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How Big Is Your Share of Government Debt?

*Dean Croushore**

Government debt grew so dramatically in the 1980s that a taxpayer might well ask: "Now how much do I owe?" And perhaps more to the point: "Will my taxes go up to pay for it?"

It's true that the \$150 billion average budget deficits of the 1980s tripled the national debt over the last 10 years. But that doesn't mean that the average taxpayer's debt burden is now

three times as heavy. There are several mitigating factors.

First, population and prices have also increased, so the rise in real debt per capita has not been so dramatic. Second, real income per capita, and hence the average taxpayer's ability to pay the debt, has gone up too. And finally, the government has been accumulating assets, not just liabilities, over the years. Those assets can help the government rationalize the size of its debt.

But even so, some disturbing trends are beginning to emerge. The government is accumulating debt more rapidly than assets. If this

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trend continues, higher tax rates or reduced government services seem inevitable.

GOVERNMENT DEBT

One look at the current trend in government debt and it is easy to see why people are alarmed. Federal debt (the total of all past annual deficits) has skyrocketed in recent years (Figure 1). Prior to World War II the federal debt was less than \$100 billion. Financing the war ran the debt up to \$250 billion, and it grew slowly to \$350 billion by the early 1970s. But the real acceleration began in 1975. Since then the debt has increased to over \$2200 billion—a 13 percent annual rate of increase.¹ What’s behind this rapid growth?

A major part of the reason for the run-up in government debt is high inflation.² If we adjust for the impact of inflation (using the GNP deflator), we measure the *real debt*. The real federal debt declined through the 1950s, the 1960s, and the first half of the 1970s. It began rising in 1976, then accelerated sharply beginning in 1982. Overall, though, the real federal debt hasn’t grown nearly as rapidly as the

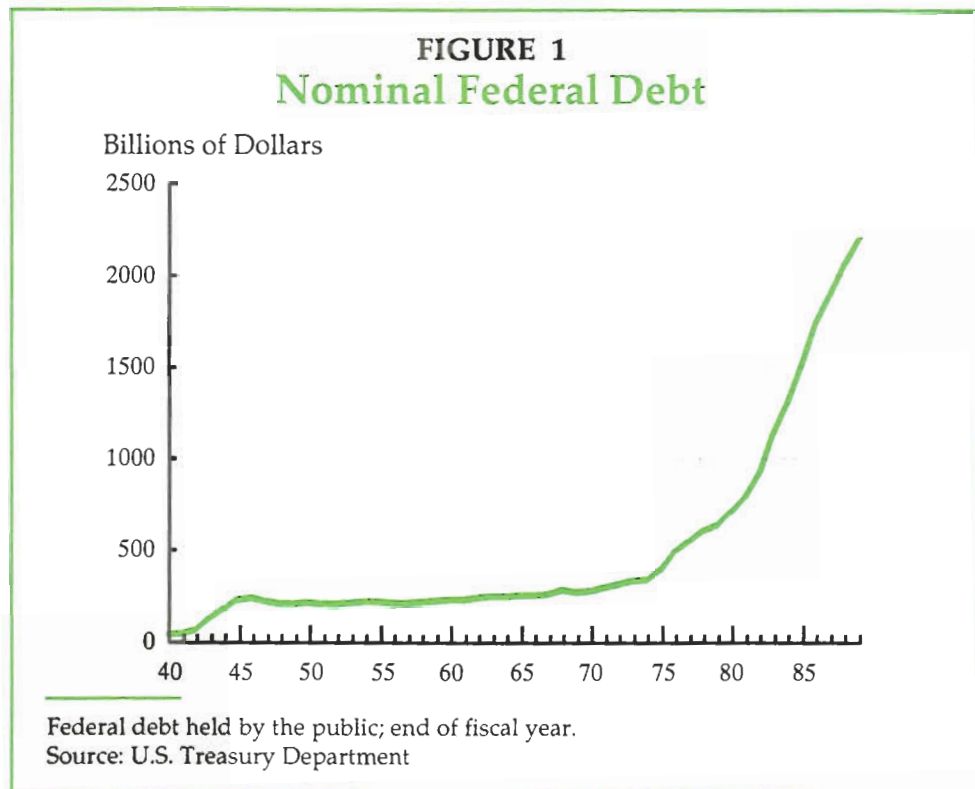
¹The debt figure (\$2.2 trillion) used here is the gross nominal federal debt (which now exceeds \$3 trillion) minus federal debt held by federal agencies and trust funds (such as social security).

