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Report to the Chairman, Committee on the Budget, U.S. Senate, and the Chairman, Committee on the Budget, House of Representatives

April 1995

# THE DEFICIT AND THE ECONOMY

## An Update of Long-Term Simulations

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GAO

**United States**
**General Accounting Office**
**Washington, D.C. 20548**

**Comptroller General**
**of the United States**

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April 26, 1995

The Honorable Pete V. Domenici
Chairman, Committee on the Budget
United States Senate

The Honorable John R. Kasich
Chairman, Committee on the Budget
House of Representatives

As you requested, this report updates our simulations of the long-term economic impacts of deficits we first published in our 1992 report.[1] In 1992 we examined the role of fiscal policy in promoting or inhibiting long-term economic growth and concluded that deficit reduction was key to our nation's long-term economic health. We observed that a path of "no action" could not be sustained over the long run. If policymakers did not take the initiative, the economic consequences would force action. We identified three forces driving the long-term growth of budget deficits: health spending, interest costs, and—after 2010—Social Security.

In our current work, we used a long-term economic growth model to simulate three of the many possible fiscal paths through the year 2025: (1) a path that takes no action on the deficit, (2) a path that "muddles through" with deficits at 3 percent of gross domestic product (GDP), roughly approximating deficits of recent years, and (3) a path that reaches balance in 2002 and sustains it.[2] To suggest some of the trade-offs facing policymakers in choosing among fiscal policies, we examined some long-term economic and fiscal outcomes of these paths. We also simulated how some types of early action on the deficit, including early action on health, might affect the long-term deficit outlook. Finally, we examined the prospects for sustaining budget balance over the long term. While this report discusses the consequences of alternative fiscal paths, it does not suggest any particular course of action, since only the Congress can resolve the fundamental policy question of choosing the fiscal policy path most appropriate for the nation.

[1]Budget Policy: Prompt Action Necessary to Avert Long-Term Damage to the Economy (GAO/OCG-92-2, June 5, 1992).

[2]The "balance" path takes unspecified cuts beginning in 1996 in all types of federal spending to achieve total deficit reduction of no more than 0.5 percent of GDP per year until balance is reached in 2002, after which balance is maintained in the same manner. The "muddling through" path follows Congressional Budget Office deficit projections through 1999, then moves to a constant deficit of 3 percent of GDP by taking unspecified cuts.

In our simulations, we employed a model originally developed by economists at the Federal Reserve Bank of New York (FRBNY) that relates long-term GDP growth to economic and budget factors. (For details of the model's assumptions, see table I.1.) Simulations are useful for comparing the potential outcomes of alternative policies within a common economic framework but should not be interpreted as forecasts of the level of economic activity 30 years in the future, given the broad range of uncertainty about future economic changes. Simulation results provide qualitative illustrations, not quantitative forecasts, of the budget or economic outcomes associated with alternative policy paths.

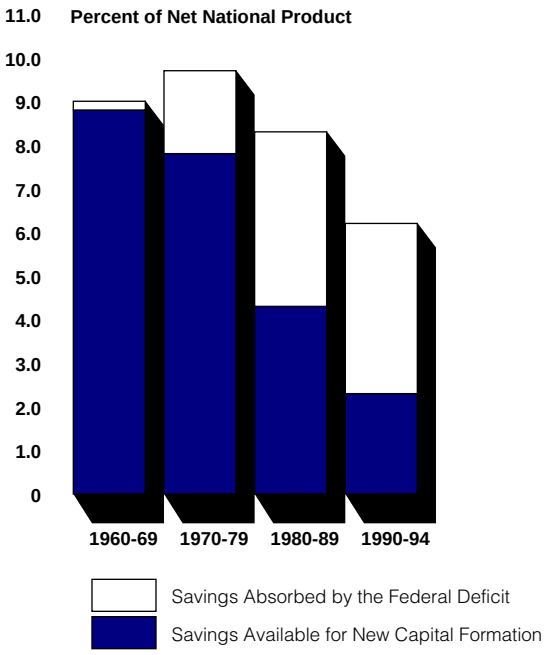
## Background

Economic growth—which is central to almost all our major concerns as a society—requires investment, which, over the longer term, depends on saving. Since the 1970s, nonfederal saving[3] has declined while federal budget deficits have consumed ever-higher levels of these increasingly scarce savings. The result has been to decrease the amount of national saving potentially available for investment.[4] (See figure 1.) Since we last reported on this issue in 1992, overall national saving has remained low. These conditions—less nonfederal saving and a greater share of this saving absorbed by deficits—do not bode well for the nation's future productive capacity and future generations' standard of living. The surest way to increase the resources available for investment is to increase national saving, and the surest way to increase national saving is to reduce the federal deficit.

[3]Nonfederal saving consists of the savings of state and local governments and the private sector.

[4]The depressing effect of deficits on growth might have been mitigated had they financed higher levels of public investment. However, as we noted in our 1992 report, this is not what happened.

**Figure 1: Effect of the Federal Budget Deficit on Net National Saving**
(1960-1994)




Note 1: Entire bar represents nonfederal saving net of capital depreciation. Nonfederal saving is comprised of private saving and the aggregate state and local government surplus/deficit.

Note 2: Shaded portion of bar represents net national saving, which is comprised of total private and public sector saving.

Source: U.S. Department of Commerce.

