods and other items that in 2007 amounted to about 23 percent of the value of its fixed reproducible capital.

Nonreproducible Capital: The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings (and of course, in a realistic sense, many of these resources would never be sold). Private land values fell sharply in the early 1990s, but they have generally risen since. It is assumed here that Federal land shared in the decline and the subsequent recovery. Oil prices have been on a roller coaster since the mid-1990s. They declined sharply in 1997–1998, rebounded in 1999–2000, fell again in 2001, and rose substantially in 2002–2007. These fluctuations have caused the estimated market value of Federally owned proved reserves of oil and natural gas to fluctuate as well. In 2007, as estimated here, the combined real value of Federal land and mineral rights was \$1.3 trillion compared with \$1.5 trillion in Federal fixed capital and inventories.

These estimates omit some valuable assets owned by the Federal Government—such as works of art and historical artifacts—partly because such unique assets are unlikely ever to be sold and partly because there is no comprehensive inventory or realistic basis for valuing them.

Total Assets: The total value of Government assets measured in constant dollars has risen sharply in the past four years, and was at an all-time high in 2007. The Government's asset holdings are vast. As of the end of 2007, Government assets were estimated to be worth about \$3.4 trillion or 24 percent of GDP.

Liabilities

Table 13–1 includes all Federal liabilities that would normally be listed on a balance sheet. All the various forms of publicly held Federal debt are counted, as are Federal pension and health insurance obligations to civilian and military retirees including the disability compensation that is owed the Nation's veterans, which can be thought of as a form of deferred compensation. The estimated liabilities stemming from Federal insurance programs and loan guarantees are shown. The benefits that are due and payable under various Federal programs are also included, but these liabilities reflect only binding short-term obligations, not the Government's full commitment under these programs. The Government also has a responsibility to repair environmental damage that resulted from nuclear weapons production, and that cost has been included in the Table as well.

Future benefit payments that are promised through Social Security and other Federal income transfer programs are not Federal liabilities in a legal or accounting sense. They are Federal responsibilities, and it is important to gauge their size, but they are not binding in the same way as a legally enforceable claim would be. The budget projections and other data in Part III are designed to provide a sense of these broader responsibilities and their claim on future budgets.

Debt Held by the Public: The Federal Government's largest single financial liability is the debt owed to the public. It amounted to about \$5.0 trillion at the end of 2007. Publicly held debt declined for several years in the late 1990s because of the unified budget surpluses at that time, but as deficits returned, publicly held debt began to increase again.

Insurance and Guarantee Liabilities: The Federal Government has contingent liabilities arising from the loan guarantees it has made and from its insurance programs. When the Government guarantees a loan or offers insurance, cash disbursements are often small initially, and if a fee is charged the Government may even collect money; but the risk of future cash payments associated with such commitments can be large. The figures reported in Table 13–1 are estimates of the current discounted value of prospective future losses on outstanding guarantees and insurance con-

tracts. The present value of all such losses taken together is about \$170 billion. As is true elsewhere in this chapter, this estimate does not incorporate the market value of the risk associated with these contingent liabilities; it merely reflects the present value of expected losses. Although individually many of these programs are large and potential losses can be a serious concern, these insurance and guarantee liabilities are fairly small relative to total Federal liabilities or even the total debt held by the public. They were less than 2 percent of total liabilities in 2007.

Pension and Post-Employment Health Liabilities: The Federal Government owes pension benefits as a form of deferred compensation to retired workers and to current employees who will eventually retire. It also provides civilian retirees with subsidized health insurance through the Federal Employees Health Benefits program and military retirees receive similar benefits. Veterans are owed compensation for their service-related disabilities. While the Government's employee pension obligations have risen slowly, there has been a sharp increase in the liability for future health benefits and veterans compensation. The discounted present value of all these benefits was estimated to be around \$4.7 trillion at the end of 2007 up from \$3.2 trillion in 2000.² A large expansion in Federal military retiree health benefits was legislated in 2001.

Environmental and Disposal Liabilities: During World War II and the Cold War, the Federal Government constructed a vast industrial complex to study, produce and test nuclear weapons. Environmental contamination occurred at these sites. The estimated liability shown here is based on the cleanup costs required by Federal, State and local laws and regulations. The Department of Energy is responsible for managing this cleanup. The Department of Defense is also charged with cleaning up contamination from its waste disposal practices, leaks, spills and other risky activities. Together the cleanup costs are estimated to amount to around 340 billion dollars in present value.³

The Balance of Net Liabilities

The Government need not maintain a positive balance of net assets to assure its fiscal solvency, and the buildup in net liabilities since 1960 has not significantly affected Federal creditworthiness. Long-term Government interest rates in 2003 reached their lowest levels in 45 years, and in 2004–2007 they remained lower than at any time from 1965 through 2002. Despite the historically low interest rates, there are limits to how much debt the Government can assume without putting its finances in jeopardy. Over an extended time horizon, the Federal Government must take in enough

²Estimates of these liabilities were derived from the Financial Report of the United States Government for 2007 and earlier years. Values for years prior to 1997 were extrapolated.

³Estimates of these liabilities were also derived from the Financial Report of the United States Government for 2007 and earlier years. Values for years prior to 1997 were extrapolated.

revenue to cover all of its spending including debt service. The Government's ability to service its debt in the long run cannot be gauged from a balance sheet alone.

It is necessary to project the budget into the future to judge the prospects for long-run solvency. That is the subject of the next section.

PART III—THE LONG-RUN BUDGET OUTLOOK

A balance sheet, with its focus on obligations arising from past transactions, can only show so much information. For the Government, it is also important to anticipate what future budgetary requirements might flow from current laws and policies. Despite the uncertainty surrounding the assumptions needed for such estimates, very long-run budget projections can be useful in drawing attention to potential problems. Federal responsibilities extend well beyond the next five or ten years, and problems that may be small in that time frame can become much larger if allowed to grow.

To assess the overall financial condition of the Government, it is necessary to examine the future prospects for all Government programs including the revenue sources that support Government spending. Such an assessment reveals that the key drivers of the long-range deficit are, not surprisingly, Social Security, Medicare, and Medicaid. Social Security and Medicare are expected to continue indefinitely and long-range projections for Social Security and Medicare have been prepared for decades. Budget projections for individual programs, however, even important ones such as Social Security and Medicare, cannot reveal the Government's overall budgetary position. Like Medicare and Social Security, Medicaid—the entitlement program that provides medical assistance, including acute and long-term care to low-income persons including families with dependent children, as well as aged, blind or disabled individuals—is projected to grow more rapidly than the economy over the next several decades and to add substantially to the overall budget deficit. Under current law, there is no offset anywhere in the budget large enough to cover all the demands that will eventually be imposed by Social Security, Medicare, and Medicaid.

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 to name a few. These uncertainties make even short-run budget forecasting quite difficult, and the uncertainties increase the further into the future projections are extended. While uncertainty makes forecast accuracy difficult to achieve, it enhances the importance of long-run budget projections because future problems are often best addressed in the present. A full treatment of all the relevant risks is beyond the scope of this chapter, but the chapter does show how long-run budget projections respond to changes in some of the key economic and demographic parameters.

The Impending Demographic Transition

This year—2008—is a watershed year as the first members of the huge generation born after World War

II, the so-called baby boomers, reach age 62 and become eligible for early retirement under Social Security. Three years from now, they turn 65 and become eligible for Medicare. In the years that follow, the elderly population will steadily increase, putting serious strains on the budget.

The pressures are expected to persist even after the baby boomers have passed through the system. The Social Security actuaries project that the ratio of workers to Social Security beneficiaries will fall from around 3.3 currently to a little over 2 by the time most of the baby boomers have retired. From that point forward, because of lower fertility and improved mortality, the ratio is expected to continue to decline slowly. With fewer workers to pay the taxes needed to support the retired population, budgetary pressures will continue to grow. The problem posed by the demographic transition is a permanent one.

Currently, the three major entitlement programs—Social Security, Medicare, and Medicaid—account for 45 percent of non-interest Federal spending, up from 30 percent in 1980. By 2035, when the remaining baby boomers will be in their 70s and 80s, these three programs could account for two-thirds of non-interest Federal spending even with the reforms proposed in this Budget. At the end of the projection period, in 2080, the figure rises to almost three-quarters of non-interest spending. In other words, most of the budget, aside from interest, would go to these three programs alone. That would severely reduce the flexibility of the budget, and the Government's ability to respond to new challenges.

An Unsustainable Path

These long-run budget projections shown in Table 13-2 illustrate that the budget is on an unsustainable path, although the expansion of the entitlement programs and the rise in the deficit unfold gradually. The budget is projected to reach balance in 2012, while most of the baby boomers are still in the work force and to remain in surplus for some years after 2012, but the deficit eventually returns and then begins a steady increase. Without further reforms, by the end of this chapter's projection period in 2080, rising deficits would have driven publicly held Federal debt to levels well above the previous peak level relative to GDP reached at the end of World War II. There likely would be a crisis that would force budgetary changes before that point could be reached, but the timing of such a crisis and its resolution are impossible to predict. Timely, comprehensive entitlement reforms could avoid such a crisis.

The revenue projections start with the budget's estimate of receipts under the Administration's proposals

for the next five years. In the long run, for this analysis, receipts are assumed to return gradually to their average as a share of GDP over the last 40 years—18.3 percent. Maintaining that sustained historical tax level relative to GDP effectively assumes ongoing efforts—as has occurred historically—to offset the inherent biases in the tax code that tend to raise the tax burden over time.