²Prices rose about 30 percent in the 1950s, 30 percent in the 1960s, 100 percent in the 1970s, and 60 percent in the 1980s. On average, an item priced at \$1 some 40 years ago now costs over \$5.

nominal debt. Real debt has grown at a 7 percent annual rate since 1975, much lower than the 13 percent rate for nominal debt.

But the real federal debt isn’t the proper concept for a worried taxpayer. It ignores the change in the market value of government debt caused by changes in market interest rates. It ignores the fact that the government owns financial assets on which it receives interest. It ignores the debt of state and local governments. And it ignores the growth of population and productivity over time.

No valuation of government debt would be complete without adjusting for changes in interest rates. The debt of the government is recorded at its value when issued (book value). However, when market interest rates change, the current market value of existing government debt changes inversely. For example, when interest rates fall, as they did in the mid-1980s, the government suffers an implicit capital loss on its existing debt because it has borrowed at an interest rate above that prevailing



in the market. On the other hand, when interest rates rise, as they did in the late 1970s, the government gets an implicit capital gain for having borrowed earlier at a lower interest rate.³

Another adjustment to the debt numbers comes from realizing that the government owns various financial assets, including currency, bank deposits, gold, foreign currency, special drawing rights on the International Monetary Fund, mortgages and other loans, and taxes receivable. These financial assets are the opposite of debt, so we subtract their market value from the debt number to arrive at the *net debt*.

We should take account of the debt of state and local governments using the same adjustments we used to arrive at the market value of federal government debt. State and local governments have balanced-budget laws that limit the types of projects for which they may borrow; even so, most of these tend to be investment projects that are self-financing. As a result, state and local governments have relatively little debt compared to the federal government.

Real Net Debt. The adjustments to debt just described, as well as the asset and net-worth adjustments described later on, were calculated first by Robert Eisner and Paul J. Pieper in 1984, and again by Eisner a couple of years later.⁴ Making these adjustments gives us the government's *real net debt*: the debt (adjusted

for inflation and changes in interest rates) minus the real market value of the government's financial assets.⁵

Estimating the market value of any asset or liability typically requires making some assumptions, and different assumptions will lead to different estimates. Given the measurement problems inherent in such calculations, we shouldn't make too much of the real net debt level (or the calculations of real tangible assets or net worth) for any one year. But the trends in these measures over longer periods illustrate how the government's fiscal position has been changing.

The real net debt figure alone may not give a true picture of debt's importance in the economy, because it ignores the growth of population and the increased productivity of workers. As productivity and the population grow, so does national output, which we measure by GNP. So by looking at the ratio of real net debt to real GNP, we can compare government debt to our capacity to repay it (Figure 2).

State and local government debt hasn't changed much over time, so the ratio of total government net debt to GNP has moved closely with the ratio of federal government net debt to GNP. Fighting World War II pushed the government's real net debt above real GNP. (The ratio of real net debt to real GNP exceeds 1.) Over time, we gradually worked off the war debt, mostly through economic growth. In the late 1970s, during the Carter Administration, the nominal federal debt increased 44 percent, but inflation raised the price level 39 percent and real GNP grew 12 percent. Consequently, the net-debt-to-GNP ratio fell, even though nominal budget deficits were large. In the 1980s, the big deficits of the Reagan Administration raised the ratio of net debt to GNP

³The capital losses and gains on government debt in the 1970s and 1980s were mostly due to unexpected changes in the inflation rate. There is an incentive problem here because if the government causes inflation to rise unexpectedly, it can reduce the market value of its outstanding debt (as occurred in the 1970s), while if inflation is lower than expected (as in the 1980s), the market value of government debt rises.