Our 1992 analysis showed that an indefinite continuation of then-current federal budget policy was not sustainable. Without policy change, the continuation of large increases in health care costs, a jump in Social Security costs after 2010 as the baby boom generation retires, and escalating interest costs would fuel progressively larger deficits. Growing deficits and the resulting lower saving would lead to dwindling investment, slower growth, and finally a decline of real GDP. Living standards, in turn, would at first stagnate and then fall. Our view was that a "no action" path with respect to the deficit was not sustainable. Action on the deficit might be postponed, but it could not be escaped.

Our simulation of several hypothetical deficit reduction paths further showed that the timing and magnitude of deficit reduction would affect both the amount of sacrifice required and the economic benefits realized. Acting sooner would reduce future interest costs and therefore total deficit reduction required from other sources. Achieving and sustaining balance or surplus would yield long-term benefits in the form of higher national saving, higher investment, and more rapid economic growth. By promoting economic growth, deficit elimination would give future generations more resources to finance the baby boom's retirement.

Since our 1992 report, the Congress and the President have taken action on the deficit. According to Congressional Budget Office (CBO) estimates, the Omnibus Budget Reconciliation Act of 1993 (OBRA 93) will reduce the federal deficit cumulatively for fiscal years 1994 through 1998 by over $400 billion. Despite this short-term progress, however, OBRA 93 did not fundamentally alter the growth of the major entitlement programs driving the long-term deficit problem. The Bipartisan Commission on Entitlement and Tax Reform, created in late 1993, highlighted the nation's vulnerability to the growth of these programs and their potential fiscal effects. Currently, the Congress and the administration are again considering proposals which could reduce future deficits.

## Results in Brief

Some progress has been made on deficit reduction since our 1992 report, but the long-term deficit outlook remains a pressing national problem. Our updated simulation results confirm that not taking additional action to reduce deficits remains an unsustainable approach in the long term. Given continuation of current budget policies, federal spending would grow faster than revenues, driven in part by escalating health costs and, in later years, Social Security costs. Rising interest costs would compound the deficit problem and take up an increasing share of the federal budget. Left unchecked through 2025, growing deficits would result in collapsing investment, a declining capital stock, and, inevitably, a declining economy. If timely policy action were not taken, these economic consequences would force belated and more painful policy changes at some point before the end of our simulation period. Accordingly, our "no action" simulation is not a forecast of what would happen but rather underscores that, as in 1992, the question is not whether to reduce the deficit, but when and how.

Our updated simulations confirm the long-term economic and fiscal benefits of deficit reduction. A fiscal policy of balance—or, as we previously reported, of surplus—would yield a stronger economy in the

long term than a policy of "muddling through." A budget balance reached in 2002 and sustained until 2025 would, over time, lower the amount of real national debt per capita, lead to increased investment and a larger capital stock, and yield higher real GDP per capita than less austere fiscal policies.

A balance path would also shrink the share of total federal spending required to pay interest costs, thereby reducing the long-term programmatic sacrifice necessary to attain deficit reduction targets. Although an alternative path of "muddling through" with deficits maintained at 3 percent of GDP would prevent deficits from rising, the continuing deficits under this policy would exact a price through higher interest costs and thus require progressively harder fiscal choices to maintain the deficit at desired levels.

The way deficits are reduced also influences the long-term deficit outlook. While our simulations cannot project the long-term effects of specific program cuts, they suggest that, dollar-for-dollar, an early reduction in fast-growing areas, such as health programs, would contribute more to the elimination of long-term deficits than other types of spending reductions. Moreover, since fiscal pressures on the federal budget will grow as the population ages, program changes generating growing savings over time might both help mitigate these longer term pressures and give affected populations more time to adjust.

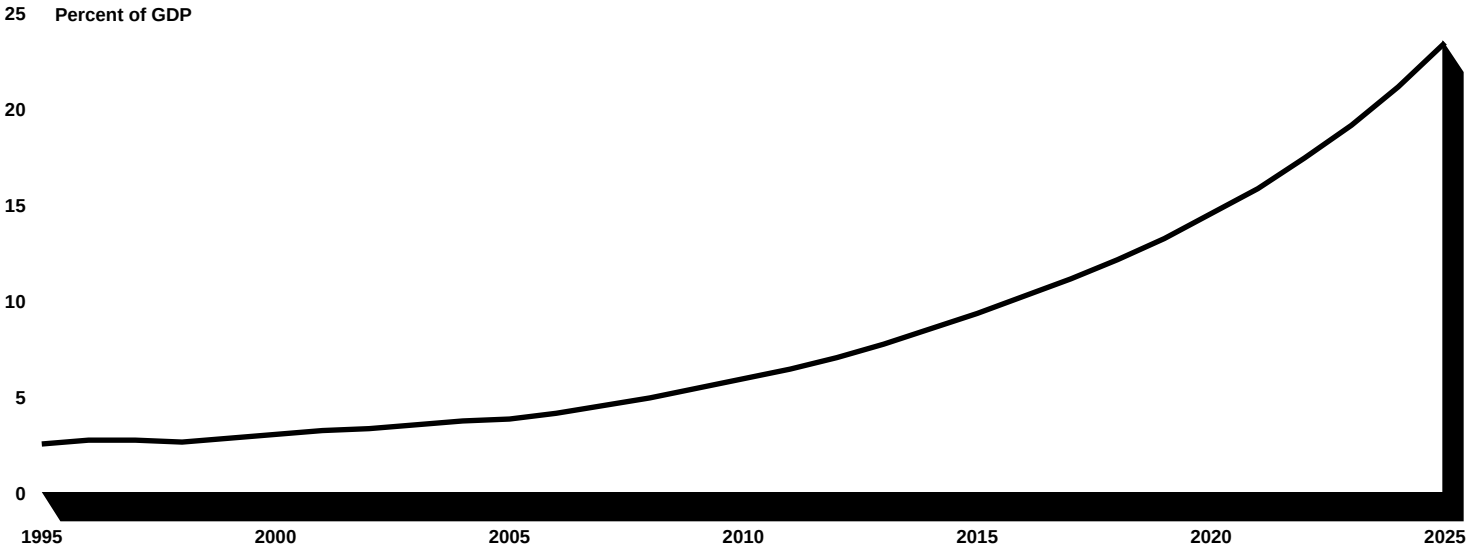
While deficit reduction would improve the long-term economic outlook and better prepare the nation for addressing future demographic pressures, it would require painful budget adjustments, and the higher saving achieved would mean foregoing some economic consumption in the short term. The decisions that the Congress faces thus involve difficult tradeoffs between the short- and long-term economic costs and benefits of deficit reduction, as well as hard budgetary choices among competing programs and priorities.

