Government Deficits and the Public Debt:
The Endless Controversy
by
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Introduction

No economic topic has attracted more attention during the 1980s than
the size of Federal government budget deficits and the corresponding rapid
rise in the public debt. Crowding out news regarding Third World debt
problems, U.S. foreign trade deficits, and the break up of American
Telephone and Telegraph, Federal government budget deficits have been
blamed for everything from high interest rates to the deterioration in the
moral fiber of the American people. Deficits and debt have also caused
political reversal: historically free spending Democrats blaming Reagan
deficits for a variety of economic ills while the conservative Republican
president treats the deficit with benign neglect.

The purpose of this paper is not to answer all of the questions that
have been raised regarding the causes and consequences of government
deficits and debt. The initial concern is instead with the facts and figures
on the absolute and relative size of the Federal government's recent
deficits and debt. Next certain measurement issues are addressed for
there is a continuing debate regarding appropriate procedures for
expressing the government's budgetary outcomes. The third and final
section of the paper reviews some of the arguments, theoretical and
empirical, on the relation between deficits and debt on the one hand and
interest rates on the other. In each section the intent is to survey rather
than to present new theoretical arguments or new empirical evidence.

Facts on Deficits and Debt

Deficits

Table I presents data on Federal government budget deficits. Column
(1) presents the dollar magnitudes of the deficits and reveals that recent
deficits have indeed reached record levels - the deficits of 1983 and 1984
are more than twice as large as the previous record deficits of 1975 and
1976 and more than three times as large as the deficits recorded during
World War II (the largest deficit for these war years was recorded in
1944, a deficit of $51.8 billion).

There are however several ways in which the sense of alarm
generated by the absolute dollar figures can be tempered. The first is to

Table I
Absolute and Relative Size of
Federal Government Budget Deficits
(Dollar Figures in Billions)

Year	(1) Surplus* or Deficit (-)	(2) Surplus or Deficit(-) as a Percent of Gross National Product
1940	$-1.3	-1.3%
1945	-42.1	-19.8
1950	9.2	3.2
1955	4.4	1.1
1960	3.0	0.6
1961	-3.9	-0.7
1962	-4.2	-0.7
1963	.3	0.1
1964	-3.3	-0.5
1965	.5	0.0
1966	-1.8	-0.1
1967	-13.2	-1.7
1968	-6.0	-0.7
1969	8.4	0.9
1970	-12.4	-1.3
1971	-22.0	-2.0
1972	-16.8	-1.4
1973	-5.6	-0.4
1974	-11.5	-0.8
1975	-69.3	-4.5
1976	-53.1	-3.1
1977	-45.9	-2.4
1978	-29.5	-1.4
1979	-16.1	-0.7
1980	-61.2	-2.3
1981	-64.3	-2.2
1982	-148.2	-4.8
1983	-178.6	-5.4
1984	-176.4	-4.8

*Calculated on the basis of national income accounts budget
Source: 1985 Economic Report of the President

divide the absolute dollar figures by Gross National Product (GNP); these calculations are shown in column (2) of Table I. Now the 1984 deficit approximates the order of magnitude experienced during 1975: in 1984 the budget deficit was 4.8 percent of GNP while in 1975 it was 4.5 percent of GNP. Even more solace can be obtained by comparing the 1983 and 1984 percentages to 1945 when the wartime deficit approached one-fifth of GNP. Thus in relative terms recent deficits are not record highs but are within, and sometimes well within, the range of historical experience.

A second way of lessening the sense of alarm regarding the size of Federal government budget deficits is to combine the fiscal position of the Federal government with those of state and local governments. There are several reasons why a combined total may be more meaningful than the Federal figure alone. One reason is the belief that there is fundamentally no difference between a deficit incurred at the Federal level and a deficit experienced at the state and local level. In both instances there is an increase in the demand for loanable funds with attentent upward pressure on interest rates. A second reason recognizes that an action taken to reduce the Federal government deficit may have an opposite effect on state and local budgets. For example, the elimination of Federal revenue sharing as a deficit reduction action may reduce surpluses or increase deficits at the state or local level.

In any event combined state and local government budgets are currently in substantial surplus: $32.9 billion for 1982, $44.1 billion for 1983, and $52.0 billion for 1984. The overall Federal, state, and local budgets, therefore, are still in deficit, although substantially lower, and still represent record highs in terms of absolute dollar amounts. Recalculating the combined deficits lowers the percentage figures to 3.7, 4.1, and 3.4 for 1982, 1983, and 1984, respectively.