⁴Eisner and Pieper have subsequently updated the data through 1988. I am indebted to them for providing me with updates of their original data, used in Figures 2, 3, and 4. For more details on their calculations, see Eisner and Pieper (1984) and Eisner (1986).

⁵Federal debt owned by the Federal Reserve System (about 10 percent of total federal debt) is netted out of the real net-debt figure.

from a low of 14 percent in 1980 to a high of 40 percent in 1988.

The rise in the ratio of net debt to GNP in the 1980s might lead a taxpayer to believe that the government will eventually raise taxes to reduce the debt. But debt alone tells only half of the government's financial story. It is important to look at *both* sides of the government's balance sheet—both its debt and the assets it acquired when incurring the debt. A

useful way of putting government debt into perspective is to think of yourself, a citizen and taxpayer, as a shareholder in the government. Of course, unlike a shareholder in a corporation, you can't sell your share in the government. But when government debt rises, you implicitly incur a liability. What's more, you also own a portion of any associated increase in government assets. If those assets produce returns in the future, then you stand to benefit. How has the value of your share in government changed over time?

THE GOVERNMENT'S TANGIBLE ASSETS AND NET WORTH

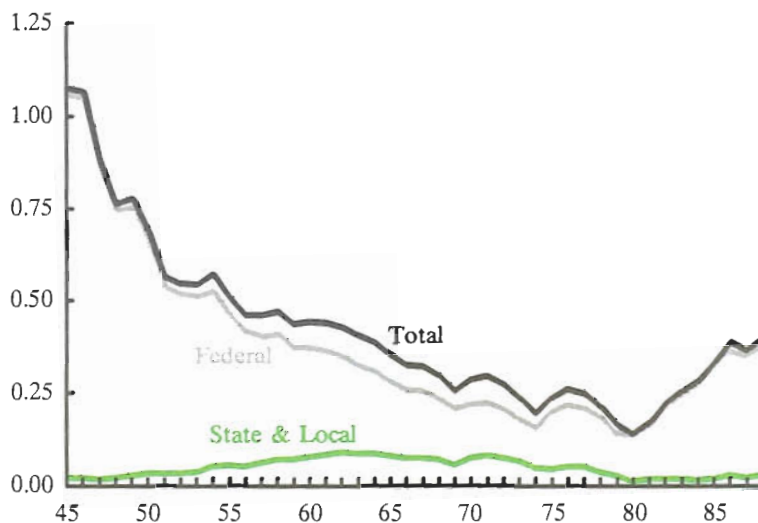
The government owns a diverse set of tangible assets: roads and bridges, parks and recreation areas, buildings for operations and schools, capital equipment, land, and mineral rights.⁶ Assessing the value of these assets is difficult. An analyst using such data might want to adjust the numbers to reflect a subjective belief about which assets should be in-

cluded in the count based on some criterion. For example, if land values rise, the government's asset value rises too. Yet, taxes would probably not drop unless the government sells the land. Similarly, acquiring more military hardware might enhance national security, but it's unlikely to improve national productivity growth. Distinguishing between different types of assets may be important for some purposes. But for the purpose of assessing the government's balance sheet, it is better to put some value on these assets rather than ignore them.⁷

⁶Government *financial* assets (loans, gold, and cash) were subtracted from government's gross debt to obtain government net debt. The government's nonfinancial assets are its *tangible* assets. Asset data come from the Federal Reserve's *Flow of Funds* tables, after adjustment for changes in market value. See Eisner and Pieper (1984) and Eisner (1986).

