

Government Debt and Deficits

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Government debt is the stock of outstanding IOUs issued by the government at any time in the past but not yet repaid. Governments issue debt whenever they borrow from the public; the magnitude of the outstanding debt equals the cumulative amount of net borrowing the government has done. The deficit is addition in the current period (year, quarter, month, etc.) to the outstanding debt. The deficit is negative whenever the value of outstanding debt falls; a negative deficit is called a surplus.

Governments issue debt to finance their activities. National defense, police protection, building roads, running schools, helping poor people - all these things costs money, or, more accurately, costs resources such as steel, uniforms, asphalt, and manhours of work. In a capitalist economy, government produces little or nothing; virtually everything is produced by private enterprise. The government must obtain the resources it needs from private producers. To do that, the government raises revenue and uses it to purchase the needed resources. The government has three ways to raise revenue: it can levy taxes, it can print money and use it to buy things (a source of revenue called “seignorage”), and it can borrow. When the government borrows, it gives to its creditors government securities stating the terms of loans: the principal being borrowed, the interest rate to be paid on the principal, and the schedule for making the interest payments and principal repayment. The amount of outstanding securities equals the amount of debt that has not yet been repaid; that amount is called “the government debt.”

Governments issue several types of debt, which can be classified in various ways. One classification is by the type of government that issued the debt. In the U.S., the main divisions are federal, state, and local debt; local debt can be divided further by type of locality, such as county or city. A second classification of government debt is by maturity at the time of issue. When we talk about a 10-year bond or a 30-year bond, we are talking about the length of time between the date when the bond was first issued and the date on which the principal will be repaid. Federal debt is divided into three convenient maturity categories. Treasury bills have initial maturities of 1 year or less (“three month bills,” “year bills,” etc.); Treasury notes have initial maturities between 1 and 5 years; and Treasury bonds have initial maturities over 5 years. State and local government securities generally are just called bonds, irrespective of the initial maturity. A perpetuity is a bond with an infinite maturity, which means the principal is never repaid and interest payments are made forever. The British government once issued some perpetuities, calling them “consols.” A third way of classifying government securities is by the source of the revenue to repay them. “General obligation bonds” will be repaid with revenue collected by taxing the public; “revenue bonds” will be repaid with revenue collected from specific user fees, such as bridge or highway tolls. This way of classifying debt is used only for state and local debt.

In early 2004, there was about \$7.1 trillion of federal debt outstanding. Almost exactly

half (\$3.6 trillion) was held by federal agencies and trust funds, which means that the government owed half the debt to itself. Such internal debt has no implications for the economy or public welfare. The important number is the amount of federal debt held by private investors, which in early 2004 was about \$3.5 trillion. Of that, about \$1.7 trillion was held by foreigners. State and local government debt outstanding was another \$1.6 trillion, most of which was held by private investors. The total amount of privately held government debt thus was about \$5.1 trillion. In some ways, these huge numbers are not really so big. As a fraction of gross domestic product of the US economy, government debt is not especially large. As of the end of 2003 was about \$11.1 trillion, a little more than twice the size of the privately held government debt. In contrast, at the end of the Second World War outstanding federal debt alone was slightly larger than gross domestic product. Another interesting comparison is between government debt and private debt. Corporate debt outstanding was about \$5.0 trillion at the end of 2003, almost exactly the same amount as privately held government debt. No one seems to worry about all of corporate America collapsing under its debt burden. Even households were more indebted than government; household credit market debt outstanding was about \$9.5 trillion at the end of 2003.

The size of the outstanding government debt is a topic of perennial interest. The obvious measurement of the debt's size is sum of all the individual outstanding government securities. That number often is reported in newspaper accounts and political debates, but it needs to be adjusted to be useful.

The most important adjustment is for inflation. Inflation is by definition the change in the general price level (which is a weighted average of the prices of all final goods and services produced in the economy). If prices double but the economy produces the same number of each type of good, then we have a doubling of the dollar value (or "nominal" value) of output but no change in the real value. In contrast, if prices are constant and physical production doubles, then the general price level doesn't change and the change in dollar value correctly represents the change in real value. We can correct output figures for inflation by dividing the dollar value of output by the general price level; the result is called "real output" and is a measure of the physical production in the economy. The same principles apply to government debt. The dollar value of a bond is the price it will fetch if sold on the open market. The real value of that same bond is the number of units of output that it can buy. If chocolate bars cost 25 cents apiece, then the real value of a \$10 bond is 40 chocolate bars. If, however, the prices of all goods double, so that chocolate bars now cost 50 cents each, then the real value of the same \$10 bond is cut in half; the bond now buys only 20 chocolate bars. The nominal value of the bond is unchanged by inflation, but the real value changes. Adjusting official debt and deficit figures for inflation can make a big difference. For example, in 1947 the official statistics report a federal surplus of \$6.6 billion. However, inflation that year was nearly 15%, which raised prices and so reduced the value of the huge outstanding debt by about \$11.4 billion. That reduction was equivalent to a further surplus; it reduced the real value of what the federal government owed its creditors. The true surplus therefore was about \$18 billion, nearly three times higher than the official figure. Another example of the impact of inflation adjustment occurs in the 1970s. The official federal

deficit was positive every year of that decade, whereas the inflation-corrected deficit was negative (that is, there was a real surplus) in exactly half those years.

