

CBO AND OMB PROJECTIONS, ADJUSTED FOR INFLATION, SHOW FEDERAL BUDGET DEFICIT UNDER CONTROL*

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Introduction

The main point of this article is to illustrate how standard measures of the federal budget deficit may be deceptive inasmuch as they do not adjust the budget for inflation. The article takes budget projections of the 1986 Congressional Budget Resolution made in August 1985 by both the Congressional Budget Office and the Office of Management and Budget and deflates them, that is it expresses them in inflation-adjusted terms. No attempt is made to evaluate the quality of these deficit projections for fiscal years 1986 through 1990. But even if the more conservative of the two projections should prove to be correct, what emerges from the analysis is the very optimistic interpretation that the budget deficit problem, as defined by the budget offices, would essentially be eliminated in real terms over the next few years without the need to raise taxes or cut social security benefits. This view is sharply in contrast with the general interpretation of the budget deficit problem that has appeared in the press. (See accompanying Box.)

Why Adjust Budget Deficits for Inflation?

It is extremely important to take inflation into account in evaluating the real effect of deficits on the economy. What appears to be a deficit may turn out to be a surplus when adjusted for inflation. The real budget deficit is the dollar deficit adjusted for the effect of inflation not only in increasing the interest rate at which the government borrows but also in

reducing the real value of outstanding government debt to be financed. The real deficit represents the net claim on credit markets for funds to finance the federal government. Eliminating the deficit in real terms could free credit markets both in the United States and other countries from supporting large annual net flows of funds to the federal government.¹ Lower real interest rates both in the United States and other countries would be a prospect to the extent that deficits in recent years had kept rates extraordinarily high.²

Deflating the budget deficit removes the effect of inflation on both the interest rate at which the government borrows and the value of its outstanding debt. This amounts to recalculating government interest payments in real terms. Suppose the government borrowing rate is 10 percent and the outstanding debt is \$1,500 billion as is approximately true for the current fiscal year. Nominal interest payments thus would contribute \$150 billion to the deficit. The 10 percent nominal interest rate includes an inflation premium to compensate lenders for depreciation in the real value of their claims to future repayment by borrowers. Consequently an increase in inflation would increase the deficit because inflation is reflected in nominal interest rates as in recent experience. On the other hand an increase in inflation would decrease the real cost of financing government debt because of two fundamental gains to the government attributable to inflation. One is that it would collect additional taxes from recipients of increased interest income on government securities due to inflation. The other is that inflation reduces the real value of its outstanding debt, thereby reducing its claim on

* The Review offers this article in the belief that readers should be aware of the widest spectrum of opinion on such key policy issues as the federal deficit. The views expressed herein are solely those of the author and not necessarily those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

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¹Gerald P. Dwyer, Jr., "Federal Deficits, Interest Rates, and Monetary Policy," *Journal of Money, Credit and Banking*, Part II (November 1985), pp. 655-81.

²William G. Dewald, "Federal Deficits and Real Interest Rates: Theory and Evidence," *Federal Reserve Bank of Atlanta, Economic Review* (January 1983), pp. 20-29.

The Deficit Problem: Views from the Press

Jane Seaberry, "CBO Cuts Forecast on Deficits," *The Washington Post*, August 16, 1985, p. E1.

[CBO Director Rudolph] "Penner's enthusiasm for the resolution contrasted with remarks by members of Congress. The leaders of the House and Senate Budget committees said the resolution was the best that could be done under the circumstances, and high deficits would persist unless taxes were raised or major benefits programs such as social security were cut.

"President Reagan said the budget compromise marked the beginning of the deficit-reduction process and this week he vowed to seek deeper cuts in spending."

Haynes Johnson, "The 134-Mile-High Stack," *The Washington Post*, September 22, 1985, p. A3.

"The forecasters say the geometric symmetry of our debt will continue to circle neatly ever upward. In 5 more years, on our present course, . . . the total national debt will have jumped again from \$2 trillion to \$3 trillion, a tripling of the debt in less than a decade.