The projection of discretionary spending is essentially arbitrary, because discretionary spending is determined annually through the legislative process, and no formula can dictate future spending in the absence of legislation. Alternative assumptions have been made for long-run discretionary spending in past budgets. Holding discretionary spending unchanged in real terms is the “current services” assumption used for baseline budget projections when there is no legislative guidance on future spending levels. Extending this assumption over many decades, however, is not realistic. When the population and economy grow, as assumed in these projections, the demand for public services is very likely to expand as well. The current base projection assumes that discretionary spending keeps pace with the growth in GDP in the long run, so that spending increases in real terms whenever there is real economic growth.

In past budgets, these long-run budget projections have typically jumped off from the end point for the current budget. This year’s Budget, however, continues to include the effects of adding personal retirement accounts to Social Security. Personal accounts are one element within a possible set of larger reforms that would restore solvency to Social Security. Because

showing the personal account proposal in isolation would give a distorted picture of the Administration’s intentions for comprehensive Social Security reform, it is not included in the base projections.

The long-run budget outlook is highly uncertain. With pessimistic assumptions, the fiscal picture deteriorates even sooner than in the base projection. More optimistic assumptions imply a longer period before the pressures of rising entitlement spending overwhelm the budget. But despite the uncertainty, these projections show that under a wide range of forecasting assumptions, the resources generated by the programs themselves will be insufficient to cover the long-run costs of Social Security and Medicare and that overall budgetary resources will not be sufficient to support all future projected needs. (For a further discussion of the forecasting assumptions used to make these budget projections, see the technical note at the end of this chapter.)

Alternative Policy, Economic, and Technical Assumptions

The quantitative results discussed above are sensitive to changes in underlying policy, economic, and technical assumptions. Some of the most important of these assumptions and their effects on the budget outlook are discussed below. Mounting deficits result for most plausible projections of the budget.

1. *Health Spending:* The projections for Medicare over the next 75 years are based on an extension of the Administration’s policy proposals to control costs in the Medicare program. These reforms are expected to reduce Medicare expenditures relative to the actuarial

Table 13–2. LONG-RUN BUDGET PROJECTIONS

(Receipts, outlays, surplus or deficit, and debt as a percent of GDP)

	1980	1990	2000	2010	2020	2030	2040	2060	2080
Receipts	19.0	18.0	20.9	18.6	18.3	18.3	18.3	18.3	18.3
Outlays:									
Discretionary	10.1	8.7	6.3	7.0	4.7	4.7	4.7	4.7	4.7
Mandatory:									
Social Security	4.3	4.3	4.2	4.3	5.1	5.9	6.0	6.1	6.3
Medicare	1.1	1.7	2.0	2.7	3.1	4.1	4.8	5.3	5.3
Medicaid	0.5	0.7	1.2	1.5	1.9	2.3	2.7	3.2	3.9
Other	3.7	3.2	2.4	2.4	2.0	1.7	1.5	1.3	1.2
Subtotal, mandatory	9.6	9.9	9.8	10.8	12.1	14.0	15.0	15.8	16.7
Net Interest	1.9	3.2	2.3	1.8	1.2	1.0	1.7	4.1	7.8
Total outlays	21.7	21.8	18.4	19.6	18.0	19.8	21.4	24.6	29.2
Surplus or Deficit (–)	–2.7	–3.9	2.4	–1.0	0.3	–1.5	–3.1	–6.3	–10.9
Primary Surplus or Deficit (–)	–0.8	–0.6	4.7	0.8	1.5	–0.4	–1.4	–2.3	–3.1
Federal Debt Held by the Public	26.1	42.0	35.1	38.2	22.2	20.5	33.9	80.4	154.4
Projections without Proposed Entitlement Savings:									
Mandatory Outlays	9.6	9.9	9.8	10.9	12.4	14.8	16.2	18.1	20.0
Surplus or Deficit (–)	–2.7	–3.9	2.4	–1.1	–0.1	–2.5	–5.2	–11.5	–20.6
Primary Surplus or Deficit (–)	–0.8	–0.6	4.7	0.6	1.2	–1.2	–2.6	–4.5	–6.4
Federal Debt Held by the Public	26.1	42.0	35.1	38.4	24.3	28.1	52.4	140.0	283.4

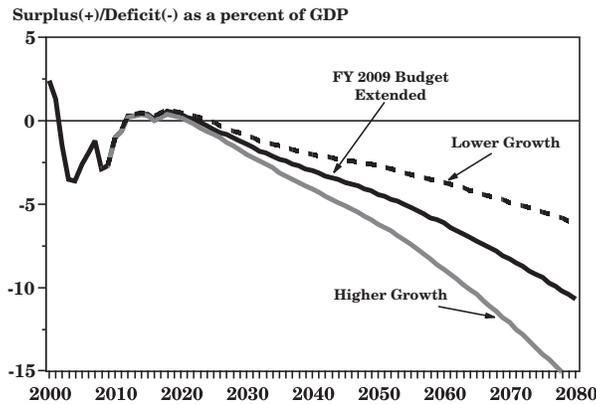
Note: The figures shown in this table for 2020 and beyond are the product of a long-range forecasting model maintained by the Office of Management and Budget. This model is separate from the models and capabilities that produce detailed programmatic estimates in the Budget. It was designed to produce long-range forecasts based on additional assumptions regarding growth of the economy, the long-range evolution of specific programs, and the demographic and economic forces affecting those programs. The model, its assumptions, and sensitivity testing of those assumptions are presented in this chapter.

projections in the 2007 Medicare Trustees' Report. Following the recommendations of its Technical Review Panel, the Medicare trustees assume that over the long run "age-and gender-adjusted, per-beneficiary spending growth exceeds the growth of per-capita GDP by 1 percentage point per year." This implies that total Medicare spending rises faster than GDP. Medicare faces a substantial shortfall in earmarked income compared with projected outgo. Although rising faster than GDP, under these assumptions, Medicare grows less rapidly than it has historically, so that even without explicit reforms the program's growth is assumed to be reduced. The effect of the Administration's proposals is to reduce future growth even more, and that would reduce the imbalance in Medicare by more than \$10 trillion over the 75-year forecasting horizon according to actuarial estimates. Instead of facing a \$34 trillion shortfall the

program would face about a \$24 trillion shortfall, if the Administration's proposals were adopted. The proposals would not eliminate the shortfall but they would reduce it substantially.

Eventually, the rising trend in health care costs will have to end, but it is hard to know when and how that will happen. Improved health and increased longevity are highly valued, and society has shown that it is willing to spend a larger share of income on them than it did in the past. Whether society will be willing to devote the large share of resources to health care implied by these projections, even with the Administration's proposals, is an open question. The alternatives highlight the effect of raising or lowering the projected growth rate in per capita health care costs by ¼ percentage point.

Chart 13-3. Health Care Cost Alternatives



2. *Entitlement Savings*: The Administration has proposed a number of savings measures in entitlement programs in addition to the Medicare savings discussed

above. These proposals, if adopted, would have ongoing budgetary effects. The chart below shows the long-run deficit with and without these reforms.

Chart 13-4. Effect of Entitlement Savings

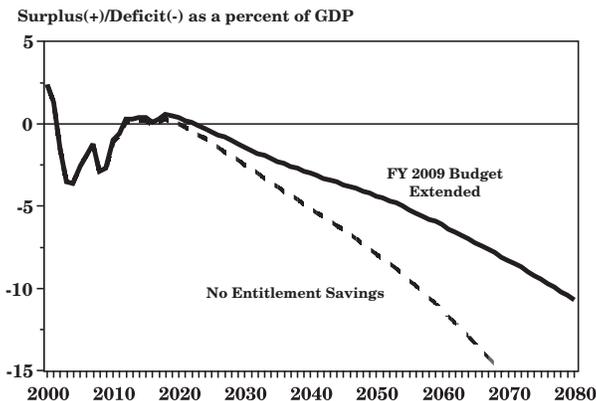
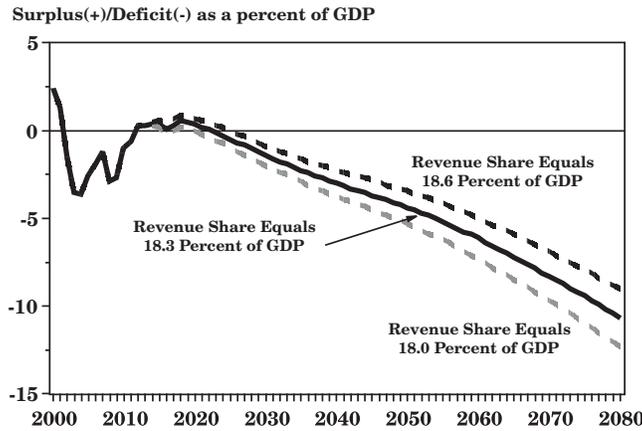


Chart 13-5. Alternative Receipts Projections

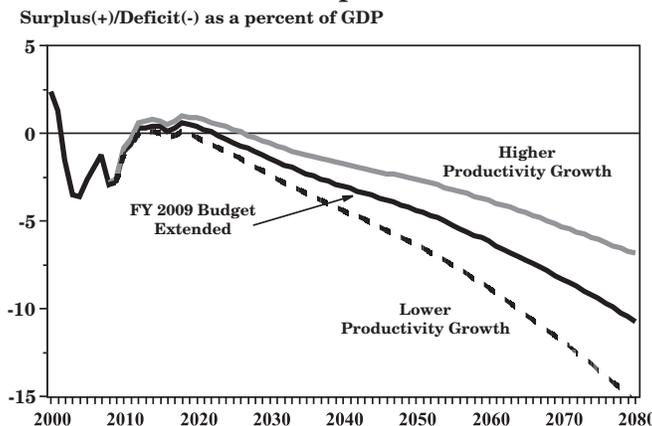


3. *Alternative Revenue Shares:* In the base projection, tax receipts are held constant relative to GDP at their average over the last 40 years—18.3 percent of GDP. Tax receipts have risen above this ratio from time to time, most recently in 2006–2007 of the 1990s, but periods of high taxes have always been followed by tax changes that have restored the long-term average tax ratio. The chart below shows the effects of alternative receipts assumptions. Allowing receipts to rise to 18.6 percent of GDP would reduce the long-run budget deficit, while holding receipts to 18.0 percent of GDP would have the opposite effect.