⁷Precise measurement of the value of these assets is often difficult, as Boskin and others (1989) discuss. Most importantly, only tangible assets get counted, because they can be

FIGURE 2
The Ratio of Government Net Debt to GNP



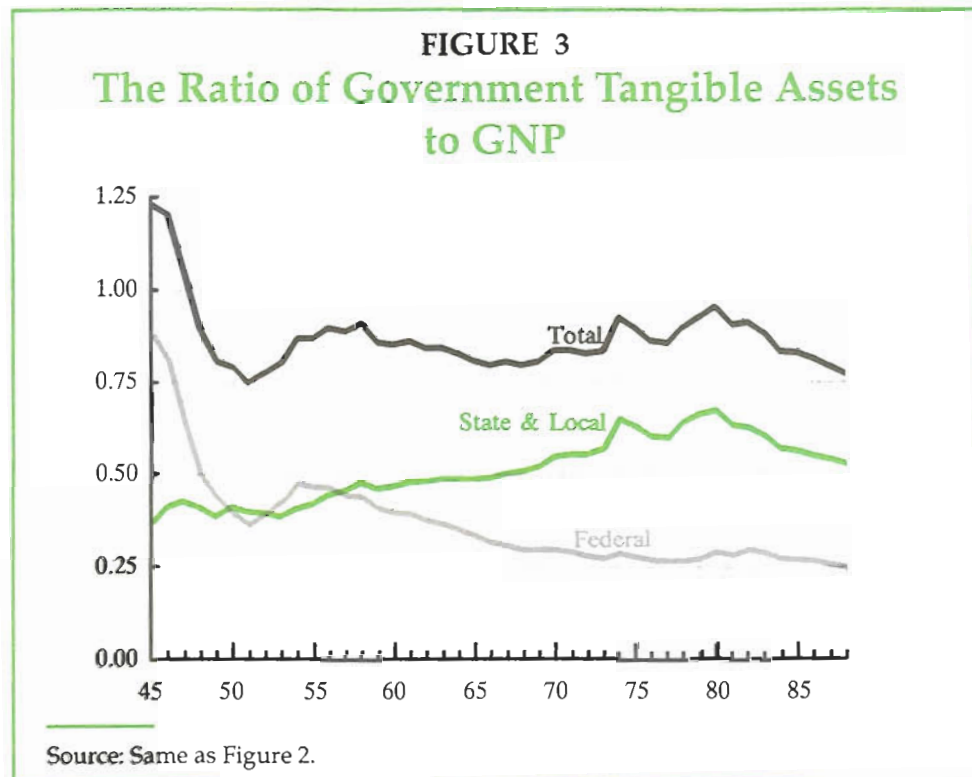
Source: Unpublished data provided by Robert Eisner and Paul Pieper, based on their previously published work. For their methodology and earlier data, see Eisner and Pieper (1984) and Eisner (1986).

After adjustment to reflect market values, the numbers calculated by Eisner and Pieper show that the ratio of total government tangible assets to GNP is about the same today as it was after World War II (Figure 3). The ratio has declined steadily since 1980, however. The growth in government assets from 1949 to 1980 was due largely to growth in state and local assets. But even though these assets are owned by state and

local governments, much of the funding for them came from the federal government through grant-in-aid programs. Accordingly, it is more appropriate to look at total government (federal plus state and local) debt and assets than at each level of government separately.

Government Net Worth. The government's net worth is the difference between the government's tangible asset holdings and its real net debt. If net worth rises over time, the government is accumulating assets more rapidly than it is incurring debt. If those assets produce returns over time, either directly to the government or indirectly via an expanded economy, thereby providing a larger tax base, then the government may be able to reduce taxes or increase government services in the future. Declining net worth, on the other hand, is more

measured. The value of intangible assets, such as the level of education (much of the funding for which is provided by the government), is too difficult to measure accurately, but may be more important than the things we can measure.



likely to imply higher future taxes or lower government services.

In the extreme, when a government's net worth deteriorates substantially and impairs its ability to service its debt, the risk that the government will default on its debt rises and lenders may be hesitant to make additional loans. Since default on debt would severely limit future borrowing, governments usually act by raising taxes or cutting services when their net worth deteriorates.

