

# The Effects of Deficits on Interest Rates

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The high interest rates of the past few years have been attributed by some analysts to deficits in the federal budget, which have increased substantially in recent years. Although some of the increase in the actual deficits has been due to declining tax revenues resulting from the recession, the deficits are expected to remain high even as the economy moves toward full employment. Moreover, based on the projected structural imbalance between the government's tax revenues and expenditures, structural budget deficits are expected to grow to unprecedented dimensions by the end of the decade.<sup>1</sup>

Analysts believing that growing deficits cause higher interest rates claim that huge govern-

ment borrowings kept market interest rates from declining appreciably in 1981 and the first half of 1982, even as inflation was slowing and a recession was setting in. As a result of this belief, pressures have built to reduce the size of future deficits. Because much of the recently higher structural budget deficits is due to a tax cut and tax indexing provisions of the Economic Recovery Tax Act of 1981 (ERTA), much of the pressure to reduce deficits has gone into efforts to offset some of the revenue loss from ERTA. These efforts led to the passage of a \$98.3 billion "revenue enhancement" bill on August 19, 1982. Since that time, market interest rates have declined substantially, which some see as confirmation of a direct relationship between the size of the deficit and the level of interest rates.

Contrary to this more popular opinion, other economists believe there is no such direct relationship between deficits and interest rates. They deny that government expenditures financed through borrowing instead of taxes have any direct implications for interest rates.

In view of these conflicting beliefs and their implications for future tax and spending legislation, this article examines the theoretical and empirical evidence regarding the effect of budget deficits on interest rates. The first section examines conditions under which budget defi-

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<sup>1</sup> The structural deficit is sometimes called the high employment deficit. By measuring what the deficit would be at a high employment level of income, it removes the effect of business cycle fluctuations on tax revenues and government spending. The high employment or structural budget deficit is expected by the Office of Management and Budget to increase steadily from \$154 billion in fiscal year 1983 to \$306 billion in fiscal year 1988. See *Budget of the United States Government: Fiscal Year 1984*, Executive Office of the President, Office of Management and Budget, January 1983.

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cits affect interest rates. The second section assumes that the conditions for deficits to affect interest rates are met and analyzes the channels through which these effects could occur. The final section reviews the empirical evidence on whether deficit financing of government spending influences the level of interest rates.

### CONDITIONS FOR BUDGET DEFICITS TO AFFECT INTEREST RATES

Budget deficits result from the government spending more than it collects in tax revenue. Deficits can be thought of as having cyclical and structural components. The cyclical component results from a decline in tax revenue during a recession. The structural component results from a structural imbalance between government spending and taxes and, therefore, persists even when the economy is operating at full employment. Many think the structural component of budget deficits have more important consequences for interest rates and other macroeconomic variables than the cyclical component. For this reason, the analysis here focuses on the effect of structural budget deficits, referred to simply as deficits.

To analyze the impact of deficits, it is useful to isolate the effects of how much the government spends from the effects of how the spending is financed. Thus, it is assumed that the amount of government spending is determined independently of whether the spending is to be financed by borrowing or by taxes.<sup>2</sup> By separating spending from financing effects in this way, it is possible to isolate the effects of substituting

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<sup>2</sup> This assumption allows an examination of whether deficit financing itself affects interest rates. Many analysts speaking of the impact of a deficit are actually talking about the impact of a deficit-financed increase in government spending. This combines the effect of government spending increases with the effect of financing of the increases by debt rather than taxes.

debt financing for tax financing for a given level of government spending.

Economists do not agree on whether the method of financing government spending has important consequences for interest rates and other macroeconomic variables. Some maintain that deficit financing has very different effects from tax financing.<sup>3</sup> Others argue that the method of financing is largely irrelevant. They maintain that whether financed by taxes or by borrowing, a given level of government spending has essentially the same effects on interest rates, income, and other macroeconomic variables. Because the proportion of government spending financed by issuing government debt is considered irrelevant for economic analysis, this hypothesis is often called the irrelevance hypothesis or the Ricardian equivalence principle after David Ricardo, a nineteenth century economist who first put this idea forward.<sup>4</sup> To determine the conditions under which deficits affect interest rates, it is useful to analyze the assumptions underlying the irrelevance hypothesis.