4. *Productivity:* The rate of future productivity growth has a major effect on the long-run budget outlook. It is also highly uncertain. Over the next few decades an increase in productivity growth would reduce projected budget deficits appreciably. Higher productivity growth adds directly to the growth of the major tax bases, while it has a smaller immediate effect on outlay

growth even assuming that in the long-run discretionary spending rises with GDP. In the latter half of the 1990s, after two decades of much slower growth, the rate of productivity growth increased markedly, and that increase is projected to persist in these long-run projections. This increase in productivity growth is one of the most welcome developments of the last several decade. Although the long-run growth rate of productivity is inherently uncertain, growth in nonfarm output per hour has averaged 2.2 percent per year since 1948, and it has grown 2.6 percent per year since 1995. The projections here assume that productivity, as measured by real GDP per hour, will grow in the long run at a 2.2 percent annual rate. This is consistent with a continuing increase in nonfarm productivity of around 2.5 percent per year. The alternatives highlight the effect of raising the projected productivity growth rate by $\frac{1}{4}$ percentage point and the effect of lowering it by the same amount.

Chart 13-6. Alternative Productivity Assumptions

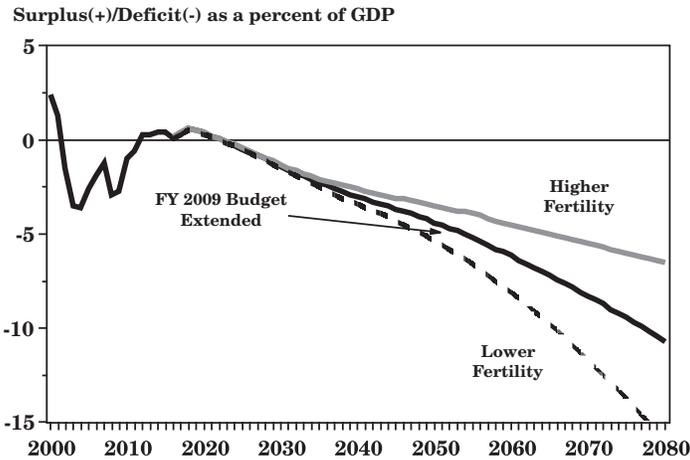


5. *Population:* The key assumptions for projecting long-run demographic developments are fertility, immigration, and mortality.

- The demographic projections assume that fertility will average between 1.9 and 2.0 total lifetime

births per woman in the future, just slightly below the replacement rate needed to maintain a constant population—2.1 births per woman.

Chart 13-7. Alternative Fertility Assumptions



- The rate of immigration is assumed to average around 900,000 immigrants per year in these projections. Higher immigration relieves some of the downward pressure on population growth from low fertility and allows total population to expand throughout the projection period, although at a much slower rate than has prevailed historically.
- Mortality is projected to decline, i.e., people are expected to live longer. The average female life-

span is projected to rise from 79.7 years in 2006 to 85.1 years by 2080, and the average male life-span is projected to increase from 75.0 years in 2006 to 81.9 years by 2080. A technical panel to the Social Security Trustees recently reported that the improvement in longevity might even be greater.

Chart 13-8. Alternative Immigration Assumptions

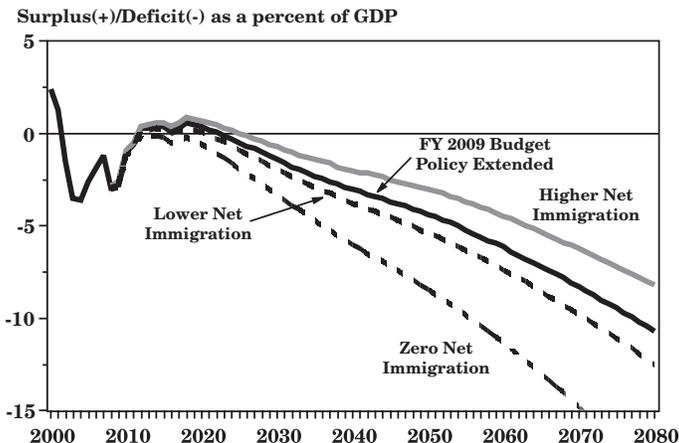
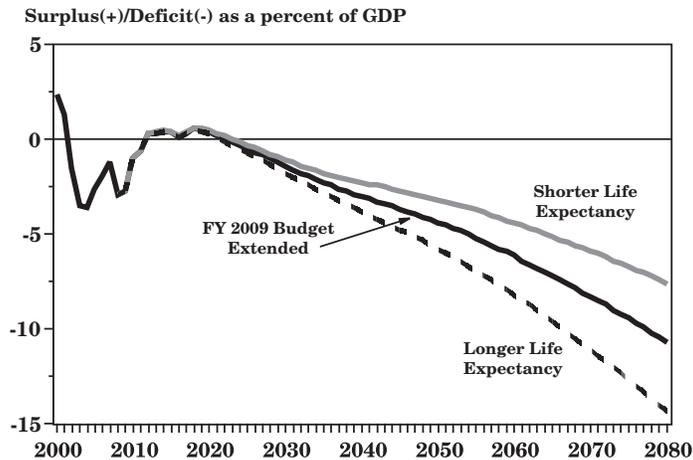


Chart 13-9. Alternative Mortality Assumptions

Actuarial Projections for Social Security and Medicare

Social Security and Medicare are the Government's two largest entitlement programs. Both rely on payroll tax receipts from current workers and employers for at least part of their financing, while the programs' benefits largely go to those who are retired. The importance of these programs for the retirement security of current and future generations makes it essential to understand their long-range financial prospects. Both programs' actuaries have calculated that they face per-

sistent long-run deficits. How best to measure the long-run imbalance in Social Security is a challenging analytical question; the imbalance may be even more difficult to measure in Medicare, which includes Hospital Insurance (HI), funded through the payroll tax, and Supplementary Medical Insurance (SMI), financed through premiums and general revenues. Under plausible assumptions, however, each program embodies a huge financial deficiency, and it will be very difficult for the Government as a whole to maintain control of the budget without addressing these programs' financial problems.

Social Security: The Long-Range Challenge

Social Security provides financial security for the elderly, the disabled, and survivors. The Social Security system is intended to be self-financing over time. The principle of self-financing is important, because it compels corrections in the event that projected benefits consistently exceed dedicated receipts.

While Social Security is running surpluses today, the program's actuaries estimate that it will begin running cash deficits 9 years from now. Social Security's spending path is unsustainable under current law. The retirement of the baby-boom generation, born following World War II, will begin to increase greatly the number of Social Security beneficiaries within five years. Demographic trends toward lower fertility rates and longer life spans mean that the ratio of retirees to the working population will remain permanently higher following the baby boomers' passage through the system. The number of workers available to support each beneficiary is projected to decline from 3.3 today to 2.2 in 2030, and to continue to decline slowly from there. This decline in the workforce available to support retiree benefits means that the Government will not be able to meet current-law benefit obligations at current payroll tax rates.

The size of Social Security's future shortfall cannot be known with precision, but a gap between Social Security receipts and outlays emerges under a wide range of reasonable forecasting assumptions. Long-range uncertainty underscores the importance of creating a system that is financially stable and self-contained. Otherwise, the demands created by Social Security could compromise the rest of the budget and the Nation's economic health. The actuarial shortfall between future benefits and income is estimated to be \$6.8 trillion over the next 75 years. Extending the horizon to perpetuity increases the imbalance to \$15.7 trillion, excluding trust fund assets as these do not represent a source of funds from a unified budget perspective.

The current structure of Social Security leads to substantial generational differences in the average rate of return people can expect from the program. While previous generations have fared extremely well, people born today can expect to receive less than a two percent annual real rate of return on their total payroll taxes (including the employer's portion, which most economists believe is ultimately borne by labor). Moreover, such estimates in a sense overstate the expected rate of return for future retirees, because they assume no changes in current-law taxes or benefits, even though such changes are needed to meet Social Security's financing shortfall.

One way to address the issues of uncertainty and declining rates of return, while protecting national savings, would be to allow individuals to invest some of their payroll taxes in personal retirement accounts. The Budget includes the estimated impact from the creation of personal accounts, funded through the Social Security payroll tax. The Administration has also embraced the concept of progressive indexing, which would significantly contribute to the solvency of the system by partially indexing the growth of benefits for higher-wage workers to inflation rather than wage growth.