"Well, I leave it to experts in the 'dismal science' of economics to sort out the theoretical and technical hows and whys of all this. But you don't have to be an expert to get the meaning of this blunt message. We're hurtling pell-mell into debtor status at all levels of American society, and no amount of smiles and soft soap from the White House can keep this news from being understood."

Helen Dewar, "Reagan Budget Policies Blasted on Both Sides," *The Washington Post*, September 25, 1985, p. A2.

"Why is he [President Reagan] on tax reform when he should be on deficits? Why does he undercut the [Senate] budget resolution? asked [Senator David F.] Durenberger [R-Minn] in reference to Reagan's spurning of a Senate budget that would have raised taxes and cut Social Security to achieve larger long-term deficit reductions than Congress ultimately approved.

"Similar rumblings on the deficit issue came during the weekly Senate Republican caucus luncheon dominated by appeals for further action to contain deficits. These included interest in a plan by Sens. Phil Gramm (R-Tex) and Warren B. Rudman (R-N.H.) to force spending cuts sufficient to balance the budget by fiscal 1990."

Bob Setter, *Los Angeles Times*, September 30, 1985, sec. 1, p. 4.

"Former budget director David Stockman called Sunday for a tax increase of at least \$100 billion a year to help reduce the federal budget deficit and prevent what he called 'traumatic economic dislocations.'

" 'If we're going to get out of this situation and restore any semblance of national solvency and fiscal discipline, it's going to take a very major tax increase, larger than we've ever had or contemplated before,' Stockman said."

resources to finance expenditures. If the nominal interest rate on government debt is 10 percent and the marginal tax rate on interest income is 30 percent,³ as is approximately true today, the effective interest rate on government borrowing which incorporates the feedback of tax receipts is only 7 percent [10 percent x (1-.3)]. The effective borrowing rate which incorporates a 4 percent inflation rate is only 3 percent [10 percent x (1-.3) - 4 percent].⁴

Essentially adjusting the deficit for inflation eliminates \$45 billion of the \$150 billion of nominal interest payments because of a feedback of taxes on interest income and \$60 billion because of depreciation in the real value of the outstanding debt. Assuming the noninterest part of the deficit (the so-called primary deficit) was balanced, the deficit would not be \$150 billion (the nominal interest payments on the debt) but only \$45 billion (the real after-tax interest cost of financing the debt if the marginal tax rate is 30 percent and inflation is 4 percent). The effective real interest rate on financing the government debt would thus not be 10 percent but only 3 percent.

Federal Deficits and Debt, 1952-1974

Chart 1 records the nominal budget deficit as a percentage of GNP. This deficit ratio typically has risen during recessions and fallen during expansions. Until 1975 deficits generally peaked during recessions at about 2 percent of GNP as in 1953, 1958, and 1971. There were occasional surpluses (negative deficits) as in 1955-57, 1960, and 1969. Nevertheless there were more and larger deficits than surpluses. As a consequence the publicly held federal debt increased from \$218 billion in 1952 to \$343 billion in 1974, a 2.2 percent average annual increase. But GNP grew at a faster rate, 7.0 percent on the average. Chart 2 shows the ratio of publicly held federal debt as a percentage of GNP. It fell from over 60 percent in 1952, a level that reflected financing World War II and the Korean War, to a level of less than 24 percent in 1974 before the onset of the deficit problems that followed.

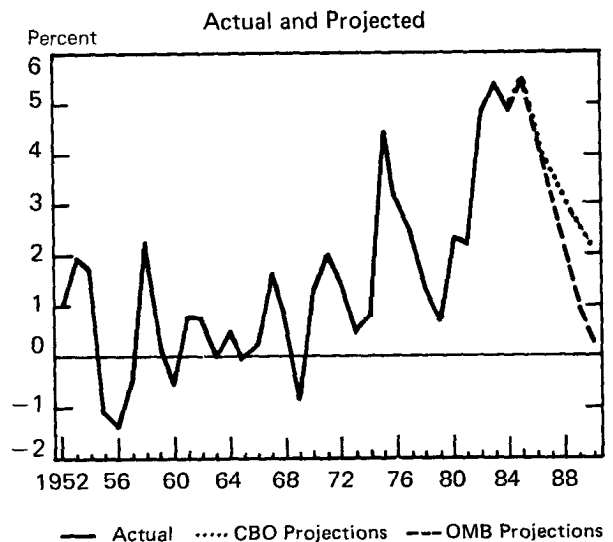
Bad News on the Deficit: Observations, 1975-1985

Charts 1 and 2 also document how dramatically the federal deficit and debt picture changed from 1975

³ U.S. Treasury Department, Private communication.

