DEFICITS

When conversation turns to the economy, one of the most popular topics of discussion is the government deficit. Newspaper columnists, TV pundits, and, of course, politicians never tire of talking about the size of the deficit and what it means for the economy. Big deficits are considered bad—except that back in the 1950s and 1960s, they often were considered good. Big deficits depress the economy because they drive up interest rates—except that back in the 1950s and 1960s, the usual argument was that deficits stimulated the economy by encouraging people to spend more. So which is it: are deficits good or bad? Do they depress or stimulate the economy? To answer those questions, we have to answer a more fundamental question: exactly what is the government deficit? Once we know that, we can proceed to the more interesting questions of how deficits affect the economy and whether they are good or bad.

DEBT AND DEFICITS: WHAT ARE THEY?

The deficit is the addition to the outstanding stock of government debt, so to understand what the deficit is, we first have to understand what government debt is. The government undertakes many activities, from national defense to providing medical insurance. To pay for them, the government usually collects taxes. Sometimes, though, the government prefers to postpone collecting part of the taxes it needs and instead borrows funds by selling government bonds to the public. Those bonds, just like corporate bonds, represent a loan the government has taken out and eventually will repay. The person who buys a government bond hands over money to the government and in return gets a bond stating
the amount of the loan (the principal, or face value, of the loan), the interest rate that will be paid on the loan, and the date when the principal will be repaid (the maturity date of the loan). The money paid to the government by the buyer of the bond is that person's loan to the government, and the bond is the contract stating the terms of the loan. The government debt is the total amount of bonds that the government has issued but not yet repaid.

**TYPES OF 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 United States, 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 one year or less (three-month bills, year bills, etc.); treasury notes have initial maturities between 1 and 10 years; and treasury bonds have initial maturities longer than 10 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 that 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.

Whenever current government expenditures exceed tax revenues, the government borrows the difference by selling new bonds to the public. In such a situation, the government budget is said to be in deficit. The amount of new debt issued in a given period of time (such as a calendar year) constitutes the deficit for that period. In contrast, when expenditures are less than tax revenues, the government budget is in surplus. At any time, the deficit is the negative of the surplus and vice versa.

**HOW MUCH GOVERNMENT DEBT IS THERE?**

At the end of 2005, there was about $7.9 trillion of federal debt outstanding. Of that, 42 percent ($3.3 trillion) was held by federal agencies and trust funds, which means that the government owed almost half the debt to itself. Such internal debt is only a bookkeeping device for tracking the flows of funds within the federal government. An accurate analogy would be a household in which
one child borrowed money from a sibling. That kind of intrafamily debt has no bearing on the family's net indebtedness and is ignored by credit rating agencies, banks, credit card companies, and so forth. The situation with respect to intragovernment debt is exactly the same: as far as the economy is concerned, that debt does not exist. It has no implications at all for the economy or public welfare. Unfortunately, popular discussions of the debt frequently fail to distinguish between internal and external government debt and thus overstate the relevant number, which is the amount of federal debt held by private investors. At the end of 2005, that amount was about $4.6 trillion. State and local governments also issue debt, and they have about $2 trillion in outstanding debt, most of which was held by private investors. Thus the total amount of privately held government debt was about $6.6 trillion at the end of 2005.

As a fraction of the total size of the U.S. economy, called gross domestic product (GDP), government debt is not especially large by historical standards. GDP was about $12.5 trillion in 2005, nearly twice the size of the privately held government debt for the same year. In contrast, at the end of the Second World War, outstanding federal debt alone was slightly larger than GDP. So when people worry about the size of the debt, they often fail to put the current situation in historical context.

The foregoing numbers on the amount of outstanding government debt are the numbers one would see in the newspaper. They must be adjusted before they can be used to discuss the effect of debt on the economy.