Debt

Table II presents data on the absolute and relative size of Total Gross Public Debt. As column (1) reveals, the current public debt when measured in absolute terms is at a record high. Once again however expressing the debt as a percent of GNP serves to reduce anxiety. The current relative size of the debt is well within the range of historical experience: from World War II through 1965, the ratio of public debt to GNP was consistently above the most recent ratio. It should also be noted that the direction in which the ratio has been changing reversed itself during the 1980s. Instead of a generally declining pattern, the ratio has been steadily increasing.

Table II
Absolute and Relative Size of
Total Gross Public Debt
(Dollar Figures in Billions)

Year	(1) Total Gross Public Debt	(2) Total Gross Public Debt as a Percent of Gross National Product
1940	$ 45.0	45.0%
1945	278.1	130.9
1950	256.7	89.9
1955	280.8	70.2
1960	290.2	57.3
1961	296.2	56.5
1962	303.5	53.7
1963	309.3	51.8
1964	317.9	49.9
1965	320.9	46.4
1966	329.3	43.6
1967	344.7	43.1
1968	358.0	41.0
1969	368.2	39.0
1970	389.2	39.2
1971	424.1	39.4
1972	449.3	37.9
1973	469.9	35.4
1974	492.7	34.4
1975	576.6	37.2
1976	653.5	38.0
1977	718.9	37.5
1978	789.2	36.5
1979	845.1	35.0
1980	930.2	35.3
1981	1028.7	34.8
1982	1197.1	39.0
1983	1410.7	42.7
1984	1663.0	45.4

*Source: Federal Reserve Bulletin

This brief review of data demonstrates that there are different ways to paint the deficit and debt pictures. An alarmist would use the harsh brush represented by absolute dollar magnitudes while the artist seeking to soften the tones would utilize the more delicate strokes of relative size. But the measurement problem is not confined to absolute versus relative, more serious measurement problems exist.

Measuring Deficits and Debts

Deficits

One fundamental distinction that arises in efforts to assess the fiscal position of the Federal government involves the recognition that economic activity can have a dramatic effect on both outlays and receipts. This has lead to the development of budgets adjusted for the level of economic activity that can be compared with so-called actual budgets. Within each approach there are, however, alternatives.

In calculating the actual budget either the unified or the national income account budget procedures can be utilized. There are two major differences. The unified budget records outlays and receipts when they occur while the national income accounts budget records activities at the time their economic consequences are felt. The national income accounts budget also ignores certain activities because they do not directly affect resources and incomes. Typically the two procedures do not lead to significantly different dollar estimates.

Some economists critize both of these alternative ways of calculating the actual budget position of the government. The central theme of these criticisms is the need to separate government spending into current and capital expense categories.[1] Such a categorization not only recognizes the substantial and economically significant differences between the two kinds of spending, it makes analogies between government and business finances more valid.

As for employment adjusted budgets, the first was developed during the early 1960s, the full or high employment budget. This budget indicates what the government's fiscal position would be if the economy had been operating at some predetermined, low unemployment rate. Such a budget concept is useful because it can be used to more accurately assess the macroeconomic thrust of fiscal policy, making characterization of expansionary and contractionary fiscal policies meaningful. The high

employment budget can also be used to evaluate the macroeconomic consequences of proposed legislative changes. Finally, by comparing the high employment budget with an actual budget, the influence of the current level of economic activity on government revenues and expenditures can be determined.

A second budget adjusting government revenues and expenditures for the level of economic activity emerged during the early 1980s. Rather than estimating outlays and receipts on the basis of some predetermined low rate of unemployment, the cyclically adjusted budget utilizes "middle trend expansion" of GNP.[2] Middle trend expansion is defined as the phase of the business cycle when "real GNP passes its prerecession peak and lasts 12 quarters – unless a downturn begins during those 12 quarters". Thus, after a middle trend expansion is experienced, government revenues and expenditures are calculated as if the economy were operating along the GNP trend line established by the middle trend expansion. This continues until another middle trend expansion is experienced. A presumed advantage of the cyclically adjusted budget over the high employment budget is that it is less arbitrary – the cyclically adjusted budget is periodically updated to reflect the actual behavior of the economy while the high employment budget is not.