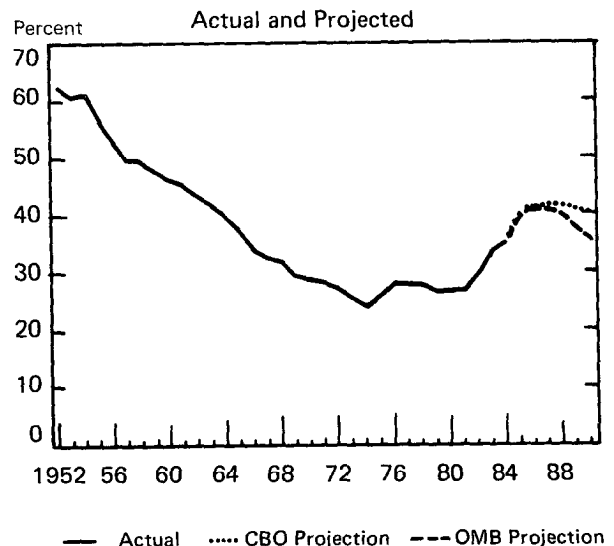
⁴ William G. Dewald, "Government Deficits in a Generalized Fisherian Credit Market," Departmental Memorandum, International Monetary Fund, August 30, 1985.

Chart 1
FEDERAL NOMINAL BUDGET DEFICIT
AS PERCENT OF GNP



through 1985. There were no surpluses and much larger deficits relative to GNP than previously had been observed, for example, 4.5 percent in 1975 and an unprecedented string of about 5 percent deficits the past four years. The publicly held federal debt more than quadrupled from \$343 billion in 1974 to \$1,522 billion in 1985, an 11.6 percent annual increase. This was significantly more than the GNP

Chart 2
PUBLICLY HELD GOVERNMENT DEBT,
PERCENT OF GNP



growth rate. Consequently the ratio of publicly held federal debt to GNP rose from a low of 23.9 percent in 1974 to a high of 39.4 percent in 1985. That is the bad news that still pervades the general perception of the budget deficit situation in the United States.

Good News on the Deficit: Projections, 1986-1990

The good news is that actually implementing the 1986 Congressional Budget Resolution—which promises to cut both defense and domestic spending programs but to leave taxes and social security essentially unchanged—would be enough to substantially reduce budget deficits and start shrinking federal debt relative to GNP. Additional domestic spending cuts such as the Administration has proposed could significantly speed the process. So would the tax hikes favored by a number of Senators and Congressmen.

Table I gives some sense of the magnitude of the good news in the Congressional Budget Resolution. In February CBO projected deficits of more than 5 percent of GNP with federal debt growing faster than GNP as far as it could see. By contrast, in August CBO projected that implementing the 1986 Congressional Budget Resolution coupled with its own more optimistic assumptions about interest rates would cut the deficit from 5.2 to 4.2 percent of GNP in the current fiscal year and from 5.3 to 2.1 percent

by 1990. Based on more optimistic assumptions about both economic growth and reductions in federal spending, in August OMB projected that the deficit to GNP ratio would fall to a mere 0.3 percent by 1990. The CBO and OMB projections of the budget deficit as a percent of GNP are plotted in Chart 1. They show a significant decline in the deficit ratio, but CBO projects the deficit declining by 1990 only to 2.1 percent of GNP. Before 1975 this had represented not a relatively low but a relatively high deficit ratio over the business cycle. Nevertheless, as Chart 2 shows, both CBO and OMB were projecting that the debt to GNP ratio would peak and start to decline beginning in 1988, thus restoring the normal peacetime pattern of declining debt to GNP ratios that had been observed from 1952 through 1974. An implication of these projections of declining debt to GNP ratios is an elimination of the federal deficit in inflation-adjusted terms as explained in the next sections.