## Inaction on the Deficit Is Not Sustainable

As in our 1992 work, our updated simulation results show that continuing current spending and taxation policies unimpeded over the long term would have major consequences for economic growth. A fiscal policy of "no action" through 2025 implies federal spending of nearly 44 percent of GDP and a deficit of over 23 percent of GDP. (See figure 2.) By drastically reducing national saving, rising deficits would shrink private investment and eventually result in a declining capital stock. Given our labor force

and productivity growth assumptions, GDP would inevitably begin to decline. These negative effects of rapidly increasing deficits on the economy would, we believe, force action at some point before the end of the simulation period. If policymakers did not take the initiative, external events—for example, the unwillingness of foreign investors to sustain a deteriorating American economy—would compel action. While the "no action" simulation is not a prediction of what would actually happen, it illustrates the pressures to change the nation's current fiscal course.

**Figure 2: Deficit Path in "No Action" Simulation** (1995-2025)



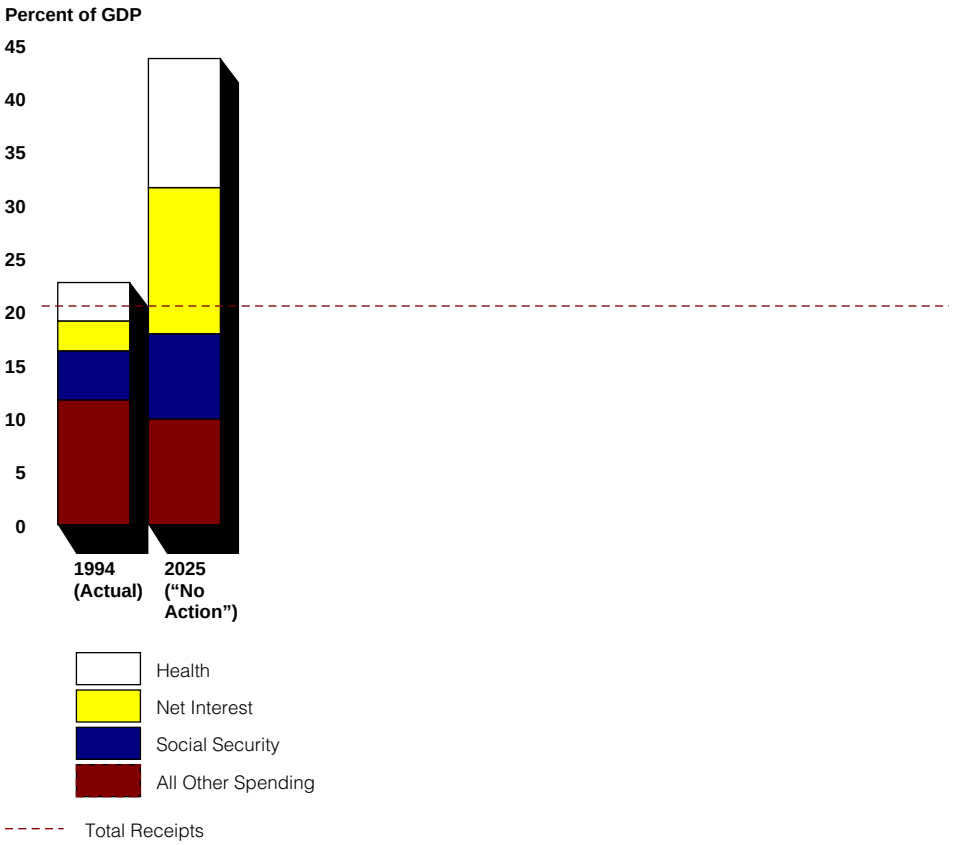
The shift in the composition of federal spending by the end of the simulation period shows that, under a long-term "no action" path, health care, interest costs, and—after 2010—Social Security spending drive increasingly large and unsustainable deficits. (See figure 3.)[5]

- As federal spending in the simulation heads toward 44 percent of GDP in 2025, the major federal health care programs—Medicare and Medicaid—would become the major programmatic driver of budget deficits. Their share of the economy would more than triple between 1994 and 2025. Health care cost inflation and the aging of the population work together to produce this rapid growth.
- At the same time, simulated interest spending increases dramatically. Escalating deficits resulting from the increased spending add substantially to the national debt. Rising debt, in turn, raises spending on interest, which compounds the deficit problem, driving a vicious circle. The effects of compound interest are clearly visible, as interest spending rises from about 3 percent of GDP in 1994 to over 13 percent in 2025.
- Social Security also grows, but its rise is much slower than health care. Its expansion occurs mainly after 2010 as the baby boom generation retires.