#### Assumptions of irrelevance hypothesis

According to the irrelevance hypothesis, deficit financing of government spending has no impact on aggregate demand or interest rates.

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<sup>3</sup> For an overview of the impact of deficits, see V. Vance Roley, "The Financing of Federal Deficits: An Analysis of Crowding Out," *Economic Review*, Federal Reserve Bank of Kansas City, July/August 1981; Dan M. Bechter, "Budget Deficits and Supply Side Economics: A Theoretical Discussion," *Economic Review*, Federal Reserve Bank of Kansas City, June 1982; or William Buiter and James Tobin, "Debt Neutrality: A Brief Review of Doctrine and Evidence," in *Social Security Versus Private Savings*, ed. by G. Van Fursterberg, New York: Ballinger, 1979, for reviews of some of the economic literature on this topic.

<sup>4</sup> While Ricardo set forth conditions that give rise to what has become known as the Ricardian equivalence theorem that deficits do not affect interest rates, it has been questioned whether he believed that the conditions would actually be met.

The basic assumption underlying this result is that the private sector views government borrowing and taxes as equivalent. In other words, private spending is thought to be independent of the amount of taxes. A tax cut, for example, would not stimulate additional consumption or investment. Instead, the full amount of the resulting increase in after-tax income would be saved. The increased saving, moreover, could be invested in financial assets. Thus, the public would be willing to buy the government securities issued to finance the higher deficit without the inducement of higher yields on the securities. As a result, increased budget deficits that lead to commensurate increases in private saving have no effect on total spending or interest rates.

The reason deficits are assumed to increase private saving is that government debt is an implicit tax liability of the private sector. Interest must be paid on the debt until it is retired. Taxes must be raised to pay the interest on government debt or to retire it sometime in the future. Thus, an increase in government debt raises the private sector's future tax liabilities. The present value of these future tax liabilities, moreover, is exactly equal to the amount of the debt issued to finance the deficit. In other words, reducing taxes without reducing government spending merely transforms explicit current tax liabilities into implicit future tax liabilities. As a result, deficit financing is held to be irrelevant to private spending and therefore to interest rates.

### Shortcomings of irrelevance hypothesis

Several objections have been raised to the realism of the assumptions underlying the irrelevance hypothesis.<sup>5</sup> One is that the private

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<sup>5</sup> Several economists have investigated this issue at a theoretical level. They include Robert Barro, "Are Government Bonds Net Wealth?" *Journal of Political Economy*,

sector may not take full account of the implicit future tax liabilities corresponding to lower current tax liabilities. These future tax liabilities may be incurred, for example, by future generations instead of those benefiting directly from a current tax cut. If so, part of the increase in income from the tax cut might be spent, thereby raising aggregate demand and interest rates. Proponents of the irrelevance hypothesis point out, however, that future generations are heirs of the present generation. If people value the welfare of their heirs as highly as their own, those benefiting directly from a tax cut might still save most of it. In this case, the motive for saving is to increase bequests enough to offset the reduction in the wealth of their heirs from the higher implicit tax liabilities. In other words, intergenerational transfers could provide a motive for saving the entire amount of a tax cut, thereby preserving the validity of the irrelevance hypothesis.<sup>6</sup>

Another objection to the irrelevance hypothesis is that it does not take account of liquidity constraints on consumption spending. The hypothesis assumes that in deciding how much

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Vol. 82, November/December 1974, pp. 1095-117; Paul David and John Scadding, "Private Savings: Ultrarationality, Aggregation, and Denison's Law," *Journal of Political Economy*, Vol. 82, No. 2, Part 1, March/April 1974, pp. 225-49; William Buiter and James Tobin, "Debt Neutrality: A Brief Review of Doctrine and Evidence," in *Social Security Versus Private Savings*, ed. by George Van Fursterberg, New York: Ballinger, 1979; and Preston Miller, "Higher Deficit Politics Lead to Higher Inflation," *Quarterly Review*, Federal Reserve Bank of Minneapolis, Winter 1983.