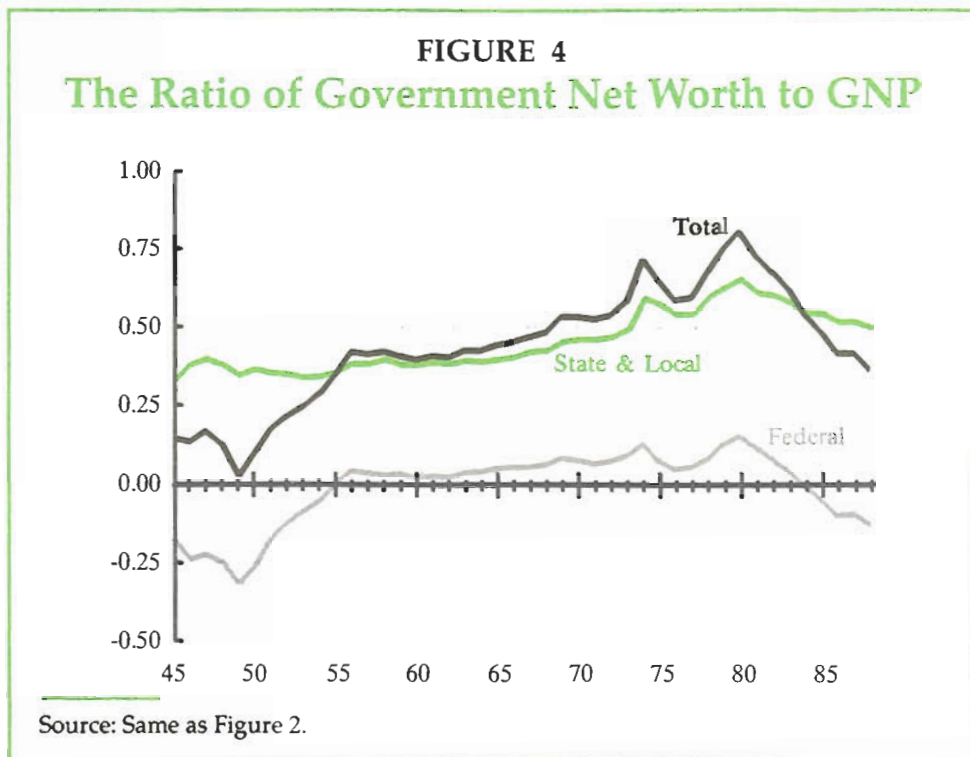
Looking at government net worth can help the taxpayer understand the implications of changes in the government budget deficit. In recent years, for example, the U.S. government sold off land or mineral rights solely for the purpose of reducing the deficit. The deficit was reduced, as was net debt, but so were government assets. If the land or mineral rights were sold at market value, then government net worth didn't increase even though the deficit was smaller.

Net worth *increased* substantially in the U.S.

from 1950 to 1980, at all levels of government (Figure 4), but has declined sharply ever since. Net worth is still positive, but the big deficits of the 1980s have taken their toll, cutting the ratio of net worth to GNP in half. We have given back two decades of growth in net worth relative to GNP, and today's net-worth-to-GNP ratio is about equal to that in the mid-1950s.

Federal government net worth was positive from 1955 to 1983, but has been negative in recent years, according to Eisner and Pieper's latest data. You needn't become alarmed about this negative net worth, but should keep in mind that the federal government provides substantial grant-in-aid money to state and local governments. Thus, the most appropriate net-worth figure is that for the total government, which combines federal-government net worth with state-and-local-government net worth. However, it is legitimate to worry about the downward trend in total government net worth in the 1980s.⁸

Future Promises. The government has many liabilities that are not measured. If included in the balance sheet, they will make the government's net worth much smaller. These are government's financial promises for the fu-



ture. Many government activities cost taxpayers nothing when they are enacted, but may have sizable costs down the road. Government loan programs, deposit insurance, pension liabilities, and the social security system are all examples.

The recent savings and loan deposit-insurance crisis—which is now expected to cost the government about \$200 billion, excluding interest—shows how costly this kind of promise can be.⁹ The S&L deposit-insurance system has been reformed, but it remains an implicit promise on the future. In addition, many government loans or loan guarantees (for example, many student loans) are delinquent and likely to go into default, and the government has generally not provided loan-loss reserves to cushion the blow. Recently, Boskin, Robinson,

⁸Keep in mind, too, that the data reported in Figures 2, 3, and 4 may be subject to measurement problems. Again, trends in the data are probably more reliable than levels for any one year.