The 'Real' Good News: Real Deficits Projected to End

This article explains why, when inflation is taken into account, even the less optimistic CBO projections of a deficit to GNP ratio falling to 2.1 percent by 1990 imply that the federal deficit in inflation-adjusted terms would essentially be eliminated. The more optimistic OMB projections imply significant real budget surpluses in 1989 and 1990. Further reductions in federal spending or increases in taxes than embodied in the Congressional Budget Resolution would imply even larger surpluses.

Adjusting Deficits for Inflation: An Example

To lay the groundwork for calculating the real budget deficit, consider some hypothetical numbers. Suppose a borrower owes \$20,000 and promises to repay the principal and 5 percent interest (\$1,000) at the end of a year. What the \$21,000 repayment is worth in real terms depends on inflation. If inflation were 10 percent, \$21,000 would be worth only \$19,090.91 ($\$21,000/1.10$) in inflation-adjusted dollars. The borrower would have struck a good bargain and the lender a bad one because the real interest rate would have turned out to be a negative 4.5 percent ($-\$909.09/\$20,000$).

If inflation were correctly anticipated, lenders would not accept such bad bargains. Suppose 10 percent inflation is expected and lender and borrower negotiate a 15.5 percent nominal interest-rate. This

Table I

CBO PROJECTIONS OF FEDERAL DEFICITS AND DEBIT HELD BY THE PUBLIC, 1985-1990

(As a percentage of GNP)

	Federal Budget Deficit to GNP		Federal Debt Held by the Public to GNP	
	February	August	February	August
1985	5.6	5.5	39.6	39.6
1986	5.2	4.2	41.8	41.1
1987	5.2	3.7	44.0	41.7
1988	5.1	3.0	46.0	41.6
1989	5.2	2.5	47.9	41.1
1990	5.3	2.1	49.7	40.2

Sources: Congressional Budget Office, *The Economic and Budget Outlook*, February 1985, Table E-2, p. 160; and Congressional Budget Office, *The Economic and Budget Outlook: An Update*, August 1985, Summary Table 4, p. xxi and Summary Table 5, p. xxi.

would yield a nominal return of \$3,100 on \$20,000. Thus the real or inflation-adjusted return would be only \$1,000 ($\$23,100/1.10 - \$20,000$) which is a 5 percent real rate. The real cost of financing the \$20,000 of debt is not 15.5 percent but only 5 percent. The \$23,100 of debt including nominal interest in current dollars at the end of a year amounts to only \$21,000 of debt in inflation-adjusted dollars which are dollars calculated to have the same purchasing power as at the beginning of the year. To continue the hypothetical example, the interest cost of financing his debt in current dollars or nominal terms would be \$3,100-his nominal interest cost. But the change in his debt in inflation-adjusted dollars or real terms would be only \$1,000 which is the net cost of financing the loan including both nominal interest payments and depreciation in its real value.

Real Budget Deficit Calculations : 1952-1990

These very same principles apply in translating the federal government deficit in current dollars into real or inflation-adjusted dollars. The easiest way to do this correctly is to calculate the real federal deficit as the change in the inflation-adjusted (deflated) value of the publicly held federal debt.⁵ Federal government outlays totaled \$851.8 billion and revenues \$666.5 billion in fiscal year 1984. Its nominal deficit was the difference which rounded out to \$185 billion. Its real deficit was much less. The reason is that 3.8 percent inflation reduced the real value of \$1,142 billion of publicly held debt outstanding by \$42 billion in inflation-adjusted dollars. Thus the real deficit was only \$136 billion, that is,

$$\frac{\$185 \text{ billion} - (.038 \times \$1,142 \text{ billion})}{1.038}$$

in terms of 1983 prices. That is still a comparatively large number. As shown in Chart 3, it is 4.0 percent of real GNP. However, it is considerably less than the 5.2 percent ratio of the nominal deficit to GNP, a figure that does not adjust the deficit for inflation.

⁵Federal debt held by the public is defined to include Federal Reserve holdings. There is a close correspondence, especially in recent years, between the amount of base money held by the public and Federal Reserve holdings of federal debt. Thus, federal debt held by the public approximates the sum of privately held federal interest bearing debt plus federal noninterest bearing debt (base money). Inflation depreciates the real value of both categories of debt and thus reduces the real cost of financing the government.