<sup>6</sup> This is not to say that the distribution of who pays cannot be affected but merely that resources cannot be shifted to the present from the future. However, a transfer of resources from current investment to current consumption can result in less future output. While the government must retire every individual piece of debt that it issues, there is no reason why it has to pay off the entire debt. Nothing in the analysis would change if every time government financed debt came due it was settled by the issuance of new debt so that the government effectively never paid back any of the funds borrowed.

to spend in a given period, individuals base their decision on their expected lifetime income instead of on their income in that period.<sup>7</sup> Because of liquidity constraints, however, some people may not be able to achieve the preferred allocation of consumption over their lifetimes. Young adults, for example, often have only meager assets even though their potential for future earnings is considerable. Unable to draw down assets or to borrow against future income, they may not be able to spend as much as they would like. As a result, an increase in disposable income resulting from a tax cut might lead such people to increase spending even when they fully realize that lower taxes now must be offset by higher taxes sometime in the future. If a substantial number of consumers are constrained this way, the additional liquidity from a tax cut could raise total spending and interest rates.

Arguments for and against the irrelevance hypothesis cannot be resolved by economic theory alone. The arguments revolve around how people perceive government debt and the extent to which consumption spending is affected by the liquidity from current income. The conditions under which deficit financing of government spending affects interest rates are clear, though. Even if only some of an increase in income resulting from a tax cut is spent, deficit financing leads to higher total spending and higher interest rates. Either of two conditions will lead to this result. First, if people do not take full account of the future tax liabilities implied by current deficits, they will perceive a current tax cut as increasing their wealth and, therefore, will increase spending. Second, if

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<sup>7</sup> See, e.g., Walter Dolde and James Tobin, "Wealth, Liquidity, and Consumption," *Consumer Spending and Monetary Policy*, Federal Reserve Bank of Boston, 1971, p. 99-147; or Frederic Mishkin, "Illiquidity, Consumer Durable Expenditure, and Monetary Policy," *American Economic Review*, Vol. 66, September 1976, pp. 642-54.

some people cannot consume what they would like because they cannot borrow against future labor income, they will use the additional liquidity provided by higher current income resulting from a tax cut to increase their spending. Under either condition, deficit financing will be accompanied by higher interest rates.<sup>8</sup>

### CHANNELS THROUGH WHICH DEFICITS MAY AFFECT INTEREST RATES

It is assumed in this section, that the conditions are met for deficit financing of government spending to raise aggregate demand. Under this assumption, the various channels through which increased deficits would raise interest rates are analyzed. For this purpose, a distinction is made between nominal and real interest rates and between long-run and short-run effects of deficits.

Abstracting from tax rate effects, the nominal or market interest rate is equal to the real interest rate plus the expected rate of inflation.<sup>9</sup> To receive a given real rate of return on their investment, investors require that an inflation premium be included in the interest paid on assets to compensate for the declining purchasing power of the dollar caused by inflation. Borrowers are willing to pay this premium be-

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<sup>8</sup> The recent discussion of the effect of Social Security on private savings centers on exactly this point—whether the reduction in savings caused by payments in the future, expected with reasonable certainty, offsets future tax liabilities of an equivalent value but uncertain incidence.

<sup>9</sup> Writing the nominal interest rate as the sum of the real interest rate and the inflation premium is an oversimplification that ignores, among other things, the effects of the tax system. Since nominal interest payments are taxable income to the lender and tax deductions to the borrower, to assure the lender the same rate of return in the presence of an inflation premium as in the absence of one, the nominal interest rate would have to rise by more than the inflation rate. For example, if the real rate is 3 percent and the lenders are in a 50 percent marginal tax bracket, an inflation rate of 10 percent will require that interest rates rise to 23 percent, not 13 percent.

cause they realize that the loan will be repaid in cheaper dollars. Since few financial contracts are indexed to inflation, the rate of inflation expected when a loan is made determines the inflation premium included in the nominal interest rate.