Another adjustment is for changes in interest rates. The value of outstanding debt changes as market interest rates change, but newspaper accounts usually confine attention to par values, which do not adjust for interest rate changes. Market values do account for interest rate changes and can be quite different from par values. To see what is involved, suppose you buy a one-year \$5000 municipal bond (equivalently, you make a loan of \$5000 to the city that issued the bond) at 11:00am. The bond carries an interest rate of 10%, which means you will be paid \$500 in interest when the bond matures one year from now. At 11:05am, the Federal Reserve announces a change in monetary policy that causes one-year interest rates to fall to 9%. Your bond now is worth more than when you bought it 5 minutes ago; that is, you could now sell the bond to someone else for more than \$5000. The reason is that anyone who wants to lend \$5000 for one year now will find that new bonds pay only 9%, meaning an interest payment in one year of \$450. Your “old” bond, however, has a 10% rate locked in and is going to pay \$500 interest for sure. That makes your bond's market value higher than its par value of \$5000. Conversion to market value can make a substantial difference in the assessment of the size of the outstanding debt. For example, in 1982 the real par value of outstanding government debt was \$54.6 billion, whereas the real market value was \$94.8 billion, nearly twice as large. Unfortunately, market values for the total outstanding government debt are not readily available. Governments do not report them, which is why newspaper reports rarely mention them.

Although the sheer size of government debt may be interesting, the debt's effects on the economy are much more important for both economic analysis and public policy. Economists are not yet in full agreement on what those effects are. When the government borrows, it promises to repay the lender. To make those repayments, the government ultimately will have to raise extra taxes, beyond what it needs to pay for its other activities. The economic effect of government debt depends heavily on how taxpayers perceive those future taxes. Perceptions are difficult to measure, and the process by which they are formed is not at all well understood.

To see what is at issue, look at a simple example. Suppose that every year the government buys \$100 billion worth of goods and services and pays for them entirely by collecting taxes. Households give the government \$100 billion in tax revenue, and the government uses the revenue to buy goods and services. Revenue equals expenditure, so the government's budget is balanced. Suppose that the government suddenly decides to change the way it finances its purchases, which it does not change. In the first year, the government reduces taxes by \$10 billion and replaces the lost revenue by selling \$10 billion worth of bonds that mature in one year and carry an interest rate of 10% a year. In the second year, the bonds mature and the government pays the \$10 billion principal and the \$1 billion of interest. Taxes in the first year are \$10 billion lower, but in the second year are \$11 billion higher. How does this temporal rearrangement of tax collections affect people? In the first year, people give the same revenue to the government as they did when they paid taxes; the difference is that \$10 billion of

it is now in the form of a loan that will be repaid in the second year with an extra \$1 billion in interest. On this account, people may feel richer because they seem to be paying less total taxes over the two periods. When the second year arrives, however, people will find that they have nothing extra at all because, to pay the \$11 billion in principal and interest, the government must raise taxes by exactly \$11 billion, which cancels the payment of the principal and interest. The government giveth with one hand and taketh away with the other. The net result is that people don't get back the \$10 billion they lent the government, and the loan is equivalent to having paid the \$10 billion in taxes in the first year. The same result emerges from any maturity of debt, whether it is a one year bond, as in the previous example, or a ten year bond or even perpetuity.

The crucial thing for determining the effect of bond finance on the economy is whether people recognize what is going to happen over time. If everybody foresees that future taxes will nullify future payments of principal and interest, then bond finance is equivalent to tax finance, and government debt has no effect on anything important (a property known as “Ricardian equivalence,” after the economist who first discussed it). If people do not foresee all the future taxes implied by government debt, then they feel wealthier when the debt is issued but poorer in the future when, unexpectedly, they have to pay higher taxes to finance the principal and interest payments. So what do people expect for future taxes? Unfortunately, there is no reliable way to discover people's expectations about taxes, and we have to use other methods to learn the effect of government debt on the economy. Economists have been working on that project for quite a while but have not yet reached a conclusion. Direct measures of the impact of debt on economic activity are straightforward in principle but difficult to construct in practice for a host of technical reasons. There is an overall tendency for the evidence to favor approximate Ricardian equivalence, but that tendency is not decisive.

If government debt is equivalent to taxation, then most of the public discussion of the “deficit problem” is misplaced. Under equivalence, government deficits merely rearrange the timing of tax collections in a way that people can anticipate and offset; no important economic effects arise. With incomplete equivalence, deficits affect the economy, but the effects are complicated. For example, suppose people do not recognize any of the future taxes implied by current deficits. Then partially replacing current tax collections with borrowing makes people feel wealthier today, which induces them to spend more and perhaps work less. However, eventually, the taxes needed to repay the debt will have to be collected. Because no one anticipated them, they will come as a surprise, inducing people unexpectedly to spend less and perhaps work more. A deficit or surplus thus has impacts not just in the period when the deficit or surplus occurs but also in subsequent periods. Predicting the magnitude and timing of the sequence of impacts is difficult.

A related issue is the desirability of deliberately using deficits to influence the path of the economy. Under full equivalence of deficit and tax finance, no such thing can be done, of course, because deficits have no effect on anything important. Under incomplete equivalence, deficits do have effects. It therefore might seem desirable to run up deficits in recessions to

encourage people to spend more and run up surpluses in booms to restrain spending. The problem is that these seemingly desirable effects arise only because people fail to perceive the future taxes implied by deficits; that is, deficits have effects only when they fool people into thinking they suddenly have become wealthier (and conversely for surpluses). Is it desirable to influence the path of the economy by using a policy that is effective only because it deliberately misleads the public? That seems a difficult proposition to justify.

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