Medicare: The Long-Range Challenge

Medicare finances health insurance for tens of millions of Americans, including most of the nation's seniors and many individuals with disabilities. It is composed of two programs: Hospital Insurance (HI) or Part A, which covers medical expenses relating to hospitalization and other institutional care, and Supplementary Medical Insurance (SMI) or Part B, which pays for physicians' services and other related expenditures. Starting in 2006, Medicare began to offer a voluntary prescription drug benefit, Medicare Part D, which is funded out of the SMI Trust Fund.

Like Social Security, HI is intended to be self-financing through dedicated taxes. According to the Medicare trustees' most recent report, the Trust Fund is projected to be depleted in 2019. Looking at the long run, the Medicare actuaries project a 75-year unfunded obligation of Medicare's HI trust fund of around \$11.9 trillion (net present value). However, this measure tells less than half the story, because it does not include the deficiency in Medicare's Part B and Part D programs. The main source of dedicated revenues to the SMI Trust Fund is beneficiary premiums, which generally cover about one-quarter of its expenses. SMI's funding structure creates an enormous financing gap for the program and is the largest contributor to the total Medicare program shortfall over the next 75 years of \$34.1 trillion. Extending the horizon to perpetuity increases the total shortfall to \$74.4 trillion. SMI's financing gap is covered by an unlimited tap on general revenues. According to the Medicare Trustees' 2007 report, "Within the next ten years, general revenue transfers are expected to constitute the largest single source of income to the Medicare program as a whole—and would add significantly to the Federal Budget pressures."

This bifurcated trust fund structure finances Medicare as if the program offers two separate, unrelated benefits, instead of recognizing that Medicare provides related and complementary health care services to its beneficiaries. The Medicare Prescription Drug, Improvement, and Modernization Act (MMA), which established Part D, also took an important first step toward improving Medicare sustainability by requiring the Medicare Trustees' Report to include a new, comprehensive fiscal analysis of the program's financing that highlights the amount of general revenue transfers used to fund Medicare. If the percent of Medicare funding that is from general fund transfers reaches 45 percent within the current or next six years of the projection (2007–2013), the Trustees issue a finding of "excess general revenue Medicare funding". In their 2007 report, the Trustees found that general revenue funding would first reach the 45 percent level in fiscal year 2013, within the seven-year window. Because this finding has been present in two consecutive Trustees' reports, a "Medicare funding warning" has been triggered. With this trigger, the MMA calls for the President to submit legislation to restore Medicare spending to sustainable levels, but it does not mandate Congressional action.

The Budget proposes to strengthen the MMA provision by modestly slowing the rate of Medicare growth if the MMA threshold is exceeded. The lower growth would be achieved through a four-tenths of a percent reduction to all payments beginning the year the threshold is exceeded. The change would only take effect if the President and Congress fail to agree on legislation to bring Medicare spending back into line with the threshold established by the MMA. The reduction would grow by four-tenths of a percent every year the shortfall continues to occur. This proposal would improve Medicare's sustainability by slowing the rate of growth in spending.

The Social Security and Medicare Trustees' Projections: In their annual reports and related documents, the Social Security and Medicare trustees typically present calculations of the 75-year actuarial imbalance or deficiency for Social Security and Medicare under current-law. The calculation covers current workers and retirees, as well as those projected to join the program within the next 75 years (this is the so-called "open-group"; the "closed-group" covers only current workers and retirees). These estimates measure the present value of each program's future benefits net of future income. They are complementary to the flow projections described in the preceding section, but unlike those projections they do not reflect the Administration's proposals to reform the Medicare program and the effects those proposals would have. More recently, the trustees'

reports have included a projection of the deficiency in perpetuity. This is the clearest way to see the total imbalance in both programs.

The present value of the Social Security imbalance over the next 75 years was estimated to be \$6.8 trillion as of January 1, 2007. The comparable estimate for Medicare was \$34.1 trillion. These estimates exclude the trust fund balances because the balances do not represent a source of funds for the Government from a unified budget perspective. (The estimates in Table 13–3 were prepared by the Social Security and Medicare actuaries, and they are based on the intermediate economic and demographic assumptions used for the 2007 trustees' reports. These differ in some respects from the assumptions used for the long-run budget projections described in the preceding section. Table 13–3

would show a smaller imbalance if the economic assumptions used for the budget had been used for the calculations. In addition, because the estimates are on the basis of current law, they do not reflect the Administration's proposals to reform Medicare. Under the Administration's proposals, the Medicare actuaries estimate that the imbalance would be reduced to about \$24 trillion.

Doing the calculations for a 75-year horizon understates the deficiencies, because the 75-year actuarial calculations omit the large deficits that continue to occur beyond the 75th year. The understatement is significant, even though values in the distant future are discounted by a large amount. Since 2004, the Social Security and Medicare actuaries have also presented the actuarial imbalances calculated in perpetuity without assuming a fixed horizon. Table 13-3 shows how much these distant benefits add to the programs' imbalances. For Social Security, the future imbalance in perpetuity is \$15.7 trillion and for Medicare it is \$74.4 trillion as of January 1, 2007. (Again, the Medicare estimate would be smaller if the effects of the Administration's policy proposals had been included in the calculation.)

The imbalance estimated on a perpetuity basis is the amount that the Government would have to raise in the private capital markets to resolve the program's imbalance permanently (given current assumptions). If nothing else changes, the estimated imbalance will grow every year at approximately the rate of interest, just as an unpaid debt grows with interest each year it remains outstanding. For Social Security this implies an increase of approximately \$700 billion in 2007 and growing amounts with every year that the imbalance remains unaddressed.

Social Security: The current deficiency in Social Security is essentially due to the fact that past and current participants will receive more benefits than they have paid for with taxes (calculated in terms of present values). By contrast, future participants—those who are now under age 15 or not yet born—are projected to pay in present value about \$0.8 trillion more than they will collect in benefits. In other words, the taxes that future participants are expected to pay will be large enough to cover the benefits due them under current law, but not large enough to cover those benefits plus the benefits promised to current program participants in excess of the taxes paid by current program participants.

Medicare: Extending the horizon to perpetuity shows that the benefits due future participants will eventually exceed projected payroll tax receipts and premiums by a huge margin. The projections into perpetuity shown at the top of Table 13-3 reveal that total Medicare benefits exceed future taxes and premiums by \$74.4 trillion in present value. This is due to an expected excess of benefits over taxes for both current participants and for future generations. Unlike Social Security, the imbalance is not simply the inherited result of a pay-as-you-go program that was never fully funded,

and which faces a demographic crunch. That is part of the problem, but even more fundamental is the assumption that medical costs continue to rise in excess of general inflation so that medical spending increases relative to total output in the economy.

General revenues have covered about 75 percent of SMI program costs for many years, with the rest being covered by premiums paid by the beneficiaries. In Table 13-3, only the receipts explicitly earmarked for financing these programs have been included. The intragovernmental transfer is not financed by dedicated tax revenues, and the share of general revenues that would have to be devoted to SMI to close the gap increases substantially under current law. Other Government programs also have a claim on these general revenues. From the standpoint of the Government as a whole, only receipts from the public can finance expenditures.

A significant portion of Medicare's actuarial deficiency is caused by the rapid expected increase in future benefits due to rising health care costs. Some, perhaps most, of the projected increase in relative health care costs reflects improvements in the quality of care, although there is also evidence that medical errors, waste, and excessive medical liability claims add needlessly to costs. But even though the projected increases in Medicare spending are likely to contribute to longer life-spans and safer treatments, the financial implications remain the same. As long as medical costs continue to outpace the growth of GDP and other expenditures, as assumed in these projections, the financial pressure on the budget will mount, and that is reflected in the estimates shown in Tables 13-2 and 13-3.

The Trust Funds and the Actuarial Deficiency: The fact that a special account or trust fund exists does not necessarily mean that the Government saved the money recorded there. The trust fund surpluses could have added to national saving if overall government borrowing from the public had actually been reduced because of the trust fund accumulations. But it is impossible to know for sure whether this happened or not.

At the time Social Security or Medicare redeems the debt instruments in the trust funds to pay benefits not covered by income, the Treasury will have to turn to the public capital markets to raise the funds to finance the benefits, just as if the trust funds had never existed. From the standpoint of overall Government finances, the trust funds do not reduce the future burden of financing Social Security or Medicare benefits, and for that reason, the trust funds are not netted against future benefits in Table 13-3. The eventual claim on the Treasury is better revealed by the difference between future benefits and future taxes or premiums.