The expansion of the three forces fueling budget deficits means that the federal government would find it increasingly difficult to fund other needs.

[5]In general, CBO's forecasts are used, along with our GDP levels, in the simulations through 1999 and, where practicable, through 2004. The Health Care Financing Administration (HCFA) and Social Security's long-term assumptions are used for their respective programs. After 1999, tax revenue is held constant as a percentage of GDP. (See appendix I for more details on our budget assumptions.)

**Figure 3: Long-Term Change in Composition of Federal Spending Under the "No Action" Simulation**




Source: 1994 data from U.S. Department of Commerce.

## Deficit Reduction Would Promote Economic Growth in the Long Term

The economic benefits of deficit reduction are illustrated by the three fiscal paths we simulate in our model. (See table 1.) As discussed above, a fiscal policy of "no action" is not economically sustainable over the long term. The "muddling through" and "balance" paths show that the further away fiscal policy moves from a path of "no action," the better the outlook for the economy in the long term.

**Table 1: The Economic and Fiscal Position in 1994 (Actual) and 2025 (Simulated)**

All data in per capita 1995 dollars

| | 1994 | 2025—"No Action" | 2025—"Muddling Through" | 2025—"Balance" | Percent Difference Between "Balance" and "No Action" | Percent Difference Between "Balance" and "Muddling Through" |
|---|---|---|---|---|---|---|
| Real GDP | $26,300 | $27,900 | $35,100 | $37,400 | 34 | 7 |
| Debt | $13,500 | $60,200 | $21,400 | $4,800 | –92 | –78 |
| Nonfarm business investment | $3,100 | $0 | $4,200 | $5,100 | N/A | 21 |
| Nonfarm capital stock | $23,700 | $11,600 | $30,100 | $36,600 | 216 | 22 |

The differences in GDP per capita at 2025 reflect major differences in the underlying capacity of the economy in our illustrative simulations to generate growth. Our "no action" simulation, when maintained unimpeded through 2025, portrays the potential long-term economic impact of a declining national saving rate. Under a policy of "no action" on the deficit, investment would peak in the next decade and then decline steadily due to the lack of national saving. Shortly thereafter, capital depreciation would outweigh investment, and the capital stock would actually begin to decline. Given our assumptions about labor force and productivity growth, the declining capital stock would lead inevitably to a decline in GDP. By 2025, investment would be entirely eliminated, the capital stock would have declined to less than half of its 1994 level, and per capita GDP—only about 5 percent greater in real terms than at the start of the 30-year period—would be poised for a precipitous drop.[6]

Compared to a policy of "no action," more stringent fiscal policies would result in greater economic growth. Tighter fiscal policies can promote greater private investment in the long term, a larger capital stock, and therefore a larger future GDP. The "muddling through" simulation shows such GDP growth but because of persistent deficits, debt increases well above current levels. In the model, the larger debt requires increased foreign capital inflows. Our "balance" simulation, compared to "muddling through," achieves greater deficit reduction and a larger GDP with lower debt and, accordingly, less reliance on foreign capital. And as we stated in 1992, a strongly growing economy will be needed to support present

[6]If capital were perfectly mobile, foreign capital inflows could fully offset a decline in U.S. savings although a portion of the income generated would flow abroad. The evidence continues to suggest, however, that a nation's investment is correlated with its own saving. Accordingly, we retained our 1992 assumption that net foreign capital inflows rise by one-third of any decrease in the national saving rate.

commitments to the future elderly and a rising standard of living for the future working population.

In actuality, the differences between alternative fiscal policies would likely be even greater than our simulation results suggest. Our model incorporates conservative assumptions about the relationship between savings, investment, and GDP growth that tend to understate the differences between the economic outcomes associated with alternative fiscal policies. For example, in our model, interest rates, productivity, and foreign investment all hold steady regardless of economic change. In the "no action" simulation, we assumed that they all remain constant in the face of a collapsing U.S. economy; this is unlikely to be true. Similarly, under our "balance" simulation, interest rates, productivity, and foreign investment do not respond favorably to increased national savings and investment. While the magnitude of any response is difficult to predict, some change could be expected. To the extent that our assumptions are conservative, differences between a "balance" path and the other two paths would be larger than simulated.

We recognize that deficit reduction would have costs in the short term. The deficit reduction necessary to achieve beneficial long-term economic outcomes and reduced interest costs would entail difficult budgetary reductions and require a greater share of national income to be devoted to saving, thus foregoing some consumption in the short term. The greater the fiscal austerity, the more consumption would need to be sacrificed. However, more stringent deficit reduction measures mean correspondingly larger increases in consumption in the long term. The decision policymakers face, then, involves a trade-off between the immediate sacrifice of deficit reduction and the deferred but more severe economic costs associated with continued deficits.