An increase in aggregate demand resulting from deficit financing of government spending could raise nominal interest rates by causing either higher real rates or an increase in inflation expectations. The magnitude of the long-run and short-run effects on these two components of nominal interest rates can be different.

### Long-run effects

Persistent budget deficits lead to higher real interest rates in the long run. Real rates rise because the tendency for deficits to increase aggregate demand must eventually be offset to bring total real spending on goods and services into line with the capacity to produce goods and services.

To see why this happens, assume that budget deficits do not affect the economy's long-run capacity to produce.<sup>10</sup> For total real demand to equal the fixed supply of goods and services,

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<sup>10</sup> For simplicity, the economy's long-run productive capacity is assumed to be independent of budget deficits. This is somewhat unrealistic. The lower investment caused by budget deficits would probably be associated with a reduction in the economy's capacity to produce. Higher real interest rates and lower investment caused by deficits would tend eventually to reduce the private capital stock, thereby lowering the aggregate supply of goods and services. This tendency could be offset to some extent, however, by other factors. If the deficit resulted, for example, from government purchases to build roads, dams, and bridges, the effect of the reduction in the private sector's capital could be offset, at least in part, by an increase in the economy's infrastructure, with little net effect on the nation's total capital stock. Moreover, if the deficit resulted from tax cuts that increased the general willingness to work, save, and invest, then the benefits of these "supply-side effects" could counter the negative impact of high real interest rates on the nation's productive capacity.

greater demand for goods and services in one sector must be offset by less demand in some other sector. It is generally assumed that investment spending, expanded to include household spending on housing and consumer durables as well as business spending on plant and equipment, is the only component of aggregate demand that is interest sensitive. Thus, the increase in consumption purchases caused by lowering taxes and issuing government debt must raise real interest rates enough to cause a commensurate reduction in investment spending.

Higher real interest rates may or may not be associated with higher nominal interest rates in the long run. If the inflation rate expected over very long periods is independent of the associated fiscal policy, nominal interest rates would increase by the amount of the increase in real interest rates. In contrast, if higher budget deficits result in expectations of permanently higher inflation, nominal interest rates would rise more than real interest rates.

Since inflationary expectations depend more on monetary policy than fiscal policy and since monetary policy cannot keep deficits from causing higher real interest rates in the long run, it seems unlikely that expectations of long-run inflation would be affected by the magnitude of budget deficits. The increase in real rates that accompanies higher budget deficits in the long run is a real phenomenon. It is not changed by the accompanying monetary policy or other financial considerations. Thus, it seems likely that in the long run budget deficits would not affect inflationary expectations and, therefore, that nominal interest rates would increase by the same amount as real interest rates. The adjustment of real and nominal interest rates to the higher long-run equilibrium can be affected, however, by the short-run response of monetary policy and financial markets to budget deficits. For this reason, it is

useful to analyze the alternative adjustment to long-run equilibrium under differing assumptions regarding monetary policy.<sup>11</sup>

### Short-run effects

Real interest rates would adjust relatively quickly to increased budget deficits if monetary policy were unchanged. The effect of deficits on real interest rates is transmitted quickly to real spending decisions through financial markets. The increase in the demand for money associated with the increase in nominal spending caused by the deficit would result in a liquidity shortage if not offset by an increase in the supply of money by the Federal Reserve. As a result, real interest rates would rise as needed to induce the public to limit its money balances to the available supply. Looked at differently, people buying government debt issued to finance the deficit require higher real yields on government securities to compensate for the lower proportion of money balances in their portfolios.

Even without an increase in the money supply, nominal interest rates would rise temporarily more than real interest rates as a result of budget deficits. The higher aggregate demand caused by the deficits would raise the equilibrium price level. To achieve this higher price level, the rate of inflation must rise temporarily. To the extent that people anticipated the in-

flationary consequences of the deficits, the inflation premium in nominal interest rates would rise. Thus, nominal interest rates would rise not only because of the increase in real rates but also because of the higher expected inflation resulting from budget deficits.