⁹This estimate is L. William Seidman's, Chairman of the FDIC and RTC. See "Seidman Says Bailout Could Cost \$200 Billion Plus Interest," *American Banker* (July 31, 1990).

and Huber estimated these contingent, unfunded liabilities of the government at \$145 billion for loan-loss reserves and \$50 billion for deposit insurance as of 1985. More recent evidence from the savings and loan crisis reveals the latter figure to have been far too low. Even more important are the implicit promises of the social security system (see *Capital Budgeting and Social Security*).

Unfortunately, because the future growth

rate of the economy and future interest rates are so uncertain, there are no reliable estimates of these liabilities.¹⁰ Consequently, we don't include them in our net-worth measure. Furthermore, the net-worth figures also ignore the value of government's investment in human

¹⁰See Boskin (1988) for a revealing discussion of the large uncertainty in the social security projections.

Capital Budgeting and Social Security

Many economists are concerned about how the social security system will be funded in the next century. Until recently, social security was almost entirely a pay-as-you-go system, in which current workers were taxed to pay retirees' benefits.

The system worked fine as long as the population grew smoothly. But serious problems result in such a system whenever the growth rates of different age groups differ substantially—as do the baby-boom generation, born in the years between 1948 and 1964, and the generation born since 1964. The decline in the birth rate since 1964 implies that, around the period 2030-50, there will be more retirees per worker than ever before.

To accommodate this demographic change, the government has gradually raised the social security tax rate over time, producing a surplus in the social security fund that can be used to provide retirees with benefits in the years 2030 to 2050 without raising taxes substantially. Economists consider this type of tax-smoothing over time to be optimal.

The problem with this plan is that it requires building a surplus that can be drawn on in the future. Unfortunately, by counting the social security surplus in its unified budget, the government has offset the surplus in the social security fund with a larger deficit elsewhere. The existing social security surplus is being offset entirely by other government borrowing. If this is allowed to continue, we will see either a tremendous tax increase around the year 2030 or a drastic curtailment of social security benefits.

One problem with building a surplus for the next 40 years is that the accumulations needed (estimated at \$12 trillion) may exceed the value of all federal debt by the year 2030. This situation would create a conflict because under current law the government cannot invest in the private sector. However, the analysis of government net worth and capital budgeting suggests a possible solution.

Part of the accumulation could be used to retire public debt, thus releasing funds to the private sector and allowing greater private investment. And if a capital-budgeting system were in place, we could also plan to increase government spending on capital projects, beginning today through the year 2030. This would enhance private productivity and provide returns in the future. When funds are needed to pay retirement benefits in the years after 2030, the government would reduce capital spending.

From 1990 to 2030 the social security surplus would be used to retire some government debt and to finance additional government investment spending. From 2030 on, government capital spending would be reduced to a lower level, while additional social security benefits are paid. This plan simply adjusts the timing of different types of government expenditure to smooth total expenditure and tax rates over time. The federal debt would be reduced, but it would not be eliminated completely.

capital, such as education (see footnote 7). If these unmeasured assets have remained about the same size relative to the unmeasured liabilities, then the net-worth picture (Figure 4, p. 8) still provides an accurate account of movement in the ratio of government net worth to GNP.

GOVERNMENT CAPITAL BUDGETING

The recent erosion of government net worth is a legitimate concern. Can anything be done to arrest this trend? One approach by which the government could stabilize its net worth is to finance current government consumption expenditures out of current tax revenues and borrow only for financing government capital investment projects.¹¹

Using debt only to finance capital spending has a certain intergenerational-equity appeal as well. Government consumption spending benefits the current generation, and their taxes would pay for it. Government capital expenditures benefit future generations, and letting them pay off a share of the debt would shift payment for those benefits to them. Unfortunately, the current federal budgeting procedure does not make any distinction between

government consumption and capital spending. Thus it is ill-suited for managing the government's net-worth position. Whether we build missiles, hire more teachers, audit income-tax statements, or support the arts, the official figures show only that the money was spent. They don't tell us how much of our spending provides current benefits and how much provides future benefits. For this reason, economists and lawmakers have introduced several proposals to put the federal government on a capital-budgeting system similar to those used by private businesses and state and local governments.