As might be expected estimates of the fiscal position of the Federal government can vary widely depending on which budget concept is used to generate the estimates. For example, for calendar year 1983 the actual budget as measured on a national income accounts basis showed a deficit of $178.6 billion (receipts of $641.1 billion and expenditures of $819.7 billion) while the cyclically adjusted budget indicated a $129.2 billion deficit (receipts of $685.6 billion and expenditures of $814.8 billion).[3]

Debt

Just as there are several different ways to calculate the current relationship between Federal government outlays and receipts, there are several different ways to measure the Federal government's debt. There are figures for gross public debt, credit market debt outstanding, and even calculations for cyclically adjusted debt. Instead of defining each of these alternatives, it is more interesting to review a set of debt measurements developed by Eisner and Pieper in an important 1984 study. [4] They begin with the distinction between the par value and the market value of government debt. With rising interest rates market value falls below par value and the decline in total market value will be greater

the larger the proportion of long term securities in the total of outstanding government debt. If par value is set equal to 100, Eisner and Pieper calculate a market index for the composite of all Federal government securities of 92.86 for 1980.

Another dimension to consider is the difference between gross and net debt. Here Eisner and Pieper make a series of calculations. The first is for the par value of total liabilities of the Federal government which is defined as the sum of gross public debt, liabilities of Federal Credit Agencies, liabilities of the Federal Reserve System, and other Federal government liabilities minus the debt held by the Federal government.[5] The next calculation is to convert the par value figure into a market value estimate. The third step is to calculate the par value of Federal government assets which include Federal government financial assets, Federal Credit Agency assets, and Federal Reserve System assets.[6] Then the asset figure must be converted from par value to market value and this involves an increase rather than an decrease: market value of assets is greater than par value because gold is included as part of the government's financial assets and its par value is set at the statutory price of $42 per ounce, well below the current market price. Through this series of calculations net public debt of the Federal government is estimated at $447.5 billion.

But, Eisner and Pieper argue, the process need not end with conversions from market to par and from gross to net. There is also a conversion from nominal to real value. Using 1972 dollars the $930.2 billion nominal debt of 1980 falls to $495.9 billion while the $447.5 billion net debt of 1980 reduces to $238.6 billion. In real terms both gross and net public debt fell between 1977 and 1980. This not surprising given the fairly rapid rise in prices during this period.

Although Eisner and Pieper make several other adjustments, only one additional calculation will be mentioned here. Eisner and Pieper recognize that an argument can be made that the fiscal position of the Federal government may be best measured by its net worth and so proceed to provide net worth estimates. For 1980 total liabilities valued at market equaled $1,154.3 billion; this figure was calculated in the manner described above. 1980 financial assets valued at market summed to $706.7 billion, also calculated in the manner described above. This yields a net debt estimate of $447.5. To obtain net worth the tangible assets and land owned by the Federal government must be estimated and set against

net debt.[7] For 1980 the market value of these tangible assets and land is set at $720.0 billion to yield a current dollar net worth of $279.4 billion. And what may seem surprising to some, the net worth of the Federal government has, in nominal terms, been steadily increasing: from - $84.0 billion in 1950, to $-0.1 billion in 1960, to $48.3 billion in 1970, to $279.4 billion in 1980.

What can be concluded from all this? Clearly there are a variety of ways in which to measure Federal government deficits and debt. Given an a priori position one is likely to find a particluar measure which supports that position. And in assessing the economic impact of deficits and debt, the choice of measures may have a dramatic impact.

Deficits, Debt and Interst Rates

Theoretical Considerations

Conventional interest rate analysis suggests a direct relationship between deficits and interest rates. In a loanable funds framework, government can be either a net borrower or a net lender depending on its budget position. With a deficit the government becomes a net borrower and adds to the demand for funds and exerts upward pressure on interest rates. All other things being equal, the greater the amount the borrowed and demanded , the stronger the tendency for interest rates to rise.

Even within a loanable funds framework, the deficit-interest rate relation can be broken in several different ways. One possibility is offsetting action by the monetary authority, that is, monetization of the debt by the Federal Reserve System. As the Federal Reserve purchases the new debt issued by the Treasury, the money supply is increased as is the supply of loanable funds. In short the increase in the demand for loanable funds is offset by an increase in the supply of loanable funds.