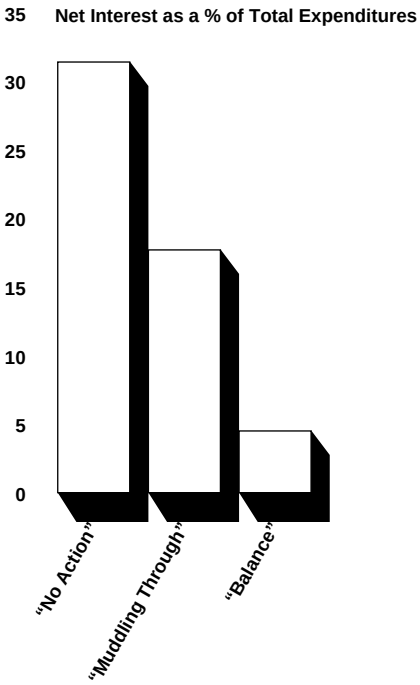
## Deficit Reduction Would Reduce Interest Costs

The share of the federal budget devoted to interest costs would be reduced through deficit reduction, freeing up scarce resources to satisfy other public needs. This will be particularly important for future budgets when the aging of the population will prompt greater spending pressures.

The dynamics of compound interest which, given no action on the deficit, lead inexorably to spiralling deficits, yield dividends under a balance simulation. The more rapidly real debt is reduced and real interest costs brought down, the less long-term programmatic sacrifice required. Action taken to achieve balance by 2002 and to sustain it shrinks interest as a

percent of total outlays from 12 percent in 1994[7] to less than 5 percent in 2025, assuming a constant interest rate.[8] (See figure 4.) In contrast, higher interest costs would approach 18 percent of outlays by 2025 under the "muddling through" path because the deficit is maintained at 3 percent of GDP, resulting in higher debt. Moreover, due to growing pressures from health and Social Security commitments, the "muddling through" path requires progressively greater spending reductions just to keep the deficit from growing above 3 percent of GDP.

**Figure 4: Net Interest as a Share of Total Expenditures in 2025 Under GAO's Three Fiscal Policy Simulations**




## The Type of Spending Reduction Matters

Not all spending cuts have the same impact over the long run. Decisions about how to reduce the deficit will reflect—among other considerations—judgments about the role of the federal government and the effectiveness of individual programs. In our 1992 work, we drew particular attention to federal investment in physical capital, human capital, and research and development. Such public investment plays a key role in economic growth, directly and by creating an environment

[7]For comparability with our model, this percentage is calculated using National Income and Product Account (NIPA) definitions. The figure would be higher if budget definitions were used.

[8]Our interest rate assumptions are based on CBO through 1999 and then move to a fixed rate.

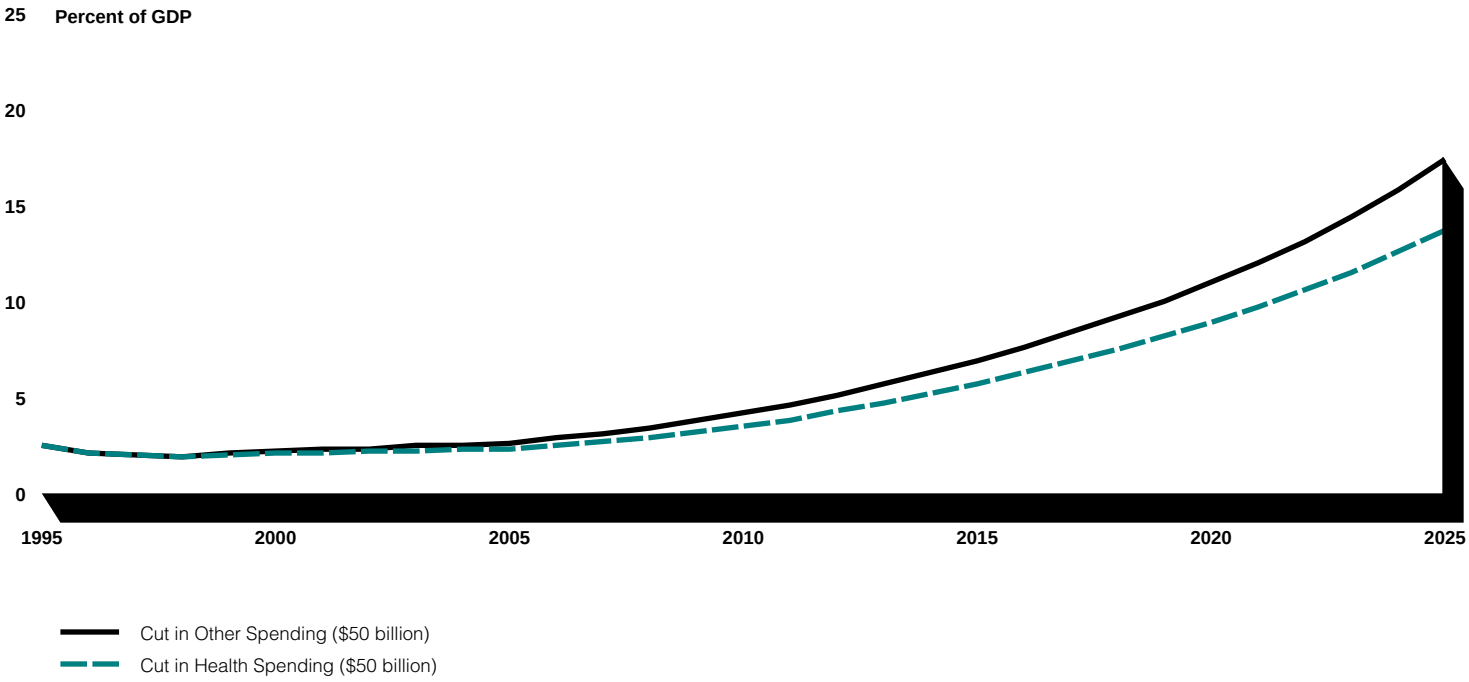
conducive to private sector investment. Accordingly, in addition to the overall level of deficit or surplus, the proportion of the budget devoted to investment spending will also affect long-term growth.