In any case, trust fund assets remain small in size compared with the programs' future obligations and well short of what would be needed to pre-fund future benefits as indicated by the programs' actuarial deficiencies. Historically, Social Security and Medicare's HI

Table 13-3. SCHEDULED BENEFITS IN EXCESS OF FUTURE TAXES AND PREMIUMS—ACTUARIAL PRESENT VALUES
 In Perpetuity as of January 1, in Trillions of Dollars

	2004	2005	2006	2007
Social Security	11.9	12.8	15.3	15.7
Medicare	61.9	68.4	70.8	74.4
Social Security and Medicare	73.8	81.2	86.0	90.3

Over a 75-Year Projection Period as of January 1, in Trillions of Dollars

	2002	2003	2004	2005	2006	2007
Social Security:						
Future benefits less future taxes for those age 62 and over	4.1	4.3	4.5	4.9	5.3	5.9
Future benefits less future taxes for those age 15 to 61	7.2	7.4	8.0	8.7	9.6	10.4
Future benefits less taxes for those age 14 and under and those not yet born	-6.7	-6.8	-7.3	-7.9	-8.5	-9.5
Net present value for present and future participants	4.6	4.9	5.2	5.7	6.4	6.8
Medicare:						
Future benefits less future taxes for those age 65 and over	2.5	2.8	3.8	4.0	4.2	4.4
Future benefits less future taxes for those age 15 to 64	10.4	12.2	20.9	22.4	24.9	24.3
Future benefits less taxes for those age 14 and under and those not yet born	0.4	0.8	3.4	3.6	3.3	5.4
Net present value for present and future participants	13.3	15.8	28.1	29.9	32.3	34.1
Social Security and Medicare:						
Future benefits less future taxes for those who have attained eligibility	6.6	7.1	8.3	8.9	9.5	10.3
Future benefits less future taxes for those over age 15 who have not yet attained eligibility	17.6	19.7	28.9	31.0	34.5	34.7
Future benefits less taxes for those age 14 and under and those not yet born	-6.3	-6.0	-3.9	-4.3	-5.3	-4.1
Net present value for present and future participants	17.8	20.7	33.3	35.6	38.8	40.8

program were financed mostly on a pay-as-you-go basis, whereby workers' payroll taxes were immediately used to pay retiree benefits. For the most part, workers' taxes have not been used to pre-fund their own future benefits, and taxes were not set at a level sufficient to pre-fund future benefits had they been saved.

The Importance of Long-Run Measures in Evaluating Policy Changes: Consider a proposed policy change in which payroll taxes paid by younger workers were reduced by \$100 this year while the expected present value of these workers' future retirement benefits were also reduced by \$100. The present value of future benefit payments would decrease by the same amount as the reduction in revenue. On a cash flow basis, however, the lost revenue occurs now, while the decrease

in future outlays is in the distant future beyond the normal budget window, and the Federal Government must increase its borrowing to make up for the lost revenue in the meantime. If policymakers only focus on the Government's near-term borrowing needs, a reform such as this would appear to worsen the Government's finances, whereas the policy actually has a neutral impact in the long run. Focusing on the Government's near-term borrowing alone, therefore, can lead to a bias against policies that could improve the Federal Government's overall long-run fiscal condition. Taking a longer view of policy changes and considering measures such as those in this chapter can correct for such mistakes.

PART IV—TAX COMPLIANCE, NATIONAL WEALTH, AND SOCIAL INDICATORS

To obtain a full picture of the Government's financial condition it is necessary to examine a broad range of additional information beyond the narrow list of Government-owned assets and liabilities. It is even necessary to consider more information than is contained in the long-term projections of the budget. This final section presents a sample of such additional information. It is intended to provide insight into the full range of resources the Government can draw upon to meet its long-term obligations and also to indicate in a summary way what the Nation obtains in exchange for the resources it provides the Government.

The first piece of additional information is analysis of compliance with the nation's tax laws, the so-called "tax gap." The Government does not collect in a timely manner all of the taxes it is legally owed, as explained in detail below (along with some proposals to narrow the gap). That discussion is followed by an investigation of national wealth and the contributions the Federal Government has made to the wealth of private persons and other levels of government. The final section discusses a range of economic and social indicators.

Improving Tax Fairness and Federal Finances through Better Tax Compliance

The Internal Revenue Service (IRS) collects over 95 percent of total Federal receipts, including \$2.7 trillion in 2007. However, not every dollar of tax legally owed is actually paid. The great majority of taxpayers comply with the law by filing returns and paying their taxes on time, but some do not comply either because they do not understand their obligations due to the complexity of the tax law or because they seek to avoid those obligations.

Tax Compliance: In 2006, the IRS released updated results of its first large study in two decades of the difference between taxes owed and taxes actually paid—the “tax gap.” The IRS estimated that taxpayers initially underpaid by \$345 billion in 2001. This equates to a voluntary compliance rate of 84 percent. Late payments and IRS enforcement action reduced this to a net tax gap of \$290 billion, raising the net compliance rate to 86 percent. The Department of the Treasury does not have estimates of the tax gap for the years after 2001. It is possible, however, that lower tax rates and more aggressive enforcement by the IRS have tended to decrease the gap

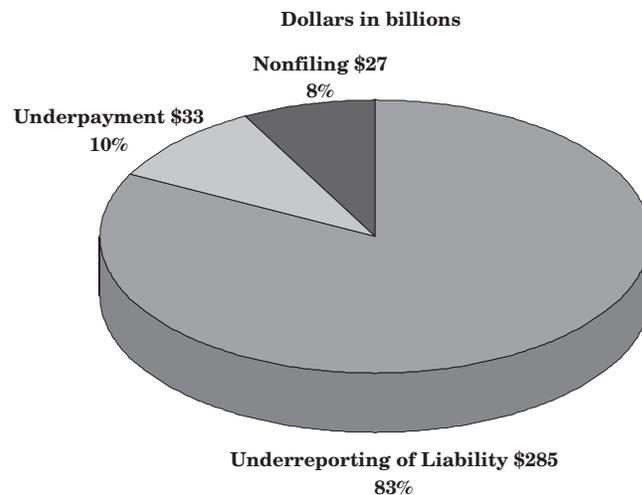
Due to changes in methodologies, comparisons between the 2001 estimates and those from earlier studies should be made cautiously. However, it does appear that the voluntary compliance rate has not changed much since the 1980s. The IRS previously reported vol-

untary compliance rates of 87 percent in 1988, 86 percent in 1985, and 84 percent in 1983. While the overall compliance rate seems to have moved relatively little over time, each one percentage point change significantly impacts revenue. A one percentage point improvement would increase revenue by \$21 billion per year based on 2001 numbers.

The IRS compliance estimates, primarily based on random audits of individuals and businesses, are not precise, but give a good general sense of the size of the tax gap and patterns in compliance. This sort of information is critical for effectively targeting IRS enforcement programs to yield the greatest improvement with the smallest cost and burden on taxpayers. The IRS’ estimates are most accurate for underpayments of known taxes as recorded in IRS financial systems, and for individual income tax compliance studied through the recent random National Research Program (NRP) study. Non-filing estimates come from studies of census data and are somewhat less precise. The weakest portions of the IRS’ estimates are in areas where no recent studies have been completed and the IRS is relying on older data (e.g., for partnerships and corporations).

Of the total tax gap, 83 percent comes from underreporting of tax liability (see chart). A significant portion of the gap also comes from underpayment of known tax debts and people who fail to file returns. Individual income taxes, the largest source of Federal receipts, account for 71 percent of the tax gap.

Chart 13-10. Sources of the Gross Tax Gap



The highest compliance rates come in areas where the IRS has good information about income, because it is reported by third parties (e.g., Form W-2 that reports wage income from employers, and Form 1099 that reports various third party payments, including

interest from banks). The IRS estimates that 95 percent of income with third-party reporting but no tax withholding (e.g., interest income, dividends) is declared on taxpayer returns. Where there is tax withholding, as in the case of most wages, nearly 99 percent of the

amounts reported by payers is declared on taxpayer returns.

Conversely, the rate of underpaid taxes is high for income with little or no third-party reporting. For example, an estimated 43 percent of the tax gap comes from business income that should be reported on individual returns (Forms 1040) but goes unreported to the IRS (see Table 13–4).

Improving Tax Compliance: While the tax gap can likely never be entirely eliminated, reducing the gap by improving compliance is important because non-compliant taxpayers impose unacceptable burdens on other taxpayers and on Federal finances.

Table 13–4. SOURCES OF THE TAX GAP FROM INCOME UNDERREPORTING

	Contribution to the Tax Gap in Dollars	Percent Share of the Overall Tax Gap
Business income underreported by individuals including small business owners	148	43
Non-business income underreporting and improper deductions and credits	88	26
Corporate income underreporting	30	9
Other underreporting	19	6
Total Underreporting	285	84

The challenge is to find ways to improve compliance without unduly burdening compliant taxpayers or the economy. For example, as noted above, income that is reported to the IRS by third parties is claimed on tax returns at a far higher rate than other income. While requiring third-party reporting of all income would likely raise compliance levels, it would necessitate burdensome new reporting requirements for individuals and businesses. However, targeted income reporting requirements in areas where the IRS is aware of abuse, such as requiring the reporting of automated payments to support business income claims, could increase compliance and help reduce the tax gap.

Another approach to improving compliance would be to change the tax code to remove tax benefits wherever there is the potential for abuse. For example, generally a taxpayer making payments to a trade or business totaling \$600 or more for services or determinable gains in the course of a year is required to send an information return to the IRS. However, there are certain exceptions for payments to corporations that have created compliance loopholes. Elimination of these exceptions by changing the tax code could increase compliance and help reduce the tax gap. Finally, much higher audit rates might improve compliance, but would be extremely expensive and unless properly targeted could be unduly burdensome to honest taxpayers.