Michael Dotsey's article in the previous *Economic Review*⁶ surveys the theoretical literature regarding the effect of budget deficits on the economy. He explains how optimal deficits would account not only for inflation as in the present article but also for the business cycle and for secular factors affecting real interest rates; The business cycle, as has been mentioned, is important to the extent that deficits normally rise when output is below normal as in the early 1980s and fall when output is above normal. Dotsey cites a recent *Wall Street Journal* article by Robert J. Barro⁷, a principal contributor to the literature on deficits, in which he estimated that the 1984 budget deficit ratio was not unusually high because two percentage points of it was attributable to inflation and about one and one-half percentage points to cyclical factors. By comparison, the present paper estimates the effect of inflation on the budget deficit but makes no attempt to calculate the effect of other factors. This is in keeping with CBO and OMB out-year projections which do not account for the business cycle but are averages that are expected to prevail.

Chart 3 shows that real deficits were generally much smaller than the nominal deficit over the years 1952-1985, especially when inflation increased so very much in the late 1970s and early 1980s. Even though inflation was comparatively low in 1953-1974, as Chart 4 shows, adjusting for inflation makes a big difference in the deficit picture. There were real surpluses (negative deficits) in 16 of these 23 years in contrast to only 7 nominal surpluses. In the years since 1974 there have been no nominal surpluses at all, yet there were real surpluses owing to high inflation in each of the years 1978 through 1981. Substantial real deficits of 3 to 4 percent were encountered only in the years 1982 through 1985 when lenders were finally demanding and getting interest returns that compensated them: for actual inflation.

The effective after-tax real interest rate at which the government borrows is plotted in Chart 5.⁸The

⁶Michael Dotsey, "Controversy over the Federal Budget Deficit: A Theoretical Perspective," Federal Reserve Bank of Richmond, *Economic Review* (September/October 1985), pp. 3-16.

⁷Robert J. Barro, "A Deficit Nearly on Target," *Wall Street Journal*, January 29, 1985, p. 32.

⁸ $r = i(1 - \tau) - \pi$

where

- r = after-tax real interest rate
- i = before-tax nominal interest rate
- τ = tax rate
- π = inflation-rate