The extent to which deficit reduction affects spending on fast-growing programs also matters. Although a dollar is a dollar in the first year it is cut—regardless of what programmatic changes it represents—cutbacks in the base of fast-growing programs generate greater savings in the future than those in slower-growing programs, assuming the specific cuts are not offset by increases in the growth rates of the programs.[9]

Figure 5 illustrates this point by comparing the long-run effects of a $50-billion cut in health spending with those of the same dollar amount cut from unspecified other programs. For both paths the cut occurs in 1996 and is assumed to be permanent but, after 1996, spending is assumed to continue at the same rates of growth as those shown in the "no action" simulation.We used the simple assumption that a reduction either in health or in other programs would not alter the expected growth rates simply to illustrate the point that a cut in high-growth areas of spending will exert greater fiscal effects in the future than the same size cut in low-growth areas.

[9]We did not simulate the effect of reducing growth rates. If cutting the base also had the effect of slowing the rate of growth, the action would have an even greater impact on the long-term deficit. Of course, if cutting the base raised the growth rate, the actions could raise the deficit in the long term.

**Figure 5: Comparison of Deficit Path With an Early Cut in Health to Deficit Path With an Equal Cut in Other Spending**




Because the 1996 cuts are equal dollar amounts, the two simulations appear very similar in the early part of the period. A gap develops between them as time passes, however, and by 2025 the difference between the two paths has widened to nearly 4 percent of GDP. The gap appears and then widens because health spending grows much faster than other areas of spending. A cut in this spending area reduces the proportion of the budget growing quickly, thereby reducing the total budget growth. The effects of compound interest, discussed earlier in this report, magnify the difference.

## Fiscal Pressures Will Continue

Even if a balanced budget is achieved early in the next century, deficits could reemerge as the coming demographic changes continue to exert fiscal pressures. Depending upon the types of spending reductions adopted, future growth in health, Social Security, and interest costs—the deficit drivers—will continue to place demands on federal budgetary resources. As the Bipartisan Commission on Entitlement and Tax Reform

recently observed,[10] the decreasing ratio of the labor force to retirees will exacerbate the fiscal effects of the growing elderly population.

In addition to the effects of the known demographic shift, uncertainties about the growth of health care costs also promise to complicate future budget policy. Recent budgetary history has shown that health care costs have proven very difficult to predict. Experts we contacted agreed on only one thing—long-range cost projections made today will be wrong. Whether they are too high or too low is unclear, although historically health projections have nearly always been too low. For these reasons, sustaining a balanced budget over the long term could be an ongoing challenge.

Rather than discouraging efforts to reduce the deficit, an awareness of future fiscal pressures might instead be used to help inform current fiscal policy choices. For example, some program changes, if made today, would generate little in immediate savings but would exert large future outlay reductions. Program changes with such "wedge-shaped" savings paths might be important elements of a strategy to mitigate the longer-term spending pressures, as they were in several other nations that reduced fiscal deficits.[11] Phasing in such changes over a longer time frame would give affected populations more time to adjust to these changes. Moreover, other nations found that phasing in program changes strengthened prospects for public support of needed fiscal policy changes.

## Objectives, Scope, and Methodology

The analysis presented in this report of the long-term economic and fiscal implications of these alternative fiscal policy paths relies in substantial part on an economic growth model that GAO adapted from a model developed by economists at the Federal Reserve Bank of New York. The model reflects the interrelationships between the budget and the economy over the long term and does not capture their interaction during short-term business cycles.

The main influence of budget policy on long-term economic performance is through the effect of the federal deficit on national saving. Conversely, the rate of economic growth helps determine the overall federal deficit or surplus through its effect on revenues and spending. Higher federal budget

[10]Bipartisan Commission on Entitlement and Tax Reform, Final Report to the President, 1995.

[11]For a more detailed discussion of this approach to deficit reduction, see Deficit Reduction: Experiences of Other Nations (GAO/AIMD-95-30, Dec. 13, 1994).

deficits reduce national saving while lower deficits increase national saving. The level of saving affects investment and, in turn, GDP growth.

Budget assumptions in the model rely upon CBO estimates through 2004 to the extent practicable. These estimates are used in conjunction with our model's simulated levels of GDP. For Medicare, we assumed growth consistent with CBO's projections and HCFA's long-term intermediate projections from the Medicare Trustees' April 1995 report. For Medicaid through 2004, we similarly assumed growth consistent with CBO's projections. For 2005 and thereafter, in the absence of long-range Medicaid projections from HCFA, we used projections developed in 1994 by the Bipartisan Commission on Entitlement and Tax Reform. For Social Security, we use the April 1995 intermediate projections from the Social Security Trustees throughout the simulation period. Other mandatory spending is held constant as a percentage of GDP after 1999, the last year in which CBO projections are available in a format usable by our model. Discretionary spending is held constant as a percentage of GDP after 2005. Receipts are held constant as a percentage of GDP after 1999. Our interest rate assumptions are based on CBO through 1999 and then move to a fixed rate. (See appendix I for a more detailed description of the model and the assumptions we used.)

We conducted our work from June 1994 through April 1995. We received comments from experts in fiscal and economic policy and have incorporated them as appropriate.