A New Budget Process? A capital-budgeting system would help citizens know which government expenditures benefit current generations and which expenditures will yield future benefits. For example, money spent on building a new road to relieve traffic congestion has a completely different time pattern of returns than money spent to buy surplus cheese. The former has an effect on commuters and shippers for many years, the latter an effect on consumers and farmers in the present. Under a capital-budgeting scheme, the road would be booked as a capital expenditure and depreciated over time, while the cheese subsidy would be recorded as a current expenditure. The cheese subsidy would have to be paid for with current tax revenue, while the road could be financed by borrowing.

The use of a capital-budgeting system would also help taxpayers recognize that deficits are not "bad" if the borrowed funds are used productively. For example, Japan runs government budget deficits that are substantially larger as a percent of GNP than ours are. But the Japanese government invests most of its borrowed money for capital projects, according to Michael Boskin in a 1987 study. As a result, Japan's governmental net worth is rising, despite large deficits.

Unlike Japan, U.S. government investment growth did not keep pace with government

¹¹The controversial theory of "Ricardian equivalence" argues that it doesn't matter how much of government spending is financed by taxes and how much is financed by debt. This is because people know that debt today requires higher taxes tomorrow, so they increase today's savings to pay tomorrow's taxes. As a result, government debt has no effect on interest rates or output. There is no convincing empirical evidence for or against this theory, however, despite many attempts to find some. See Barro (1989) and Bernheim (1989) for opposing views of the theory and evidence. A more conventional view is that government debt crowds out private capital spending by raising interest rates. The economy's output depends on its capital stock, both public and private. Deficits that finance current government spending raise interest rates, crowd out private capital spending, and thus reduce the economy's output. However, if deficits finance government *capital* spending (and if government capital is a close substitute for private capital), then the total capital stock is not reduced and thus the economy's output does not fall.

deficits during the 1980s. Budget pressures have recently placed great restraint on government spending, including investment spending. As a result, even projects whose benefits to the public exceed their costs go undone. Recent evidence by researcher David Aschauer suggests that government investment is far too low, given the returns such investment could generate. We would be better-off, it seems, if the government had greater borrowing ability to increase capital spending.

There is a political danger inherent in a capital-budgeting system, however. Politicians could label current expenditure as capital expenditure in order to reduce taxes today. It may be easy to see through such schemes, much as people saw through the methods used in the last few years to meet the Gramm-Rudman deficit-reduction targets. Nonetheless, for a capital-budgeting system to be effective, it may be necessary to establish some objective criteria for determining precisely which types of government spending belong in the capital budget.

CONCLUSION

In evaluating the government's financial position, we need to account not only for its debt, but for its ownership of tangible assets. Over time, changes in government assets, in net debt, and in net worth all help determine the true impact of government fiscal policy.

As of January 1, 1990, your share of the government net debt (federal, state, and local) was about \$9,000, and you owned a share of government assets valued at \$16,000. Thus,

your share in the government's net worth is \$7,000, which may help you worry less about government debt. But you might worry about this: on January 1, 1980, your share of government's net worth was \$13,000 (in 1990 dollars). So you "lost" \$6,000 in the 1980s.

The sense in which you "lost" is made clear by comparing the government's real net debt and asset figures in 1980 and 1990. While real net debt tripled, this huge rise in government indebtedness generated no similar gain in government assets. So taxpayers, and future taxpayers, will be paying interest on this debt with little hope that there will be higher future returns from government assets to help pay it off.

Taxpayers would be in a better position to judge whether budget deficits were good or bad for their economic future if the federal government adopted a capital-budgeting system. Then they would know whether government spending is supporting current or future consumption.

A capital-budgeting system would change the nature of the debate over the size of the government's budget deficit. Currently we argue over how much of a deficit reduction should come from reducing government spending and how much should come from increasing taxes. Capital budgeting tells us that the composition of government spending—the amount spent on tangible assets—is equally important. Knowing this, taxpayers could be more confident about the extent to which increases in government debt are a burden on future generations.

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