The persistence of the two effects on nominal interest rates would differ, however. The increase in inflation necessary to achieve the new equilibrium price level is only temporary. The corresponding increase in the inflation premium in nominal interest rates would, therefore, also be temporary. In contrast, the increase in real interest rates would last as long as the deficit. Real interest rates would continue to increase, in fact, as the increase in the price level reduced the real value of the money stock, thereby, reinforcing the scarcity of liquidity initially caused by the deficit.

Accommodative monetary policy could be used to postpone the rise in real interest rates. By increasing its purchases of government securities, the Federal Reserve could monetize part of the debt, thereby increasing the monetary base. Monetization would allow depository institutions to increase growth in the supply of money and credit, temporarily averting the liquidity shortage associated with the increase in aggregate demand resulting from budget deficits. The increased demand for money would then be accommodated by an increased supply of money, with little or no initial change in real interest rates.

Accommodative monetary policy might not prevent an immediate increase in nominal interest rates, however. More expansionary monetary policy would reinforce the expansionary effect of budget deficits on aggregate demand, leading to more upward pressure on the price level. To the extent that financial markets anticipated the associated inflation, the inflation premium in nominal interest rates would rise. Market interest rates might rise even

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<sup>11</sup> This analysis assumes that the demands for money and credit are related primarily to values of such short-run nominal variables as nominal income. If, instead, money and credit demands are functions solely of such long-run real variables as real permanent income, monetary policy would not have even a temporary effect on real interest rates or other real variables. Adjustments would be made solely on the basis of expected long-run values of the real money stock and real credit supply. The Federal Reserve could not affect perceived liquidity and, therefore, could not affect the timing or magnitude of adjustments in real interest rates or any other real variables.

more initially than without monetary accommodation. Moreover, unless monetary growth continued to increase indefinitely, leading ultimately to hyperinflation, growth in the real money stock would sooner or later return to the initial rate. When money growth returned to what it was initially, real interest rates would rise. Thus, the most monetary accommodation can do is postpone the increase in real rates resulting from budget deficits.

Alternatively, monetary policy might be directed toward offsetting the expansionary impact of deficits. If the Federal Reserve were committed to reducing inflation at the same time budget deficits were increasing, the increase in real interest rates would be especially pronounced. For monetary policy to be disinflationary, it must cause a net reduction in aggregate demand. Disinflationary policy, therefore, must reduce monetary growth more than enough to offset the stimulative impact of budget deficits. Because of the resulting liquidity shortage, real interest rates would increase dramatically under such a policy. The aggregate supply of money would be declining at the same time as the government was trying to induce the public to buy more government debt. Real yields would have to rise substantially to make the public willing to hold much more of its financial assets in the form of government bonds instead of money balances.

Some analysts have interpreted the high market interest rates in 1981 and early 1982 as resulting from this sort of imbalance between monetary and fiscal policy. At the same time the ERTA was leading to very large current and prospective structural budget deficits, the Federal Reserve was reducing growth of the money supply to bring down inflation. As a result, declining inflation was not matched by commensurately lower nominal interest rates. Real interest rates remained unusually high. Not until the last half of 1982 did market rates

decline substantially, restoring real rates to more normal levels.

If this description of recent experience is valid, further declines in nominal interest rates can be expected to the extent that further progress is made in reducing inflation and, more importantly, expectations of future inflation. Real interest rates, however, could remain high unless the size of structural budget deficits is brought down. Monetary accommodation of the prospective deficits would, at most, be only a temporary palliative for the adverse consequences of high budget deficits.

### EMPIRICAL EVIDENCE

Economists have used various empirical and statistical techniques in examining the effect of budget deficits on interest rates—unfortunately, with no consensus. 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 contradictory results point up the complexity of the issues and the sensitivity of empirical evidence to the choices of methodology, data, and time periods. It is useful, nevertheless, to examine the available evidence.