We are sending copies of this report to the President of the Senate and the Speaker of the House of Representatives and to the Ranking Minority Members of your Committees. We are also sending copies to the Director of the Congressional Budget Office, the Secretary of the Treasury, and the Director of the Office of Management and Budget. Copies will be made available to others upon request.

This report was prepared under the direction of Paul L. Posner, Director for Budget Issues, and James R. White, Acting Chief Economist. They may be reached at (202) 512-9573. Major contributors to this report are listed in appendix II.

Charles A. Bowsher
Comptroller General
of the United States

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**Abbreviations**

| | |
|---|---|
| CBO | Congressional Budget Office |
| FRBNY | Federal Reserve Bank of New York |
| GDP | gross domestic product |
| HCFA | Health Care Financing Administration |
| NIPA | National Income and Product Account |
| OASDI | Old Age Survivors' and Disability Insurance |
| OBRA | Omnibus Budget Reconciliation Act of 1993 |

# The Economic Model and Assumptions

This updated analysis[1] of the long-term economic and budgetary implications of alternative fiscal policy paths relies in substantial part on an economic growth model that GAO adapted from a model developed by economists at the Federal Reserve Bank of New York (FRBNY). The model represents growth as resulting from labor force increases, capital accumulation, and the various influences affecting total factor productivity. To allow a closer analysis of the long-term effects of fiscal policy, we added a set of relationships describing the federal budget and its links to the economy. The relationships follow the definitions of national income accounting, which differ slightly from those in the budget.

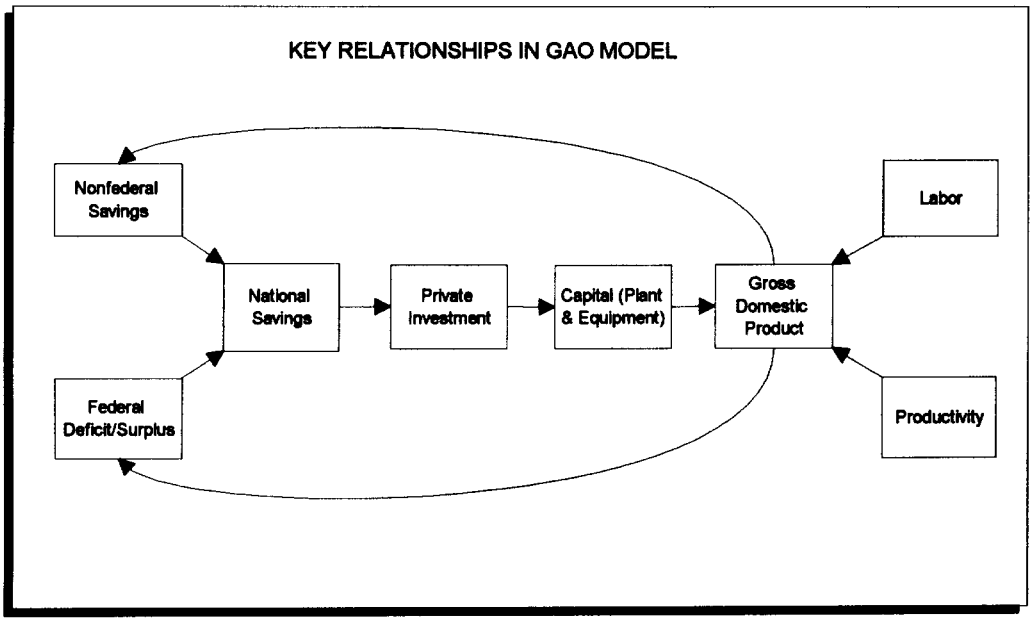
The model is helpful for exploring the long-term implications of policies and for comparing alternative policies within a common economic framework. The results provide qualitative illustrations, not quantitative forecasts, of the budget or economic outcomes associated with alternative policy paths. The model reflects the interrelationships between the budget and the economy over the long term and does not capture their interaction during short-term business cycles.

## Overview of the Model

Figure I.1 illustrates the core relationships of the model. The main influence of budget policy on long-term economic performance is through the effect of the federal deficit on national saving. Higher federal budget deficits reduce national saving while lower deficits increase national saving. The level of savings affects investment and, hence, GDP growth.

[1]Budget Policy: Prompt Action Necessary To Avert Long-Term Damage to the Economy (GAO/OCG-92-2, June 5, 1992).

**Figure I.1: Key Model Relationships and Budget Assumptions**




***KEY FEDERAL BUDGET ASSUMPTIONS***

**Receipts**

- Based on CBO's projections until 1999, thereafter held constant as a share of GDP.

**Expenditures**

- Discretionary spending follows caps through 1998, grows at rate of inflation from 1999-2005, and is then held constant as a share of GDP.
- Health based on CBO, Trustees', and the Entitlement Commission's projections.
- Social Security based on Trustees' projections.
- Other mandatory spending based on CBO baseline through 1999, then held constant as a share of GDP.
- Interest rate on debt is based on CBO assumptions through 1999 and then moves to a fixed rate.

Gross domestic product (GDP) is determined by the labor force, capital stock, and total factor productivity.[2] GDP in turn influences nonfederal saving, which consists of private saving and state and local government surpluses or deficits. Through its effects on federal revenues and spending, GDP also helps determine the federal budget deficit or surplus. Nonfederal and federal savings together comprise national saving, which influences private investment and the next period's capital stock. Capital combines with labor and total factor productivity to determine GDP in the next period, and the process continues.