The most important adjustment is for inflation. The nominal value of a bond is the price in dollars that it would fetch on the open market. The real value of that same bond is the number of units of output that it can buy. If DVD movies cost $20 each, then the real value of a $200 bond is 10 DVD movies. In other words, if you sell your bond, you will receive in return enough cash to buy 10 DVDs. If, however, the prices of all goods double, so that DVDs now cost $40 each, then the bond's cash value now buys only five DVDs. The bond's nominal value is unchanged by inflation and remains at $200. Its real value, however, is changed. Real values are what matter because what people care about is how many goods their paper assets can buy. That is precisely what the real value of a bond measures. Adjusting official debt and deficit figures for inflation can change the measurement of the debt's size by a substantial amount. In 1947, for example, official federal government statistics reported a surplus of $6.6 billion. However, inflation that year was almost 15 percent. That inflation reduced the value of outstanding debt by about $11.4 billion. That reduction was equivalent to an additional surplus because it reduced the real value of what the federal government owed its creditors. The true surplus, therefore, was about $18 billion, nearly three times as high as the official figure. Another example is the decade of the 1970s, during which the official numbers showed a federal deficit every year, but the inflation-corrected numbers indicated a real budget 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. To see what is involved, suppose that you buy a one-year $10,000 treasury bill (equivalently, you make a
The bond carries an interest rate of 10 percent, which means that you will be paid $1,000 in interest when the bond matures one year from now. At 11:00 a.m., the Federal Reserve announces a change in monetary policy that causes one-year interest rates to fall to 9 percent. Your bond now is worth more than when you bought it an hour ago because you could now sell the bond to someone else for more than $10,000. The reason is that anyone who wants to lend $10,000 for one year now will find that new bonds pay only 9 percent, meaning an interest payment in one year of $900. Your old bond, however, has a 10 percent rate locked in and will pay $1,000 interest for sure. That makes your bond's sales value higher than its stated value of $10,000. These kinds of changes happen continually, day in and day out. As a result, the market value of the outstanding government debt fluctuates from day to day, even if there is no inflation, and even if the government issues no new debt and retires no outstanding debt. The sales, or market, value of outstanding debt will be greater than the stated, or official, value if interest rates have fallen on average since the debt was issued and will be smaller than the par value if rates have risen. The difference between official and market value of the outstanding debt is typically a few percentage points. Unfortunately, market values for the total outstanding government debt are not readily available. Governments do not report them, and newspaper reports rarely mention them.

THE ECONOMIC EFFECTS OF GOVERNMENT DEBT

To see how government debt may affect the economy, we need to understand how government debt affects the flow of net income to the people lending money to the government. 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 neither economists nor others understand exactly how people form their perceptions. As a result, economists still disagree on the economic effect of government debt.

A simple example will help illustrate the situation. Suppose the government buys $1 trillion worth of goods and services every year and pays for them entirely by collecting taxes. The government's budget is balanced because revenues equal expenditures. Suppose that the government decides to change the way it finances its expenditures but does not change the amount being spent. In the first year, the government reduces taxes by $100 billion and replaces the lost revenue by selling $100 billion worth of bonds that mature in one year and carry an interest rate of 10 percent a year. In the second year, the bonds mature, and the government pays the $100 billion principal and the $10 billion of interest. Taxes in the first year are $100 billion lower (the government is running deficit) but in the second year are $110 billion higher (the government is running a surplus). How does this rearrangement of the timing of tax collections affect people? In the first year, people give the same total amount of revenue to the government
WHAT DEBT IS THE RISKIEST?

There is an inconsistency in popular discussions of government debt compared to other types of debt. Corporations and households both issue debt (i.e., borrow money). Corporate debt outstanding was about $5.0 trillion in 2004 (as of this writing, the latest year for which figures are available), not much below the amount of privately held government debt. Household debt is even larger. In 2004, households’ total credit market debt stood at $9.6 trillion, 50 percent larger than the privately held government debt.

Commentators regularly express concern that government debt represents a risk to the economy, once in a while express similar concerns about household debt, and virtually never even mention corporate debt. In fact, household and corporate debt can represent an economic risk in some rather rare circumstances, but government debt virtually never represents such a risk. In a deep recession, debtors may become unable to repay their debts and be forced to default on them. That, in turn, can make financial institutions insolvent and lead to a collapse of the financial system. Such a mechanism seems to have been the reason the recession of 1929 became the Great Depression of 1932. Deflation made existing debt increasingly costly to repay, leading to widespread defaults on debt.