The empirical literature on the effect of deficits on interest rates can be divided into three main areas. One examines whether budget deficits affect aggregate demand and, therefore, real interest rates—that is, whether the irrelevance hypothesis holds. Another investigates the extent to which deficits affect nominal interest rates by raising expected inflation, as for example, by leading to higher monetary growth through monetization of government debt. The other disregards the channels of influence and focuses instead on the overall relationship of market interest rates to budget deficits. This section analyzes a representative sample of recent research in each of these areas.

## Irrelevance hypothesis

An article by Kochin in 1978 seemed to confirm the hypothesis that the method of financing government spending has no effect on total spending or interest rates.<sup>12</sup> If bond financing of government spending is seen as being equivalent to tax financing, consumption spending should not change when deficits increase. Kochin found that deficits and taxes have roughly the same effect on consumption spending for nondurables. He interpreted his findings as indicating that deficits do not affect total spending or interest rates.

In contrast, subsequent studies by Buiter and Tobin and by Feldstein led to the opposite conclusion.<sup>13</sup> Buiter and Tobin criticized both Kochin's statistical method and his theoretical framework. Using a slightly different version of Kochin's model and more recent data, they found no evidence to support the irrelevance hypothesis. However, they were not able to reject the hypothesis on a strict statistical basis.<sup>14</sup> Similarly, in an even more recent study, Feldstein used a different model and more sophisticated empirical techniques and found that deficits raise aggregate demand and, by implication, real interest rates. His empirical results, however, could be interpreted differently.

No definite conclusions can be drawn as to whether debt financing is more expansionary than tax financing. The evidence suggests that

debt financing may be somewhat more expansionary. Whether this is because people do not fully discount the implicit future tax liabilities that accompany deficits or because consumption decisions are affected by the liquidity current income affords, deficits seem to lead to higher aggregate demand and higher real interest rates. However, because the empirical evidence is mixed, no firm conclusions are warranted.<sup>15</sup>

## Effect of deficits on monetization of debt and inflation expectations

Several economists have tried to determine whether deficits have resulted in more expansionary monetary policy due to the Federal Reserve's monetization of debt. Barro examined the determinants of the rate of growth of the money supply.<sup>16</sup> His empirical results suggest no systematic relationship between budget deficits and expected money growth. In a later study using a version of Barro's model, Hamburger and Zwick found some evidence of a positive relationship between deficits and expected money growth.<sup>17</sup>

Niskanen took another approach to the relationship between monetary growth and deficits. He estimated a monetary policy reac-

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<sup>12</sup> Lewis Kochin, "Are Future Taxes Anticipated by Consumers?" *Journal of Money, Credit, and Banking*, Vol. 6, August 1978, pp. 385-94.

<sup>13</sup> William Buiter and James Tobin, in *Social Security Versus Private Savings*; Martin Feldstein and Otto Eckstein, "The Fundamental Determinants of the Interest Rate," *Review of Economics and Statistics*, Vol. 52, November 1970, pp. 363-75.

<sup>14</sup> Tobin and Buiter find that disposable income, taxes, and their own measure of the deficit are so highly correlated that the independent influence of each variable cannot be determined.

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<sup>15</sup> Paralleling the empirical literature on deficits is the empirical literature on Social Security. See Martin Feldstein, "Perceived Wealth in Bonds and Social Security: A Comment," *Journal of Political Economy*, Vol. 84, April 1976, pp. 331-36; Martin Feldstein and Andrew Pellechio, "Social Security and Household Wealth Accumulation: New Microeconomic Evidence," *Review of Economics and Statistics*, 1979, Martin Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Accumulation," *Journal of Political Economy*, Vol. 82, October/November 1974.

<sup>16</sup> Robert Barro, "Unanticipated Money, Output and the Price Level in the United States," *Journal of Political Economy*, Vol. 86, August 1978, pp. 549-80.

