ONE

What Is Public Debt?

Public debt—the total of the nation's debts; debts of local and state and national governments; an indicator of how much public spending is financed by borrowing instead of taxation.

—Definition of public debt from www.webster-dictionary.org

Let's start with the basics: what is public debt, and where does it come from? If you already know the basics, you can jump to chapter 2, but it may still be worth reading the last two sections of this chapter, "Money and Public Debt" and "The Missing Debt."

The Basics: Government Deficit, Government Surplus, and Public Debt

Never trust those who tell you that a government's budget is like a household's budget. In many respects it is not. And yet similarities in some basic aspects do emerge. So, let's think about your own household. Your annual income is $60,000, but you need to spend $70,000. How do you bridge the $10,000 difference? You borrow from your bank at an interest rate of 5 percent, to be paid next year. If you start your year with zero debt, by the end of the year your debt will be $10,000. Next year, nothing changes,

except that your expenses rise from $70,000 to $70,500 as you must pay the bank $500 for interest on your debt. Your bank, however, is generous and not only rolls over the initial debt but lends you another $10,500 to cover your new imbalance between your revenues and your spending. At the end of the second year, your debt has reached $20,500.

Let's now introduce some terms that economists use to talk about government finances. The imbalance between the government spending and its revenues (in the above household example, $10,000 in the first year and $10,500 in the second year) is called the *government,* or *fiscal, deficit*. The amount the government owes at the end of the year is the *public,* or sometimes *government* or *national, debt* (in the example above, $10,000 after one year and $20,500 after two years). It grows because the government has a deficit. Indeed, broadly speaking, public debt is the cumulative sum of all previous deficits.[1] Debt can go down in terms of dollars, or of whatever national currency, only if, in a given year, government revenues exceed government spending, in which case the government, instead of running a deficit, is running a surplus. So public debt goes up when there is a deficit and comes down when there is a surplus. If revenues and spending are equal, the government is running a balanced budget and the debt goes neither up nor down.

One last definition: the *primary deficit* is the deficit net of interest payments. In the above household example, it is $10,000 in the first year as well as in the second year. It is unchanged because the amount of spending excluding interest payments (what economists call *primary spending*) does not change. This says that your deficit can go up even if your revenues and primary spending do not change. It goes up because interest payments accumulate and keep rising as long as debt rises, as credit card holders know very well.

In modern times, governments, unlike households, do not typically borrow from banks. They borrow by selling securities to investors. The securities with a maturity of up to one year are often called *Treasury bills*, while other securities are referred to as *government bonds*, or take fancier names according to their specific features, for example, whether their yield is fixed or indexed to short-term interest rates or inflation. All these securities are sold primarily through auctions, and the yield that each security bears depends on the result of the auction: so whereas a household can negotiate the interest rate on a loan with a bank, the yield of government

debt is determined by the interaction of many investors through the auction mechanism.

One additional complication is that almost every country has different levels of government. At one extreme are local governments, such as municipalities, while at the other there is a central government or, in federal nations such as the United States, a federal government. In between are regional or state governments. All these entities may run deficits and borrow, mostly by issuing securities but, especially in the case of municipalities, also by borrowing from banks. Sometimes these government entities even hold securities issued by other government entities (a situation common for social security administrations, which often buy paper issued by the central government). In most of this book the term "public debt" will be used to refer to what has been borrowed by all these central and local administrations, often referred to as *general government*, usually net of the debt held by components of the general government itself.[2]

Some Features of Government Debt That May Affect Its Riskiness and Yield

In advanced economies, government securities are often regarded as the quintessential risk-free asset and therefore are able to offer much lower interest rates than securities issued by the private sector. Lending to the government is regarded as quite safe because the government has the power to raise revenues by taxing people. Private borrowers cannot do this, and therefore lending to them is riskier. Indeed, many have argued that public debt is desirable precisely because economies need a steady supply of risk-free assets, whereby investors can hold the assets with a low yield but also at no risk. Some may remember that in the 1990s, many were worried that the stream of budgetary surpluses that characterized the Clinton administration would deprive America, and the whole world, of a supply of risk-free assets.