There also are important links between national saving and investment and the international sector, not shown in figure I.1 in order to keep the overview simple. In an open economy such as the United States, a decrease in saving due to, for example, an increase in the federal budget deficit, does not require an equal decrease in investment. Instead, part of the saving shortfall may be filled by foreign capital inflows. A portion of the net income that results from such investments flows abroad.

If capital were perfectly mobile, foreign capital inflows could fully offset the effect on domestic investment of a decline in U.S. saving. The evidence continues to suggest, however, that a nation's investment is correlated with its own saving. Hence, we retained our 1992 assumption (based on the work of FRBNY) that net foreign capital inflows rise by one-third of any decrease in the national saving rate.

Table I.1 lists the key assumptions incorporated in the model. The assumptions used tend to provide conservative estimates of the benefit of deficit reduction and the harm of deficit increases. The interest rate on the national debt is held constant, for example, even when deficits climb and the national saving rate plummets. Under such conditions, the more likely result would be a rise in the rate of interest and a more rapid increase in federal interest payments than our results display. Another conservative assumption is that the rate of total factor productivity growth is unaffected by the amount of investment. Productivity is assumed to advance 1 percent each year even if investment collapses. Such assumptions suggest that deficit changes could have greater effects than our results indicate.

We have made several modifications to the model since the 1992 report, but its essential structure remains the same. The model incorporates the

[2]Total factor productivity reflects sources of growth not captured in aggregate labor and capital measures, including technological change, labor quality improvements, and the reallocation of resources to more productive uses.

National Income and Product Accounts (NIPA) shift from 1982 to 1987 as the base year, and the switch from gross national product to GDP as the primary measure of overall economic activity.

The more recent data prompted several parameter changes. For example, the inflation rate is now assumed to be 3.4 percent, down from 4.0 percent in our previous work, while the average interest rate is reduced to 7.2 percent from 7.8 percent. Our work also incorporates the CBO projection that deficits in the next few years will be somewhat lower than was foreseen in 1992.

The distinction between the mandatory and discretionary components of the budget is important. Our approach has been modified to accommodate this distinction by reclassifying budget data based on the NIPA framework as mandatory or discretionary spending. From 1995 through 1999, CBO data were used for this reclassification. For the years from 2000 through 2005, we adopted CBO's assumption that discretionary spending would increase at the rate of inflation, and, thereafter, we assumed it would keep pace with GDP growth.

Mandatory spending includes Health, Old Age Survivors' and Disability Insurance (OASDI, or Social Security), and a residual category covering other mandatory spending. For the first 9 years, health spending incorporates CBO's Medicare and Medicaid assumptions. Thereafter, Medicare follows the Trustees' 1995 Alternative II projections. We smoothed the path of Medicaid spending from 2005 through 2011 in order to link CBO's spending assumptions to those of the Bipartisan Commission on Entitlement and Tax Reform. OASDI reflects the April 1995 Social Security Trustees' Alternative II projections.

Other mandatory spending is a residual category consisting of all nonhealth, non-Social Security mandatory spending. It equals CBO's NIPA projection for Transfers, Grants, and Subsidies less Health, OASDI, and other discretionary spending. Through 1999, CBO assumptions are the main determinant of other mandatory spending, after which its growth is linked to that of GDP.

The interest rates for 1994-1999 are consistent with the average effective rate implied by CBO's interest payment projections. We assume that the average rate then moves to 7.2 percent by 2003, where it remains for the rest of the simulation period.

Receipts follow CBO's dollar projections to 1999. Thereafter, they continue at 20.3 percent of GAO's simulated GDP, which is the percent the model projects for 1999.

As these assumptions differ somewhat from those used in our earlier report, the results are not directly comparable. An appendix to the 1992 report provides additional detail on the model's structure.

**Table I.1: Key Assumptions**

| | Assumptions | Comments |
|---|---|---|
| Saving rate: private savings plus state and local surplus/deficit | 16.5% of GDP | Same as 1992 |
| Labor: growth in hours worked | Follows the Trustees' Alternative II projections | |
| Total factor productivity growth | 1% per year | Same as 1992 |
| Inflation rate | 3.4% per year | Revised; was 4% in 1992 |
| Interest rate (average on the national debt) | 7.2% per year after 2002; in earlier years, interest rates are consistent with the average effective rate implied by CBO's interest payment assumptions | Revised; was 7.8% in 1992 |
| Surplus/Deficit 1995-99 (% of GDP) | 2.5% for 1995<br>2.7% for 1996<br>2.7% for 1997<br>2.6% for 1998<br>2.8% for 1999 | Deficit is on a NIPA basis and follows CBO projections of deficit's dollar values, GAO's GDP |
| Discretionary categories | | |
| 1995-1998 | Follows caps | |
| 1999-2005 | Spending rises at the rate of inflation | |
| After 2005 | Spending rises at the rate of economic growth | |
| Health | | |
| 1995-2004 | Grows at the rate CBO assumes | |
| After 2004 | Medicare follows HCFA; Medicaid follows assumptions of the Bipartisan Commission on Entitlement and Tax Reform | |

(continued)

| | Assumptions | Comments |
|---|---|---|
| OASDI | | |
| 1995-2025 | Follows the Trustees' Alternative II projections | |
| Other mandatory spending | | |
| 1995-1999 | CBO's assumed levels | |
| After 1999 | Spending rises at the rate of economic growth | |
| Receipts | | |
| 1995-1999 | CBO's assumed levels | |
| After 1999 | Receipts equal 20.3 percent of GDP (1999 ratio) | |

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