<sup>17</sup> Michael Hamburger and Burton Zwick, "Deficits, Money and Inflation," *Journal of Monetary Economics*, January 1981, pp. 141-50.

tion function to explain monetary growth and found that deficits have led the Federal Reserve to increase monetary growth.<sup>18</sup> His results were very sensitive, however, to changes in the sample period over which the relationship was estimated. Blinder took a similar approach, but instead of using monetary growth as the measure of Federal Reserve policy, he used the change in bank reserves relative to GNP. He also allowed for the possibility that the extent to which deficits are monetized depends on the prevailing inflation rate.<sup>19</sup> He found that Federal Reserve policy is slightly more expansionary when deficits are higher but that monetization of the deficit varies inversely with the rate of inflation. From this, he concluded that monetization of deficits has not caused much inflation.

Overall, empirical evidence does not confirm much effect of budget deficits on expected inflation and nominal interest rates through monetization of government debt. Although there is some evidence that past deficits were accompanied by more expansionary monetary policy, the effect was small. The relationship between monetary growth and deficits, moreover, has been estimated for periods before the October 1979 change in Federal Reserve operating procedures, a change that could have further reduced the responsiveness of monetary growth to the size of the deficit. Thus, empirical evidence does not strongly support the view that the high nominal interest rates of recent years have resulted from a belief in financial markets that the Federal Reserve will monetize some of the large budget deficits, thereby reigniting inflation.

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<sup>18</sup> William Niksanen, "Deficits, Government Spending, and Inflation: What Is the Evidence?" *Journal of Monetary Economics*, August 1978, pp. 591-602.

<sup>19</sup> Alan Blinder, "On the Monetization of Debt," National Bureau of Economic Research Working Paper 1052.

### **Overall relationship between deficits and interest rates**

Several analysts have tried to construct a general framework of interest rate determination by integrating the various channels through which deficits can affect interest rates. Feldstein and Eckstein, for example, have explained interest rates by combining standard liquidity preference theory with the assumption that nominal interest rates reflect the expected rate of inflation.<sup>20</sup> They assumed that nominal interest rates depend on the real quantity of money, real income, inflation expectations, and government debt outstanding. Their results suggest a small but statistically significant positive effect of government debt on nominal interest rates.

Plosser has used a somewhat different approach to examine the relationship between government debt and interest rates. His approach does not require a specific model of interest rate determination but only a list of variables likely to affect interest rates.<sup>21</sup> Assuming that financial markets are efficient in the sense that current yields reflect all available information, he postulated that only unexpected changes in privately held government debt, Federal Reserve holding of government debt, government purchases of goods and services, and other variables would result in changes in interest rates. His findings suggest that unexpected increases in government spending lead to an increase in interest rates but that the method of financing the higher spending has no effect. Plosser interpreted his results as indicating that the amount of government debt the public

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<sup>20</sup> Martin Feldstein, "Government Deficits and Aggregate Demand," *Journal of Monetary Economics*, Vol. 9, January 1982, pp. 1-20.

<sup>21</sup> See Charles Plosser, "Government Financing Decisions and Asset Returns," *Journal of Monetary Economics*, Vol. 9, May 1982, pp. 245-52.

holds has little influence on interest rates, though he admitted that his results depend heavily on the method used in estimating expected values of the variables he assumed to affect interest rates.

As for other empirical evidence, results regarding a direct relationship between deficits and interest rates are inconclusive.

### **SUMMARY AND CONCLUSIONS**

Recent large budget deficits have been accompanied by high nominal and real interest rates. Budget deficits, moreover, are expected to remain high for the foreseeable future, causing some to wonder if interest rates will sharply increase again as the economy moves toward full employment.

Theoretical and empirical evidence does not

resolve whether budget deficits influence interest rates, or how. Arguments can be marshalled in support of the view that deficits do not affect interest rates at all. The assumptions underlying these arguments can be questioned, but empirical evidence does not necessarily contradict the view that budget deficits have no effect on interest rates, real or nominal. To the extent that such an impact occurs, the magnitude appears small. However, as further evidence is accumulated regarding the relationship between deficits and interest rates during a time when the size of the deficits is unprecedented and the Federal Reserve's commitment to disinflation is increasingly convincing, it may be possible to identify more precisely the magnitude and the channels of the impact of deficits on interest rates.