But are government securities really risk-free? Raising taxes does not win elections, so one should have doubts about the willingness of governments to raise revenues to repay debt under any circumstances. And indeed, in economic history, hundreds of cases of governments defaulting on their debt can be found. So let's now look at some of the factors that

affect the risk that the government will not repay you and, therefore, the yield (the *risk premium*) investors will request when they lend to the government (we return to this issue in more depth in chapter 3).

First, the size of public debt is certainly relevant: the larger the size of public debt, the higher the tax revenues needed to service it, and thus the more the government will be tempted to declare bankruptcy. To understand the risk associated with public debt, however, just looking at the level of debt in terms of dollars, euros, or pounds is not sufficient. The risk associated with a certain amount of debt also depends on the amount of national resources that could potentially be taxed. A good proxy for these resources is given by a country's gross domestic product (GDP), or what a nation produces every year, as most government revenues come from the taxation of GDP or its components (consumption spending, for example). That is why economists usually look at public debt as a percentage of GDP. This is not a neutral choice, though. For example, since 2007 the rise in public debt has been very strong in terms of percentage of GDP but much less strong in terms of percentage of private sector wealth, or at least financial sector wealth. But, as mentioned, taxes on GDP are the main source of government revenue. Moreover, GDP data are more easily available than data on wealth, and it is by now common practice to focus on the public debt-to-GDP ratio as a key indicator of the riskiness of public debt. Of course, looking at public debt-to-GDP ratios rather than at debt expressed in national currency also makes it easier to compare levels of debt across countries and over time.

In addition to its size, four other features of public debt may affect its riskiness. The first one is the composition of those who buy government securities, and in particular, whether investors are domestic or foreign residents. If debt is held primarily by foreigners, the risk that the government will be unable to roll over its debt is higher because foreigners are often the first to run if there are doubts about the government's willingness to repay its debt. Moreover, the temptation to repudiate public debt is stronger if investors are foreigners: first, they do not vote, and second, if investors are predominantly foreigners, the negative impact of debt repudiation on the national economy is smaller (more on this in chapter 10). Another important issue relating to the composition of the investors has to do with the share of securities held by the central bank. We return to this topic in the next section.

The second feature of government debt that affects its riskiness is its average maturity. Some securities are to be repaid in a few months, some in two years, others in twenty-five years' time or longer. Economists often look at the average residual life of government securities, or sometimes to a similar concept, called *duration*.[3] For a given amount of debt, the shorter the average residual life, the greater is the amount of securities that will mature every month and that will have to be rolled over—in more technical terms, the higher is the government's *gross borrowing requirement* (the total amount of securities that must be sold, or the sum of what needs to be rolled over and what is needed to finance the new deficit). In turn, the larger the gross borrowing requirement, the higher is the potential pressure that could arise in the government paper market should investors start doubting the government's willingness to repay its debt. The perceived risks would be correspondingly stronger.[4]

The third key feature of government debt affecting its riskiness relates to its currency denomination. A country can issue securities denominated in its own currency, as the United States does, or in the currency of another nation. For example, many developing countries issue securities denominated in U.S. dollars, euros, or Japanese yen, because they believe they can more easily attract investors this way. The currency denomination strongly affects the risks associated with public debt. But to understand how this happens, it is important to focus on a fourth key aspect of the composition of public debt, one that relates to the interaction between the government and its central bank and to how, directly or indirectly, the government can finance its deficit by borrowing from outside the public sector or by printing money. This is a key issue for the riskiness of public debt, as well as for its macroeconomic effects.

Money and Public Debt

Modern states have the ability to create money from nothing, or at least just from paper and ink. They usually do not do it directly but through each country's central bank: for example, the Federal Reserve in the United States, the Bank of England in the United Kingdom, and the European Central Bank for euro-zone countries. Four things must be understood about printing money.