Another possibility draws on the notion that deficits are frequently the result of downturns in economic activity, specifically the result of a recession caused by a decline in investment spending. Thus the recession begins with the decline in investment spending which decreases business demand for loanable funds and the interest rate. The decline in economic activity reduces government tax revenues and increases government spending on such programs as unemployment compensation. The recession, thereby, creates or enlarges the government's deficit and increases the government's demand for loanable funds. Over the cycle whether or not

interest rates increase depends on whether the decline in demand for loanable funds emanating from the business sector is offset by the increase in the demand for loanable funds arising from the deficit financing.

More recently the consequences of budget deficits have been explored from a completely different perspective: the Ricardian Equivalence Theorem as developed by Robert Barro.[8] This theorem argues that deficits will have no impact on interest rates by making two major assumptions: (i) an increase in government debt today is equivalent to an increase in taxes tomorrow and (ii) the present value of government spending is equivalent to the present value of taxes.

The story is as follows. Assume that government currently has a balanced budget and decides to decrease taxes which is to be deficit financed. The first assumption requires that taxes will be eventually raised. The current generation recognizes that this action will raise future taxes and they increase their savings to prevent imposing increased tax burdens on future generations (the current generation's heirs). So the increase in the demand for loanable funds associated with the deficit financing is offset by an increase in the supply of loanable funds generated by the increased saving of the current generation. The second assumption assures that the two changes exactly offset each other and leave the interest rate unchanged.

Of course those who believe that deficits and debt lead to higher interest rates attack the Ricardian Equivalence Theorem by attacking its assumptions. They beleive that it is unlikely that both assumptions can be satisfied. They also argue that the theorem is invalid if the deficit is generated by an increase in government spending which involves greater purchases. For the theorem to be valid for greater purchases an additional restricitve assumption is necessary, namely that government purchases are a perfect substitute for private purchases.[9]

All of this shows that theoretical conclusions regarding the effects of deficits and debt on interest rate depends, as is almost always the case in conceptual arguments, on the particular set of assumptions employed in the analysis. And as is usually the case, the debate turns to empirical evidence for resolution.

Empirical Evidence

There have been a number of empirical studies on the deficit (debt)-interest rate relation even to the point where there are summary articles which attempt to generalize. Before attempting to make summary statements here, it is informative to examine a few in some detail to obtain a flavor of both the kinds of analysis that have been undertaken and the conclusions drawn.

In a recent study Paul Evans takes a historical approach, concentrating on three periods when the Federal government's deficits were more than 10 percent of national income.[10] The three periods are defined as the U.S. experiences during the Civil War, during World War I, and during World War II. Evans applies regression analysis to each of these periods where the regression equation is drawn from a conventional IS-LM model. The basis form of the equation is

$$R = a_0 + a_1 G + a_2 D + a_3 (M/P) + a_4 II + a_5 US + a_6 UM$$

where R = nominal interest rate, G = real government spending, D = the real deficit, M/P = real money stock, II = the expected inflation rate, US = an error term measuring autonomous private spending, and UM = an error term that measures the level of autonomous money demand. According to Evans, his analysis "has not encountered a positive association between deficits and interest rates" Evans concludes his study by concentrating on the very recent past, examing the period October 1979 through December 1983. He finds no reason to alter his original conclusion. As a final point Evans asks why there is no association and accepts the Ricardian Equivalence Theorem as an appropriate explanation.

A second study, by William G. Dewald, concentrates on explaining real interest rates.[11] His analysis involves several different statistical techniques and covers the period 1953-1980. The first technique is a cyclical comparison of both long and short term real rates of interest with real deficits as a percent of high employment GNP. On this basis Dewald concludes that there is "no strong association between real interest rates and real deficits." He then applies regression analysis to both cyclical average data and quarterly data. For the quarterly analysis the defcit variable is combined with a lagged dependent variable while in the cyclical regression the deficit variable appears as the single explanatory variable. The regression results support Dewald's initial conclusion. In summary Dewald states that "other factors offer a more promising

explanation of high real interest rates then budget deficits which have been found to account for very little of recent high real interest rates."

A comparison of the Evans and Dewald studies is insightful because it suggests a robustness for the position of those who believe that there is no defict (debt)- interest rate relation. That is, the two studies examine different periods and employ different sets of explanatory variables in their regressions, yet reach similar conclusions.