The banking system came under great pressure and eventually collapsed with the banking panic of 1932. This sort of thing happened from time to time up through the Great Depression but has not happened since, largely because of regulatory changes and an improved understanding by the Federal Reserve System of how to conduct monetary policy in the face of such circumstances. In contrast, default by any level of government in the United States has been exceedingly rare, and the federal government has never defaulted on its debt obligations.

as they did when they paid only taxes, but now $100 billion of the total payment is in the form of a loan that will be repaid in the second year, with an extra $10 billion in interest. On this account, people may feel richer because they seem to be paying less in total taxes over the two periods. This year, they pay $900 billion in taxes and $100 billion in loans for the same $1 trillion total that they were paying before the government decided to issue debt. Next year, however, it seems they will be better off than before. They will pay $1 trillion in taxes, but they will receive $110 billion in repayment of their first-year loan. Their net payment in the second year will be only $890 billion. This seems like a good deal, but unfortunately, it will not turn out that way. When the second year arrives, people will find that their net payment is $1 trillion, just as if the debt never had been issued. Why is that? To pay the $110 billion in principal and interest, the government must come up with an extra $110 billion in revenue, so it must raise taxes by that amount. Those extra taxes exactly cancel the payment of the principal and interest. The government gives with one hand and takes away with the other. The net result is that people do not really get back the $100 billion they lent the government or the $10 billion in interest on it, and the loan is equivalent to having paid the $100 billion in taxes in the first year. The same result holds
from any maturity of debt, whether it is a 1-year bond, as in the previous ex-
ample, a 10-year bond, or even a bond with an infinite life.

Note, by the way, that the government cannot beat the mathematics by refi-
nancing old debt with new debt. If the government tried to repay existing debt,
including the interest on it, by issuing new debt, the amount of debt would grow
at the rate of interest. In our example, in the second year, the government owes
$110 billion in principal and interest on the debt issued in the first year. The
government could raise the revenue by issuing $110 billion in new debt. It then
would have to pay $121 billion in principal and interest in the third year ($110
billion in principal and $11 billion in interest, assuming that the interest rate
stays at 10 percent for simplicity). Thus the debt would grow by 10 percent every
year that the government issued new debt to repay the old debt. The problem is
that interest rates generally exceed the growth rate of the economy, so in finite
time, the government would reach a point where it was issuing debt equal in
value to the entire GDP of the economy. After that, it would not be able to issue
any new debt because the government would be promising to repay more than
could possibly be available to it, and the scheme would come to an end.

There are two major factors determining how government debt affects the
economy. One is the kind of taxes the government uses to collect revenue, and
the other is the way that people perceive the future taxes implied by current
debt. It is easiest to start with people's perceptions in a simple case and then
move on to the more complicated case that actually confronts us.

Suppose for a moment that taxes are very simple. In particular, suppose that
the government uses what are called lump sum taxes to finance everything it
does. A lump sum tax is one whose amount is independent of anything the tax-
payer does. For example, he could draw a number out of a hat, and that would be
his tax, irrespective of whether he was rich or poor. Actual taxes are more com-
plicated, usually being based on income, consumption, or some form of wealth.
The taxpayer has some influence over how much of those kinds of taxes he pays
because he can control how much income, spending, and wealth he has. For the
moment, though, concentrate on the simple, even if unrealistic, case of a lump
sum tax. In that simple case, government debt is unlikely to have any signifi-
cant effect on the economy. People generally try to estimate their future income,
and of course, what they care about is their income after taxes. That means that
in effect, they try to estimate their future taxes. As we have seen already, any
government debt issued today implies extra taxes at some time in the future.
If people are aware of that fact, then they will see that any reduction in today's
taxes brought about by the government issuing new debt is going to be offset by
more taxes in the future. Our example above showed that the offset is exact.

The question is whether people recognize at least approximately that the off-
set is exact. If they do, then bond finance is equivalent to tax finance, as our
example above showed. In that case, government debt has no effect on anything
important, a property known as Ricardian equivalence after David Ricardo, 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. They then are likely to increase their consumption spending today and perhaps work less today. In the future, when the inevitable taxes arrive, they will have to reduce their consumption spending and increase their work effort. So if people do not correctly perceive the future taxes implied by current debt, they will alter their economic behavior when debt is issued or retired and thus affect the economy.