The first one is obvious: printing money is profitable. Printing pieces of paper costs very little, but with money you can buy things or you can lend money and earn interest. The beauty of it is that people who need money for their transactions are happy to receive those useless pieces of paper in payment for the goods and services they provide. Economists have coined a name for the profit arising from printing money: *seigniorage.* We return to this concept later in the book.

Second, even if the money is printed by the central bank, it is the government that benefits from the bulk of seigniorage, because central bank profits, even when the central bank is not legally owned by the government, are typically returned to the government.

Third, and relatedly, when the government borrows from the central bank—that is, when the central bank buys government paper either directly from the government or indirectly from the market—that part of borrowing does not cost the government anything: the interest paid by the government to its central bank is returned to the government when the profits of the central bank are transferred to it. This makes a big difference: if the government finances its deficit by issuing securities on the market, it needs to make interest payments and to worry about rolling over the securities when they come to maturity. If the government finances its deficit by borrowing from its central bank, it does not need to worry about all this.

Fourth, in today's world, central banks create money not just by printing banknotes; they also create electronic money. For example, when they buy a government security from a commercial bank, they pay by crediting the account of the commercial bank at the central bank. That is also money, although in electronic form. Whatever we say about money applies not only to banknotes but also to electronic money. It is easier, however, to think in terms of banknotes, so you do not need to worry about this additional complication.

If financing the fiscal deficit by printing money is so good for the government, why then does the government not finance itself just by printing money? The reason is that by abusing its power to print money, the government can kill the goose that laid the golden eggs. People are willing to use money issued by the government for their transactions because they have confidence that those pieces of paper will maintain their value over time. But if too many of those pieces of paper are floating around, and people realize that they are going to be flooded with pieces of paper because the government has a huge deficit to finance, they will lose confidence in

the value of money and try to get rid of it as soon as they receive it by buying things. This drives up the prices of goods and services, as well as asset prices, and ultimately could even lead to a switch to a different currency. This happened in Ecuador, which abandoned its currency in 2000 and is completely "dollarized," having fully substituted the U.S. dollar for its own currency. More generally, the main episodes of hyperinflation in history, including Germany's post–World War I inflation, have all been linked to abuse by the government of its power to print money. And even before banknotes were introduced, one popular option for sovereigns short of cash, including some prominent Roman emperors, starting with Nero, was to reduce the gold or silver content of coins while maintaining their face value.

We come back to this issue in chapter 7, in a discussion of whether printing money could be the solution to high public debt. For the moment, I would just underscore something quite surprising regarding public debt statistics. While economics textbooks are clear about the difference between financing deficits by borrowing from the private sector and by printing money, public debt statistics, including those discussed in the next chapter, do not really make this distinction. Public debt data include both the money that has been borrowed from private investors and that which has been borrowed from the central bank—although, as discussed, this is not really "borrowing" because the interest the government pays is returned to it when central bank profits are passed to the government.

There is a formal reason for this anomaly: from an accounting point of view, the money borrowed from the central bank is formally a liability and so it is part of the debt definition. But there is perhaps a more substantive reason: if we believe that a surge in the amount of borrowing from the central bank, matched by a surge in money in circulation, can only be temporary, to avoid the risk of killing the goose that laid the golden eggs, then it may be preferable to keep track of total government debt, including the debt held by the central bank, which will eventually have to be replaced by regular borrowing. But there are different views on this, as will be discussed in chapter 7.

Let's return to the issue we started with: the need to distinguish whether the government has borrowed in domestic currency or in foreign currency. It does make a difference. If the government has borrowed in domestic currency, the debt may be repaid by printing money (there may be institutional barriers to overcome, but technically it is possible). Inflation may result, but the government may deem this preferable to, for example, having to default

on its debt. If instead the government has borrowed in foreign currency, and it cannot print it to repay its debt, there is a higher risk that the government will be unable to pay. This scenario is described by some economists, starting with Barry Eichengreen and Ricardo Hausmann in 1999, as the "original sin" of many emerging markets that borrowed in foreign currency and were later unable to repay their debt.