Chart 3

NOMINAL AND REAL FEDERAL BUDGET DEFICITS AS PERCENT OF GNP

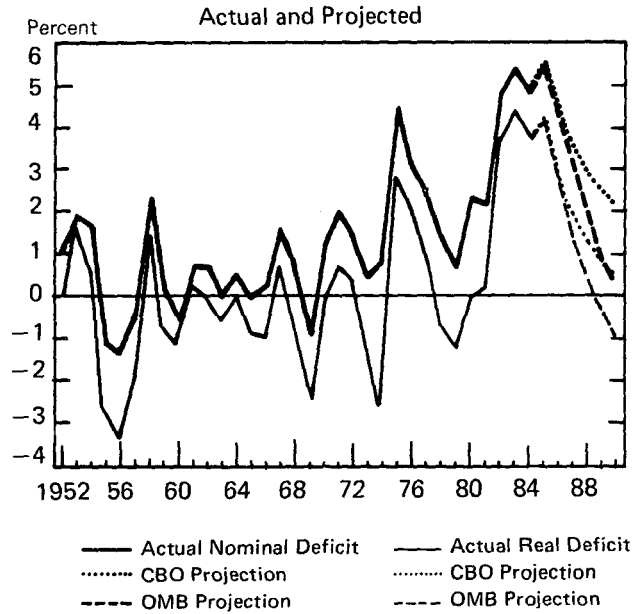


Chart 5

REAL AFTER-TAX GOVERNMENT BORROWING RATE

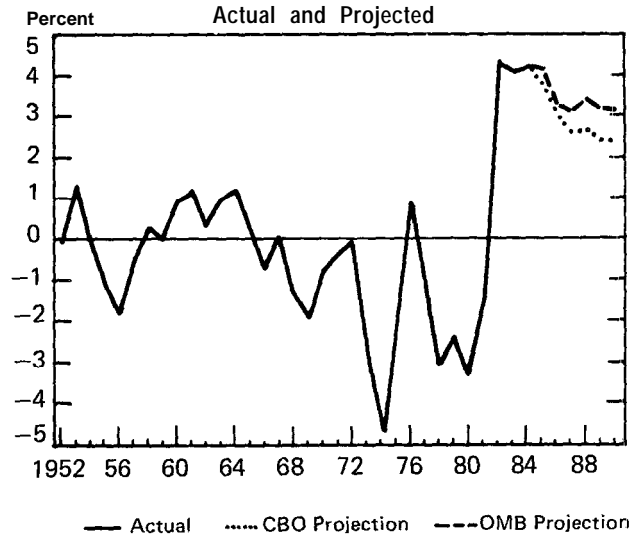
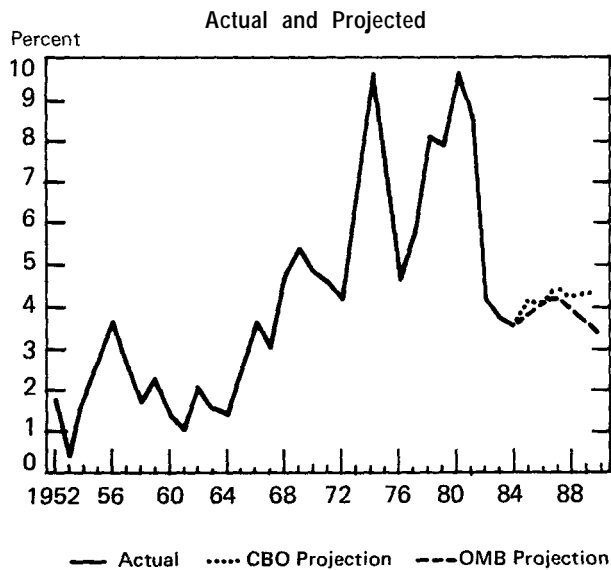


Chart 4

INFLATION



reason why the net interest cost on government borrowing is an after-tax interest rate is that the government collects tax revenue from taxpayers who earn interest on government securities. As mentioned, if the government pays a 10 percent before-tax rate but collects 30 percent of interest income in taxes, its effective interest cost rate would be 7 percent [10

percent x (1-.3)]. It is essentially the same rate at which taxpayers earn interest income. Taking inflation into account Chart 5 shows that the after-tax real interest rate on government securities was low, generally negative, from the middle 1960s through the 1970s and early 1980s as inflation accelerated. Only since 1982 have after-tax real rates at which the government borrows and taxpayers lend been positive and only since then have there been persistently high real deficits.

By incorporating such effective real interest costs of financing the federal government debt in calculating real deficits, Chart 3 shows how both the CBO and OMB projections of budget deficits embodied in the 1986 Congressional Budget Resolution would cut the deficit in 1988-1990 to well within the range of variation that was observed in the 1950s and 1960s which is the main point of the present article. To the extent that high real interest rates have been associated with high real deficits, these projections imply lower real interest rates in the future than were observed in recent years. The calculations used to adjust the CBO and OMB projections to inflation are shown in the Appendix.

Conclusion

My conclusion is that implementing the Congressional Budget Resolution would go a lot further in cutting back government spending and deficits than

is generally understood. My argument has used CBO and OMB assumptions and projections, but expressed deficits in inflation-adjusted terms. The deficit picture may be even brighter than these figures suggest when one considers that eliminating deficits might spur real growth and cut government borrowing rates more than have been projected by the budget offices. In any event, taking account of inflation, this article has shown that even CBO's conservative assumptions, rather than OMB's optimistic assumptions, imply that the 1986 Congressional Bud-

get Resolution promises to accomplish a lot more to alleviate the deficit problem than its authors seem to have recognized. Perhaps the budget resolution will be disregarded as has often been the case in recent years. But if it is implemented and if the economic assumptions of CBO and OMB prove to be accurate, then the federal budget deficit in inflation-adjusted terms would be eliminated without the necessity of raising taxes or cutting social security benefits. May one conclude that application of the "dismal science" need not yield dismal results?