This is not to say that there is no empirical support for the position that budget deficits and debt are factors which affect the interest rate. One early study, by Martin Feldstein and Otto Eckstein, argues that over the period 1954-1969 government debt did exert a significant influence on the interest rate.[12] Using a "synthesis of Keynes' theory of liquidity preference and Fisher's model of the role of anticipated inflation, they develop a regression equation which includes the real per capita monetary base, real per capita private GNP, the quarterly inflation rate, and real per capita privately owned Federal government debt as major explanatory variables. Defining the interest rate as the yield to maturity on seasoned Moody's Aaa industrial bonds, they isolate a statistically significant debt effect. That is, over the time period studied, because real per capita debt was decreasing, the fiscal position of the government " reduced the upward movement in interest rates. "The implication is, of course, that an increase in real per capita debt would raise interest rates.

Such a result has been confirmed in more recent studies updating the original Feldstein - Eckstein analysis. Girola finds that debt has a positive and highly significant effect on interest rates.[13] This result is confirmed by Barth, Iden, and Russek.[14] This latter analysis also separated total debt into domestically held and foreign held debt. They find that domestically held debt exerts a statistically significant, positive effect on interest rates while foreign held debt exerts a negative but statistically insignificant effect.

Thus empirical evidence can, like conceptual arguments, be mustered on both sides of the deficit (debt)-interest rate argument. Specific findings are sensitive to whether a deficit or a debt variable is employed (the debt variable tends to be more significant than the deficit variable), the time period examined, how the deficit, debt, and interest rate variables are defined, the specific explanatory variables employed in the regression equation, and the particular econometric procedures utilized.

Conclusions

As is the case with many economic questions, theoretical arguments and empirical evidence can be presented by both sides on the deficit (debt) -interest rate issue. As one recent survey concluded:

> Analysts have found that deficits affect both real and
> nominal interest rates, neither real nor nominal interest
> rates, and nominal but not real interest rates. The con-
> tradictory results point up the complexity of the issues
> and the sensitivity of empirical evidence to the choice
> of methodology, data, and time periods.[15]

Thus it would appear that the controversy regarding Federal government deficit and debt is, indeed, likely to be endless.

Footnotes

[1.] For example see Albert T. Sommers, "The Federal Budget Should be Rebuilt from the Ground Up", Across the Board (May, 1982).

[2.] See "Cyclical Adjustment of the Federal Budget and the Federal Debt," Survey of Current Business (December, 1983).

[3.] See Monetary Trends Federal Reserve Banks of St. Louis (August, 1985).

[4.] R. Eisner and P.J. Pieper, "A New View of the Federal Debt and Budget Deficits". American Economic Review (March, 1984).

[5.] The figures given for 1980, in billions, are $930.2, $188.2, $173.8, $120.1, and $192.5 for each of the categories, respectively, for a total liabilities figure, at par, of $1,220.0.

[6.] For 1980 the figures are $225.3, $192.5, and $173.8 billion, respectively, for a total par value figure of $591.7 billion.

[7.] For 1980 tangible assets included $20.6 billion of residential structures, $251.6 billion of non-residential structures, $202.4 billion of equipment, $132.9 billion of inventories while the market value of land was set at $119.5 billion.

[8.] See chapter 15 in Macroeconomics by R.J. Barro (John Wiley and Son: New York, 1984).

[9.] On this point see "Do Federal Deficits Really Matter?" by J. R. Barth, G. Iden and F. S. Russek (paper presented at the Western Economic Association Meetings, June, 1984)

[10.] P. Evans, "Do Large Deficits Produce High Interest Rates?" American Economic Review (March, 1985)

[11.] William G. Dewald, "Federal Deficits and Real Interest Rates: Theory and Evidence", Economic Review Federal Reserve Bank of Atlanta (January, 1983).

[12.] M. S. Feldstein and O. Eckstein, "The Effects of Deficits on Interest Rates", Review of Economic and Statistics (November, 1970).

[13.] James N. Girola, "Federal Deficits and Interest Rates" (paper presented at the annual meeting of the Society of Government Economists, March, 1984)

[14.] "Do Federal Deficits Really Matter?"

[15.] Charles E. Webster, Jr. "The Effects of Deficits on Interest Rates," Economic Review Federal Reserve Bank of Kansas City (May, 1983)