In virtually all advanced economies, the bulk of public debt is denominated in national currency. However, euro-zone countries, while having a debt denominated in their own currency, do not individually have access to central bank resources because there is a common central bank, the European Central Bank, which does not take orders from any of its member countries individually. This feature has complicated the management of the 2011–12 European debt crisis, and the provision of adequate liquidity financing to the euro zone, thus also contributing to the view that European countries would be better off if they left the euro zone (see chapter 8).

The Missing Debt: Derivatives and Pension Debt

Two important items are not usually included in the standard definition of public debt. The first involves some technical details and is not so important for the rest of this book, but the second one comes up in chapter 2, so focusing on it is recommended.[5]

The first is the debt that arises from derivative contracts the government has signed with financial institutions, usually banks. These contracts typically imply that the government must pay or receive money from the counterparty bank, depending on certain developments in financial markets, such as whether interest rates rise or fall. Governments enter into these contracts to reduce the effect of financial sector developments on the cost of their debt. For example, if interest rates on public debt rise, the government will have to make higher interest payments on its debt. A derivative contract ensures that, if interest rates do rise, the government will receive a partial compensation from the counterparty bank. The downside of this mechanism is that if instead interest rates decline, the government will have to make payments, which reduces the benefits that would be realized when interest rates fall. Every month, as interest rates move up or down, the government either receives payments or makes payments as a result of outstanding derivative contracts. At any moment the market

value of these derivative contracts (the "debt" arising from them, in case future payments prevail) is equal to the sum of future payments (more precisely, the net present value of those payments) the government will have to make, based on prevailing market interest rates at various maturities. Therefore, this value changes over time as interest rates change. The figures involved are usually not huge but not trivial either. In the case of Italy, a country that has actively engaged in derivative operations, this form of debt amounted to 2.6 percent of GDP at the end of 2014, a relatively small figure compared to Italy's greater than 130 percent of GDP recorded public debt. However, the fact that, as a result of derivative contracts, the government may have to pay banks sizable amounts of money is often the source of much political controversy. Those in charge of public debt management may be accused of having bet and lost public money out of incompetence or worse. In reality, there is nothing fundamentally wrong with these operations: they are just like an insurance against bad events, such as a rise in interest rates. Of course, if those events do not materialize, or if circumstances turn out to be even more favorable than expected (an interest rate decline), there is a price to pay, in the same way that there is a price to pay for a regular insurance contract, namely, the insurance premium.

The second form of unrecorded debt is social security (or "pension") debt, by far the most important one in terms of size, including in the United States, where, as we will see in chapter 2, it is quite large. Pension debt is related to the payments that the government through its social security institutions must make in the future as a result of existing pension legislation and rules. There are various definitions of pension debt. For example, some countries, while not adding pension debt to the standard debt definition, publish statistics, at least for public sector employees, on the present value (the sum, discounted by some interest rate) of pension payments that have already accrued, even if they are not yet payable because those employees have not yet retired. I prefer to use a definition of pension debt that is more closely linked to pressures that may arise in the future on the fiscal accounts and that are not already captured by today's fiscal deficit and debt figures. In particular, my former colleagues in the Fiscal Affairs Department of the International Monetary Fund developed and publish annually in the IMF's *Fiscal Monitor,* for several countries, the net present value of future increases in pension spending-to-GDP ratios over the next thirty-five to forty years. It is useful to look at these increases in pension spending because social security revenues are likely to rise in line with GDP as social

security contributions are, broadly speaking, a fixed percentage of earnings. Thus, looking at the increases in pension spending with respect to GDP provides an estimate of the increasing (or decreasing) imbalance in the accounts of the social security system and the fiscal account in general. As discussed in the next chapter, pension debt computed in this way can be very large: in some countries it is equivalent to a large share of, even as large as, official public debt. It cannot therefore be forgotten even if it does not give rise to the potentially more pressing problems associated with financial debt, notably the risk of a rollover crisis.