In 2006, the Department of the Treasury released a comprehensive strategy to improve tax compliance.⁴ The strategy builds upon the demonstrated experience

and current efforts of the Treasury Department and IRS to improve compliance. The IRS has developed a carefully targeted plan for reducing the tax gap, which is aligned with the strategy and is detailed in a recent report on improving voluntary compliance.⁵ The Budget provides a \$358 million initiative in the IRS to more vigorously implement this key strategy. Components of the strategy include:

Reduce Opportunities for Evasion: The Administration will pursue carefully targeted tax law changes to promote compliance while causing minimal taxpayer burden and IRS cost increases. The Budget includes 16 legislative proposals, such as expanding third party information reporting where it can be done with acceptable levels of taxpayer burden (e.g., requiring brokers to report the cost basis for certain securities' sales). (See chapter 17, "Federal Receipts" for a full description of these legislative proposals.)

Multi-Year Commitment to Research: Improved research on tax gap causes and potential remedies, and compliance rates for different segments of taxpayers, will help the IRS target its enforcement and service programs to achieve the greatest possible impact at the lowest cost

Investments in Information Technology: Modernized computer systems will give IRS staff the tools they need to improve efficiency, service and compliance. The IRS now receives more than half of all individual tax returns electronically, and aims to continue increasing this rate.

Improve Compliance Activities: Through re-engineering and selected funding increases the IRS will improve the effectiveness of its enforcement efforts. Enforcement efforts yielded a record \$59.2 billion in 2007, an increase of 20 percent over 2006.

Taxpayer Service: Improved service will help taxpayers avoid unintentional errors and will make filing easier. Improved telephone service, new internet tools, and increases in electronic filing have already helped taxpayers file more accurate returns with less effort. The IRS answers more than 80 percent of all phone calls with answer accuracy rates greater than 90 percent. This is a significant improvement from the 1990s, when approximately 60–65 percent of calls were answered with accuracy rates around 80 percent.

Reform and Simplify the Tax Law: Simplifying the tax law will reduce unintentional errors caused by a lack of understanding. Simplification will also reduce the opportunities for intentional evasion and make it easier for the IRS to administer the tax laws.

Coordinate with Partners and Stakeholders: Closer coordination is needed between the IRS and State and foreign governments to share information and compliance strategies. Closer coordination is also needed with practitioner organizations, including bar and accounting associations, to maintain and improve mechanisms to ensure that advisors provide appropriate tax advice.

⁴Treasury Department, A Comprehensive Strategy for Reducing the Tax Gap (September 26, 2006). See: <http://www.treas.gov/press/releases/reports/otptaxgapstrategy%20final.pdf>

⁵IRS, Reducing the Federal Tax Gap: A Report on Improving Voluntary Compliance (August 2, 2007). See: http://www.irs.gov/pub/irs-news/tax_gap_report_final_080207_linked.pdf

The IRS also relies on volunteer groups to serve taxpayer needs, and in 2007 the IRS added 16 new Low Income Taxpayer Clinics where volunteers help taxpayers who cannot afford representation obtain access to competent assistance in meeting their obligations.

Collectively these efforts will reduce the tax gap and improve the fiscal situation of the Government. Equally important, better compliance will improve the fairness of the tax system by ensuring all taxpayers pay their fair share. Implementation depends on effective IRS leadership, to improve factors such as technology investments and reengineering processes, as well as the active support of the Congress to implement tax law changes and provide needed funding for these improvements.

National Wealth

The Government relies on private wealth to support its activities. It also contributes to that wealth. 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, but they are not owned by the Federal Government and would not show up on a balance sheet for the Federal Government. It is true, of course, that to the extent these investments encourage economic growth, they augment future tax receipts. The return on investment that comes back to the Government in the form of higher taxes, however, is far less than what a private investor would require before undertaking a similar investment.

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

To show the importance of these kinds of issues, Table 13–5 presents a national balance sheet. It includes estimates of national wealth classified into three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these types of capital, and these contributions are shown separately in the table. At the same time, the private wealth shown in Table 13–5 generates future income and tax receipts, which finance future public activities. The Nation's wealth sets the ultimate limit on the resources available to the Government.

The table shows that Federal investments are responsible for about 7 percent of total national wealth including education and research and development. This may seem like a small fraction, but it represents a large volume of capital: \$7.5 trillion. The Federal contribution is down from 10 percent in 1960. Much of this decline

reflects the relative shrinkage in the stock of defense capital, which has fallen from around 34 percent of GDP in 1960 to under 6 percent in 2007.

Physical Assets: The physical assets in the table include private stocks of plant and equipment, office buildings, residential structures, land, and the Government's physical assets such as military hardware and highways. Automobiles and consumer appliances are also included in this category. The total amount of such capital is vast, \$64.8 trillion in 2007, consisting of \$55.1 trillion in private physical capital and \$9.7 trillion in public physical capital (including capital funded by State and local governments); by comparison, GDP was around \$14 trillion in 2007. The Federal Government's contribution to this stock of capital includes its own physical assets of \$2.8 trillion plus \$1.5 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed over 20 percent of all 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. Table 13–5 includes an estimate of the stock of capital represented by the Nation's investment in formal education and training. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 15 and over; in other words, the goal is to measure how much it would cost to reeducate the U.S. workforce at today's prices (rather than at the original cost). This is more meaningful economically than the historical cost of schooling, and is comparable to the methods used to estimate the physical capital stocks presented earlier.

Although this is a relatively crude measure, it does provide a rough order of magnitude for the current value of the investment in education. According to this measure, the stock of education capital amounted to \$52 trillion in 2007, of which about 3 percent was financed by the Federal Government. The total stock of education capital was roughly the same in value as the Nation's private stock of physical capital. The main investors in education capital have been State and local governments, parents, and students themselves.

Even broader concepts of human capital have been proposed. Not all useful training occurs in a schoolroom or in formal training programs at work. Much informal learning occurs within families or on the job, but measuring its value is very difficult. Labor compensation, however, amounts to about two-thirds of national income with the other third attributed to capital and thinking of total labor income as the product of human capital suggests that the total value of human capital would be two times the estimated value of physical capital if human capital earned a similar rate of return. Thus, the estimates offered here are in a sense conservative, because they reflect only the costs of acquiring

formal education and training, which is why they are referred to as education capital rather than human capital. They constitute that part of total human capital that can be attributed to 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.⁶ That stock is estimated to have been \$3.7 trillion in 2007. Although this represents a large amount of research, it is a relatively small portion of total National wealth. Of this stock, 38 percent was funded by the Federal Government.

Liabilities: When considering how much the United States owes as a Nation, the debts that Americans owe to one another cancel out. Table 13–5 only shows net totals for the Nation. Gross debt is important even though it does not appear in Table 13–5. The amount of debt owed by Americans to other Americans can exert both positive and negative effects on the economy. Americans' willingness and ability to borrow have helped fuel the current expansion by supporting consumption and housing purchases. On the other hand, unsound lending practices could be a risk to future growth, if they undermine confidence in borrowers' ability to repay their debts.

Table 13–5. NATIONAL WEALTH
(As of the end of the fiscal year, in trillions of 2007 dollars)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2006	2007
ASSETS												
Publicly Owned Physical Assets:												
Structures and Equipment	2.3	2.6	3.3	4.0	4.3	4.5	5.0	5.4	6.2	7.6	8.1	8.1
Federally Owned or Financed	1.3	1.4	1.6	1.8	1.8	2.1	2.2	2.4	2.4	2.6	2.7	2.7
Federally Owned	1.2	1.2	1.2	1.2	1.1	1.3	1.3	1.3	1.2	1.2	1.2	1.2
Grants to State & Local Governmnts	0.2	0.2	0.4	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.5
Funded by State & Local Governmnts	1.0	1.2	1.7	2.3	2.5	2.4	2.7	3.1	3.8	5.0	5.4	5.3
Other Federal Assets	0.5	0.5	0.5	0.6	0.9	1.0	0.9	0.6	0.9	1.4	1.5	1.6
Subtotal	2.8	3.1	3.8	4.7	5.2	5.5	5.8	6.1	7.1	9.0	9.6	9.7
Privately Owned Physical Assets:												
Reproducible Assets	7.9	9.1	11.1	14.3	18.6	19.7	22.5	24.9	30.3	36.8	38.0	38.2
Residential Structures	3.1	3.6	4.3	5.5	7.5	7.7	8.8	10.1	12.6	16.8	17.3	17.4
Nonresidential Plant & Equipment	3.1	3.5	4.5	5.9	7.6	8.4	9.4	10.2	12.4	14.2	14.8	14.8
Inventories	0.8	0.9	1.0	1.3	1.6	1.5	1.6	1.6	1.8	1.9	2.0	2.0
Consumer Durables	1.0	1.1	1.4	1.6	2.0	2.2	2.7	3.0	3.6	3.9	3.9	4.0
Land	2.4	2.8	3.2	4.2	6.4	7.3	7.6	5.6	8.7	13.7	15.1	16.9
Subtotal	10.3	11.9	14.4	18.5	25.0	27.1	30.1	30.6	39.0	50.4	53.2	55.1
Education Capital:												
Federally Financed	0.1	0.1	0.3	0.4	0.6	0.7	0.9	1.1	1.4	1.6	1.7	1.8
Financed from Other Sources	6.5	8.8	11.9	15.0	19.2	22.5	27.8	32.7	41.8	47.6	48.5	50.2
Subtotal	6.6	8.9	12.2	15.5	19.8	23.2	28.6	33.7	43.2	49.2	50.2	51.9
Research and Development Capital:												
Federally Financed R&D	0.2	0.4	0.6	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.4	1.4
R&D Financed from Other Sources	0.2	0.2	0.3	0.4	0.5	0.7	1.0	1.3	1.7	2.1	2.2	2.3
Subtotal	0.3	0.6	0.9	1.1	1.2	1.5	1.9	2.3	2.9	3.4	3.6	3.7
Total Assets	20.0	24.6	31.2	39.7	51.3	57.3	66.4	72.7	92.2	112.1	116.5	120.4
Net Claims of Foreigners on U.S. (+)	-0.1	-0.2	-0.2	-0.1	-0.4	0.1	0.9	1.7	3.4	5.9	7.6	8.3
Net Wealth	20.2	24.8	31.4	39.8	51.7	57.2	65.5	71.0	88.9	106.1	108.9	112.1
ADDENDA:												
Per Capita Wealth (thousands of 2007 dollars)	112	128	153	185	227	240	261	266	314	357	363	370
Ratio of Wealth to GDP (in percent)	672	657	695	779	844	783	767	735	754	800	802	802
Total Federally Funded Capital (trils 2007 dollars)	2.1	2.4	2.9	3.4	4.0	4.6	4.9	5.1	5.8	7.0	7.3	7.6
Percent of National Wealth	10.4	9.7	9.3	8.6	7.7	8.0	7.5	7.2	6.5	6.6	6.7	6.8

⁶R&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.