The situation becomes more complicated when we extend our examination to include the fact that taxes are not lump sum. Taxes in the real world take some fraction of the tax base, which is the thing taxed: income for an income tax, consumption purchases for a sales tax, and so on. To keep the discussion simple, restrict the story to an income tax by supposing that that is the only kind of tax the government uses. (The principles are the same for other taxes, so nothing important is lost by this simplification.) The problem with taxes that are not lump sum, such as an income tax, is that they have positive marginal tax rates. The marginal tax rate is the fraction that you must pay in tax on the next dollar of income that you earn. A proportional income tax, for example, levies a fixed tax rate on your income, no matter how high or low your income is. If the marginal rate were 20 percent, then you would pay 20 cents on every dollar that you earn, whether you earn $10,000 or $10 million. Everybody would pay exactly 20 percent of his income in taxes. This is the so-called flat tax. Some state governments levy that kind of income tax. A graduated or progressive income tax is one whose tax rate rises with the income of the taxpayer. The federal income tax is that type of tax. Somebody earning $20,000 has a marginal tax rate of 15 percent, so if he earns another dollar, he will pay 15 cents of it to the federal government in tax. In contrast, someone earning $200,000 has a marginal rate of 35 percent and will pay in tax 35 cents of the next dollar he earns. For our purposes, it is sufficient to consider a proportional income tax, with the same marginal tax rate for everyone.

The important thing about marginal tax rates is that they affect people's economic behavior. People's choices depend on the tax rate they face. Think of someone trying to decide whether to work an extra hour. Suppose he earns $30 an hour. If there were no tax, then one more hour of work will earn him $30, pure and simple. If, in contrast, he is in the 15 percent tax bracket, he will get to keep only 85 percent of his extra $30 dollars, which is $25.50. The other $4.50 goes to the government as tax. Thus the effective return to working another hour is not the stated $30, but the after-tax earning of $25.50. It is less attractive to work an hour for $25.50 than for $30, so fewer people would end up deciding to work when there is a tax compared to when there is not. The same reasoning holds for investment. People will be less likely to make the next investment (e.g., buying a new machine for their machine shop) because the return on that investment is reduced by the tax.

So what does all this have to do with government debt? Remember that debt rearranges taxes over time. It therefore also rearranges the incentive effects associated with those taxes. For example, if the government reduces taxes today by issuing debt, in reality, the taxes it reduces will be income taxes, not lump sum taxes. Thus, by issuing debt, the government will reduce the disincentive
effects of taxes today and increase them tomorrow. As a result, the government will affect the timing of people's economic decisions. The effects of rearranging disincentive effects over time get to be quite complicated, but the important thing for our discussion here is that precisely because debt does rearrange taxes and has disincentive effects over time, it has real effects on the economy. The situation becomes even more complicated if people cannot figure out exactly what the new timing will be after debt is issued. No one really knows when the government will collect the taxes to repay a new 30-year bond. It may decide to retire the bond early, or it may decide after 30 years to replace it with another bond, say, a five-year note, thus postponing the repayment by five years. In the face of such uncertainty, figuring out exactly what the incentive effects will be can become extremely complicated.

Unfortunately, there is no reliable way to discover people's expectations about taxes, so we have to use statistical methods to learn the effect of government debt on the economy. Even though economists have been studying this issue for more than 30 years, they have not yet reached a consensus. Statistical measures of the effect of debt on economic activity are straightforward in principle but difficult to carry out in practice. Overall, though, the evidence is that debt's effects are not strong. Some of the evidence even favors Ricardian equivalence (no effect of debt at all) as a close approximation. For example, Figure D.1 shows two plots. One is the federal deficit as a share of GDP, and the other is the real (inflation-adjusted) interest rate on three-month treasury bills. There is no obvious relation between the two series. The statistical correlation between them is a virtually nonexistent –4 percent.

A related issue is the desirability of deliberately using deficits to influence the path of the economy. If taxpayers fully anticipate and perceive the effects of
deficit and tax finance (Ricardian equivalence), no such thing can be done, of course, because deficits do not affect anything important. If taxpayers do not, though, deficits do have effects, as we have just seen. Therefore it 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 for undesirable reasons: the taxes distort choices, and on top of that, they fool people into thinking that 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 because it deliberately misleads the public? Such a proposition seems difficult to justify. Another problem is that any desirable effects are accompanied by other effects that might not be deemed desirable. When equivalence is incomplete, changing the stock of debt outstanding also changes the interest rate in the same direction. In particular, running a deficit in a recession would raise interest rates, which would reduce investment and economic growth, which in turn would reduce output in the future. Thus using deficits to stimulate the economy now to ameliorate a recession comes at the cost of reducing output later. Whether that is a good exchange is not obvious and requires justification.

See also: The Dollar; Inflation; Interest Rates; Stock Market Predictions

John J. Seater