Appendix Table I

CONGRESSIONAL BUDGET OFFICE DEFICIT PROJECTIONS

(Fiscal Years, Billions of Dollars, and Percent)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Fiscal Year	Nominal Deficit	Publicly Held Debt	Inflation	Price Level 1985=100	Real Deficit	GNP	Real GNP	Nominal Deficit ÷ GNP	Real Deficit ÷ Real GNP	Publicly Held Debt ÷ GNP
1984	185	1,141.8	3.8	96.1	147.4	3,581	3,728	5.2	4.0	36.7
1985	210	1,313.0	4.1	100.0	156.2	3,840	3,840	5.5	4.1	39.6
1986	175	1,522.0	4.1	104.1	108.2	4,138	3,975	4.2	2.7	41.1
1987	163	1,701.0	4.4	108.7	81.1	4,462	4,106	3.7	2.0	41.7
1988	143	1,861.0	4.2	113.2	57.3	4,813	4,250	3.0	1.3	41.6
1989	132	2,002.0	4.3	118.1	38.9	5,190	4,394	2.5	0.9	41.1
1990	120	2,133.0	4.3	123.2	23.0	5,597	4,543	2.1	0.5	40.2
1991	—	2,252.0	—	—	—	—	—	—	—	—

Source: Congressional Budget Office, The Economic and Budget Outlook: An Update, August 15, 1985.

Columns:

- (1) Table II-1, p. 64.
- (2) Figures are for the beginning of the fiscal year. Table II-1, p. 64.
- (3) Table I-3, p. 8.
- (4) Calculated from (3).
- (5) $[(1) - \frac{(3) \times (2)}{100}] \div \frac{(4)}{100}$.
- (6) Table I-3, p. 8.
- (7) $(6) \div \frac{(4)}{100}$.
- (8) (1) ÷ (6).
- (9) (5) ÷ (7).
- (10) Figures are for the end of the fiscal year. (2) ÷ (6).

Appendix Table II

OFFICE OF MANAGEMENT AND BUDGET DEFICIT PROJECTIONS

(Fiscal Years, Billions of Dollars, and Percent)

Fiscal Year	(1) Nominal Deficit	(2) Publicly Held Debt	(3) Inflation	(4) Price Level 1985=100	(5) Real Deficit	(6) GNP	(7) Real GNP	(8) Nominal Deficit ÷ GNP	(9) Real Deficit ÷ Real GNP	(10) Publicly Held Debt ÷ GNP
1984	185.0	1,141.8	3.8	96.3	147.0	3,581	3,717	5.2	4.0	36.7
1985	211.3	1,312.6	3.8	100.0	161.4	3,835	3,835	5.5	4.2	39.5
1986	177.8	1,515.2	4.1	104.1	111.1	4,146	3,983	4.3	2.8	40.9
1987	139.3	1,694.7	4.2	108.5	62.8	4,497	4,146	3.1	1.5	40.8
1988	99.8	1,834.0	3.9	112.7	25.1	4,869	4,320	2.0	0.6	39.7
1989	53.6	1,933.8	3.6	116.8	-13.7	5,243	4,490	1.0	-0.3	37.9
1990	17.7	1,987.4	3.3	120.6	-39.7	5,605	4,647	0.3	-0.9	35.8
1991	—	2,005.1	—	—	—	—	—	—	—	—

Source: Office of Management and Budget, Mid-Session Review of the 1986 Budget, August 30, 1985.

Columns:

- (1) Table 2, p. 3.
- (2) Figures are for the beginning of the fiscal year. 1984.86: Table 23, p. 39.
1987-90: Means of financing other than borrowing from the public assumed to be zero.
- (3) Table 3, p. 5.
- (4) Calculated from (3).
- (5) $[(1) - \frac{(3)}{100} \times (2)] \div \frac{(4)}{100}$.
- (6) Calculated for fiscal years from Table 2, p. 3.
- (7) $(6) \div \frac{(4)}{100}$.
- (8) $(1) \div (6)$.
- (9) $(5) \div (7)$.
- (10) Figures are for the end of the fiscal year. $(2) \div (6)$.