Table 13-6. TRENDS IN NATIONAL WEALTH

(Average Annual Rates in Percent)

	1960-07	1960-1973	1973-1995	1995-2007
Real GDP	3.3	4.3	2.8	3.1
Net National Wealth	3.7	4.6	3.1	3.9
Private Physical Wealth	3.6	3.9	2.7	5.0
Nonresidential Plant and Equipment	3.4	4.1	3.1	3.2
Residential Structures	3.7	4.0	3.1	4.6
Consumer Durables	3.1	3.6	3.2	2.3
Public Physical Wealth	2.7	3.3	1.6	3.9
Net Education	4.5	5.9	4.1	3.7
Net R&D	5.2	8.6	3.9	3.9

The only debts that show up in Table 13-5 are the debts Americans owe to foreigners for the investments that foreigners have made in the United States. America's net foreign debt has been increasing rapidly in recent years because of the imbalance in the U.S. current account. Last year, the current account deficit declined for the first time in several years, but it remains very high compared with historical experience. Even so, the size of the net foreign debt is relatively small compared with the total stock of U.S. assets. In 2007, it amounted to 7 percent of total assets including education and R&D capital.

Federal debt does not appear explicitly in Table 13-5 because much of it consists of claims held by Americans; only that portion of the Federal debt which is held by foreigners is included along with the other debts to foreigners. Comparing the Federal Government's net liabilities with total national wealth however, does provide another indication of the relative magnitude of the imbalance in the Government's accounts. Federal net liabilities, as reported in Table 13-1, amounted to 6 percent of net U.S. wealth as shown in Table 13-5. Prospectively, however, Federal liabilities are a much larger share of national wealth, as indicated by the long-run projections described in Part III.

Trends in National Wealth

The net stock of wealth in the United States at the end of 2007 was \$112 trillion, about eight times the size of GDP. Since 1960, it has increased in real terms at an average annual rate of 3.7 percent per year. It grew very rapidly from 1960 to 1973, at an average annual rate of 4.6 percent per year, slightly faster than real GDP grew over the same period. Between 1973 and 1995 growth slowed, as real net wealth grew at an average rate of just 3.1 percent per year, which paralleled the slowdown in real GDP growth over this period. Since 1995 the rate of growth in U.S. real wealth has picked up. Net wealth has been growing

at an average rate of 3.9 percent since 1995. Productivity growth has also accelerated since 1995, following a slowdown from 1973 to 1995.

The net stock of privately owned nonresidential plant and equipment accounts for about 27 percent of all privately owned physical assets. In real terms, it grew 3.4 percent per year on average from 1960 to 2007. It grew especially rapidly from 1960 to 1973, at an average rate of 4.1 percent per year. Since 1973 it has grown more slowly, averaging around 3.1 percent per year. Plant and equipment has grown at roughly the same rate over the last ten years compared with 1973-1995. The real value of privately owned residential structures and the land they occupy have grown much more rapidly in real value since 1995 than from 1973 to 1995, while the stock of consumer durables has grown less rapidly.

The accumulation of education capital has averaged 4.5 percent per year since 1960. Its growth also slowed down between 1973 and 1995. It grew at an average rate of 5.9 percent per year in the 1960s, 2.0 percentage points faster than the average rate of growth in private physical capital during the same period. Since 1995, education capital has grown at a 3.7 percent annual rate. This reflects both the extra resources devoted to schooling in this period, and the fact that such resources have been increasing in economic value. R&D stocks have grown at an average rate of 3.8 percent per year since 1995.

Other Federal Influences on Economic Growth

Federal investment decisions, as reflected in Table 13-5, obviously are important, but the Federal Government also affects wealth in ways that cannot be easily captured in a formal presentation. The Federal Reserve's monetary policy affects the rate and direction of capital formation, and Federal regulatory and tax policies also affect how capital is invested, as do the Federal Government's credit and insurance policies.

TABLE 13-7. ECONOMIC AND SOCIAL INDICATORS

Calendar Years	1960	1970	1980	1990	1995	2000	2005	2006	2007
Economic:									
Living Standards:									
Real GDP per person (2000 dollars) ¹	13,840	18,392	22,666	28,429	30,128	34,755	37,052	37,752	38,238
average annual percent change (5-year trend)	0.6	2.3	2.6	2.3	1.2	2.9	1.3	1.7	1.9
Real Disposable Personal Income Per Capita (2000 dollars) ...	9,735	13,563	16,940	21,281	22,153	25,469	27,436	28,005	28,664
average annual percent change (5-year trend)	1.2	3.2	2.1	1.8	0.8	2.8	1.5	1.7	1.8
Median Income: All Households (2006 dollars)	N/A	39,604	41,258	44,778	44,764	49,163	47,845	48,201	N/A
average annual percent change (5-year trend)	N/A	N/A	1.0	1.2	0.0	1.9	-0.5	0.0	N/A
Income Share of Lower 60 percent of All Households	31.8	32.3	31.2	29.3	28.0	27.3	26.6	26.5	N/A
Poverty Rate (%) ²	22.2	12.6	13.0	13.5	13.8	11.3	12.6	12.3	N/A
Economic Security:									
Civilian Unemployment (%)	5.5	4.9	7.1	5.5	5.6	4.0	5.1	4.6	4.6
CPI-U (percent Change)	1.7	5.7	13.5	5.4	2.8	3.4	3.4	3.2	2.8
Payroll Employment Increase (millions)	-0.4	-0.4	0.3	0.3	2.2	1.9	2.5	2.3	1.3
Managerial or Professional Jobs (percent of civilian employment)	N/A	N/A	N/A	29.2	32.0	33.8	34.7	34.9	35.5
Wealth Creation:									
Net National Saving Rate (percent of GDP) ³	10.6	8.3	7.4	4.4	4.1	5.9	1.0	1.9	1.5
Innovation:									
Patents Issued to U.S. Residents (thousands)	42.3	50.6	40.8	52.8	64.4	96.9	82.6	102.2	N/A
Multifactor Productivity (average 5 year percent change)	1.0	0.8	0.8	0.6	0.6	1.1	1.8	1.9	N/A
Nonfarm Output per Hour (average 5 year percent change) ³	1.8	2.1	1.1	1.6	1.5	2.5	3.0	2.7	2.2
Environment:									
Air Quality:									
Nitrogen Oxide Emissions (millions of tons)	18	27	27	26	25	23	19	N/A	N/A
Sulfur Dioxide Emissions (millions of tons)	22	31	26	23	19	16	15	N/A	N/A
Carbon Monoxide (millions of tons)	N/A	197	178	144	120	102	89	N/A	N/A
Lead Emissions (thousands of tons)	N/A	221	74	5	4	3	N/A	N/A	N/A
Greenhouse Gas Emissions (mil metric tons carbon equivalent)	N/A	N/A	N/A	6,147	6,471	6,978	7,181	7,076	N/A
Water Quality:									
Population Served by Secondary Treatment or Better (millions)	N/A	85	N/A	162	174	179	N/A	N/A	N/A
Social:									
Families:									
Children Living with Mother Only (percent of all children)	9.2	11.6	18.6	21.6	24.0	22.3	23.4	24.0	N/A
Safe Communities:									
Violent Crime Rate (per 100,000 population) ⁴	160.0	364.0	597.0	729.6	684.5	506.5	469.0	473.5	N/A
Murder Rate (per 100,000 population) ⁴	5.1	7.8	10.2	9.4	8.2	5.5	5.6	5.7	N/A
Murders (per 100,000 Persons Age 14 to 17) ⁴	N/A	N/A	5.9	9.8	11.0	4.8	4.8	N/A	N/A
Health:									
Infant Mortality (per 1000 Live Births)	26.0	20.0	12.6	9.2	7.6	6.9	6.8	6.6	N/A
Low Birthweight [<2,500 gms] Babies (%)	7.7	7.9	6.8	7.0	7.3	7.6	8.2	8.3	N/A
Life Expectancy at birth (years)	69.7	70.8	73.7	75.4	75.8	77.0	77.9	N/A	N/A
Cigarette Smokers (percent population 18 and older)	N/A	39.2	33.0	25.3	24.6	23.1	20.9	20.8	N/A
Overweight (percent population 20-74 with Body-Mass Index) greater than 2.5)	44.5	47.5	47.2	54.6	60.7	65.0	66.3	66.3	N/A
Learning:									
High School Graduates (percent of population 25 and older)	44.6	55.2	68.6	77.6	81.7	84.1	85.2	85.5	N/A
College Graduates (percent of population 25 and older)	8.4	11.0	17.0	21.3	23.0	25.6	27.6	28.0	N/A
National Assessment of Educational Progress ⁵									
Reading 17-year olds	N/A	N/A	285.0	290.0	288.0	287.4	N/A	N/A	N/A
Mathematics 17-year olds	N/A	N/A	299.0	305.0	306.5	307.8	N/A	N/A	N/A
Participation:									
Individual Charitable Giving per Capita (2000 dollars)	281	381	373	465	449	692	652	N/A	N/A
(by election year)	(1960)	(1972)	(1980)	(1984)	(1988)	(1992)	(2000)	(2004)
Voting for President (percent eligible population)	62.8	55.1	52.8	53.3	50.3	55.2	50.3	55.5

¹ Forecast data are used for the fourth quarter of 2007.

² The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.

³ 2007 through Q3 only.

⁴ Not all crimes are reported, and the fraction that go unreported may have varied over time.

⁵ Data for some years are interpolated.

Social Indicators

There are certain broad responsibilities that are unique to the Federal Government. Especially important are preserving national security, fostering healthy economic conditions including sound economic growth, promoting health and social welfare, and protecting the environment. Table 13–7 offers a rough cut of information that can be useful in assessing how well the Federal Government has been doing in promoting the domestic portion of these general objectives.

The indicators shown in Table 13–7 are only a subset drawn from the vast array of available data on conditions in the United States. In choosing indicators for this table, priority was given to measures that were consistently available over an extended period. Such indicators make it easier to draw comparisons and establish trends. In some cases, however, this meant choosing indicators with significant limitations.

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

Such a table can serve two functions. First, it highlights areas where the Federal Government might need to modify its current practices or consider new approaches. Where there are clear signs of deteriorating conditions, corrective action might be appropriate. Second, the table provides a context for evaluating other data on Government activities. For example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective. The Government cannot avoid making such trade-offs because of its size and the broad ranging effects of its actions. Monitoring these effects and incorporating them in the Government's policy making is a major challenge.

Some of the trends in these indicators turned around in the 1990s. Perhaps, most notable has been the turnaround in the crime rate. After reaching a peak in the early 1990s, violent crime fell by a third. The turnaround was especially dramatic in the murder rate, which has been lower since 1998 than at any time since the 1960s, although the last three years have seen an uptick. The 2001 recession had a negative effect on some of these indicators: unemployment rose and real GDP growth declined, but as the economy recovered income growth revived. Indeed, productivity growth, the best indicator of future changes in the standard of living, has continued to grow at the higher rate reached in the late 1990s.

TECHNICAL NOTE: SOURCES OF DATA AND METHODS OF ESTIMATING

Long-Range Budget Projections

The long-range budget projections are based on demographic and economic assumptions. A simplified model of the Federal budget, developed at OMB, is used to compute the budgetary implications of these assumptions.

Demographic and Economic Assumptions: For the years 2008–2018, the assumptions are drawn from the Administration's economic projections used for the 2009 Budget. These budget assumptions reflect the President's policy proposals. The economic assumptions are extended beyond this interval by holding inflation, interest rates, and the unemployment rate constant at the levels assumed in the final year of the budget forecast. Population growth and labor force growth are extended using the intermediate assumptions from the 2007 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. Productivity growth is assumed to equal the average rate of growth in the Budget's economic assumptions.

- CPI inflation holds stable at 2.3 percent per year; the unemployment rate is constant at 4.8 percent; and the yield on 10-year Treasury notes is steady at 5.3 percent.
- Real GDP per hour, a measure of productivity, grows at the same average rate as in the Administration's medium-term projections—2.2 percent per year.
- Consistent with the demographic assumptions in the trustees' reports, U.S. population growth slows from around 1 percent per year to about half that rate by 2030, and slower rates of growth beyond that point. Annual population growth is only 0.3 percent at the end of the projection period in 2080.
- Real GDP growth declines because of the slowdown in population growth and the increase in the population over age 65, who supply less work effort than younger people do. Historically, real GDP has grown at an average yearly rate of 3.4 percent. In these projections, average real GDP growth declines to around 2.5 percent per year.

The economic and demographic 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.

Budget Projections: For the period through 2013, receipts follow the budget's policy projections. After 2013, receipts are assumed to return gradually to their share of GDP over the last 40 years, 18.3 percent, and to remain at that lower share over the long run. Discretionary spending follows the policies in the Budget over the next ten years and grows at the rate of growth in nominal GDP afterwards. Other spending also aligns with the Budget through the budget horizon, except for the proposal to incorporate personal accounts in So-

cial Security. Long-run Social Security spending is projected by the Social Security actuaries using this Chapter's long-range assumptions. Medicare benefits are projected based on the estimates in the 2007 Medicare trustees' report, adjusted for differences in the assumed inflation rate and the growth rate in real GDP per capita, and further adjusted for the estimated long-run effects of the Administration's policy proposals. Federal pensions are derived from the most recent actuarial forecasts available at the time the budget was prepared, repriced using Administration inflation assumptions. Medicaid outlays are based on the economic and demographic projections in the model. Other entitlement programs are projected based on rules of thumb linking program spending to elements of the economic and demographic projections such as the poverty rate.

Federally Owned Assets and Liabilities

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

Fixed Reproducible Capital: Estimates were developed from the OMB historical data base for physical capital outlays and software purchases. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. The source data are in current dollars. To estimate investment flows in constant dollars, it was necessary to deflate the nominal investment series. This was done using chained price indexes for Federal investment from the National Income and Product Accounts. The resulting capital stocks were aggregated into nine categories and depreciated using geometric rates roughly following those used by the Bureau of Economic Analysis in its estimates of physical capital stocks.

Fixed Nonreproducible Capital: Historical estimates for the value of Federal land holdings in the period 1960–1985 were drawn from estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, "Government Saving, Capital Formation and Wealth in the United States, 1947–1985," published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University of Chicago Press, 1989). Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and from the Agriculture Department for farm land. The value of Federal oil and natural gas deposits were based on data for proved reserves from the Department of Energy valued at contemporary market prices for oil and gas.

Inventories: Recent years data are from the *Financial Report of the United States Government*. For the period prior to 1995, data are from the Bureau of Economic Analysis.

Debt Held by the Public: Treasury data.

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

Pension and Post-Employment Health Liabilities: The accrued liabilities for Federal retiree pensions and retiree health insurance along with the liability for Veterans disability compensation were derived from the *Financial Report of the United States Government* (and the Consolidated Financial Statement for some earlier years). Prior to 1976, the values were extrapolated.

Other Liabilities: The source of data for trade payables and miscellaneous liabilities is the Federal Reserve's Flow-of-Funds Accounts. The *Financial Report of the United States Government* was the source for benefits due and payable.

Environmental Liabilities: The source of data for environmental liabilities was the *Financial Report of the United States Government* for 2007 and previous years. Prior to 1994, the estimates were extrapolated assuming a constant ratio to GDP.

National Balance Sheet

Publicly Owned Physical Assets: Basic sources of data for the federally owned or financed stocks of capital are the Federal investment flows described in Chapter 6. Federal grants for State and local government capital are added, together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local government capital come from the revised capital stock data prepared by the Bureau of Economic Analysis extrapolated for 2007.

Privately Owned Physical Assets: Data are from the Flow-of-Funds national balance sheets and from the private net capital stock estimates prepared by the Bureau of Economic Analysis extrapolated for 2007 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 15 years of age and older at the current cost of providing schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' forgone earnings, i.e., it reflects the opportunity cost of education. Estimates of students' forgone earnings are based on the minimum wage for high-school students and year-round, full-time earnings of 18–24 year olds for college students. These year-round earnings are reduced by 25 percent because students are usually out of school three months of the year. Yearly earnings by age and educational attainment are from the Bureau of the Census.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions because these outlays are classified elsewhere as investment in physical capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate edu-

cation spending in HHS, Defense and Agriculture; and most outlays for vocational training. The Federal share of the total education stock in each year is estimated by averaging the prior years' shares of Federal education outlays in total education costs.

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*, Lexington Books, 1974.

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

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent on the estimated stock of applied research and development. Basic research is assumed not to depreciate. These are the same assumptions used in a study published by the Bureau of Labor Statistics estimating the R&D stocks financed by private industry (U.S. De-

partment of Labor, Bureau of Labor Statistics, "The Impact of Research and Development on Productivity Growth," Bulletin 2331, September 1989). Chapter 6 of this volume contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and nondefense components.

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

Experimental estimates of R&D capital stocks have 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 13-4 assume that basic research does not depreciate. BEA also assumed a slightly higher rate of depreciation for applied research and development, 11 percent, compared with the 10 percent rate used here.

Sources of Data and Assumptions for Estimating Social Indicators

The main sources for the data in this table are the Government statistical agencies. The data are all publicly available, and can be found in such general sources as the annual *Economic Report of the President* and the *Statistical Abstract of the United States*, or from the respective agencies' web sites.