CHAPTER 1

Introduction to the Other Half of Macroeconomics

Human progress is said to have started when civilizations sprang up in China, Egypt, and Mesopotamia over 5,000 years ago. The Renaissance, which began in Europe in the 13th century, accelerated the search for both a deeper understanding of the physical world and better forms of government. But for centuries, that progress benefited only the fortunate few with enough to eat and the leisure to ponder worldly affairs. Life for the masses was little better in the 18th century than it was in the 13th century when the Renaissance began. Thomas Piketty noted in his book *Capital in the Twenty-First Century* that economic growth was basically at a standstill during this period, averaging only 0.1 percent per year.[1]

Today, on the other hand, economic growth is largely taken for granted, and most economists only talk about "getting back to trend." People actually become upset when they do not see enough economic growth. Economists arguing that growth will return to the high rates of the past if only inflation reaches the 2-percent target are typical of this group. But what they do not ask is how the growth trend was established in the first place. To understand how centuries of economic stagnation gave way to a period of rapid economic growth that was then followed by where we are today, with decelerating

[1] Piketty, Thomas (2014), *Capital in the Twenty-First Century*, translated by Arthur Goldhammer, Cambridge, MA: Belknap Press of Harvard University Press.

economic growth and rising social tensions, we need to review certain basic facts about the economy and how it operates.

Basic Macroeconomics: One Person's Expenditure Is Another's Income

One person's expenditure is another person's income. It is this unalterable linkage between the expenditures and incomes of millions of thinking and reacting households and businesses that makes the study of the economy both interesting and unique. It is interesting because the interactions between these households and businesses create a situation in which one plus one seldom equals two.

Consider a world where there are only two economic entities, A and B, and each is buying $1,000 in goods from the other. If A decides to buy $100 less from B in order to set aside $100, or 10 percent of her income, as savings for an uncertain future, B will have $100 less income to use to buy things from A. If B, whose income has fallen from $1,000 to $900, then reduces his purchases from A by $100, A's income will also fall to $900. If A's original intention was to save 10 percent of her income, she will end up saving $90 instead of her original goal of $100. Thus, the interaction of the two players results in a situation in which one plus one does not equal two.

This feedback loop between A and B is easily recognized if there are only two entities, but not when there are millions. But the principle that one person's expenditure is someone else's income is unchanged.

This interaction between expenditure and income also means that at the national level, if someone is saving money, someone else must be doing the opposite ("dis-saving") for the economy to keep running. If everyone is saving and no one is dis-saving—which usually takes the form of borrowing—those savings will leak out of the economy's income stream, resulting in less income for all.

For example, if a person with an income of $1,000 decides to spend $900 and save $100, the $900 that is spent becomes someone else's income and continues circulating in the economy. The $100 that is saved is typically deposited with a financial institution such as a bank, which then lends it to someone else, most often a business, who can make use of it. When that business borrows and spends the

$100, total expenditures in the economy amount to $900 plus $100, which is equal to the original income of $1,000, and the economy moves forward.

But if there is no borrower for the $100, this amount will remain in the financial sector while total expenditures in the economy shrink to $900 from the original $1,000. If the recipient of the $900 decides to save 10 percent and spend $810, the economy will shrink another 10 percent if there are still no borrowers for the saved $90, and so on. This shows how important it is to have borrowers when there are savers in the country: if someone is saving money, someone else must borrow it in order to keep the economy from contracting. If all saved funds are not borrowed and spent, the economy will shrink.

The Importance of Financial Intermediation

In a normal economy, this critical function of matching savers and borrowers is performed by the financial sector, with interest rates moving higher or lower depending on whether there are too many or too few borrowers. If there are too many, interest rates will be bid up, and some potential borrowers will drop out. If there are too few, interest rates will be bid down, prompting potential borrowers who stayed on the sidelines to step forward. If all saved funds are borrowed and spent in this way, the economy will continue to move forward.

This also means that societies without a functioning financial sector to match savers and borrowers are seriously disadvantaged because some of the saved funds could leak out of the income stream. Ancient societies where money lending was considered a crime stagnated in part because saved funds could not re-enter the income stream until the saver himself chooses to dis-save at some point in the future.

One of the characteristics anthropologists look at when assessing how advanced an ancient society was is the use of money. But the invention of money as a store of value also made it easy for people to save for an uncertain future. That, in turn, increased the risk of leakages from the income stream unless those saved funds were made available to those who could borrow and use them. One of the characteristics economists should look for in determining whether an economy is functioning properly, therefore, is the financial sector's ability to match savers and borrowers.

It must be noted that the borrowings that are relevant here are those for real expenditures—such as for the construction of factories or the purchase of consumer goods—and not for purchases of existing assets such as houses and stocks. The former add to GDP; the latter, which merely involve a change of ownership, do not. Even though a typical lender may not care whether the money is being borrowed to build a new factory or to buy existing real estate as long as the loan is ultimately paid back, the distinction is critical for economists because the former adds to GDP, but the latter does not.

Unfortunately, there are no readily available data that distinguish between the two types of borrowing. Because of this limitation, the data used in this book refer to total borrowings. Readers should therefore keep in mind that the actual borrowing numbers—which are what matters—are smaller than the figures used here.

The Role of Fiscal and Monetary Policy

It would be ideal if the market-driven adjustments in interest rates previously noted were sufficient to match savings and borrowings, and thereby keep the economy from spiraling downward. However, there are many circumstances in which such adjustments are not enough. To address these situations, the government has two types of policy, known as monetary and fiscal policy, that it can use to help stabilize the economy by matching private-sector savings and borrowings.

The more frequently used of the two is monetary policy, whereby the central bank raises or lowers interest rates to assist the matching process. Since an excess of borrowers relative to savers is usually associated with a strong economy, a higher policy rate might be appropriate to prevent overheating of the economy and inflation. In this case, the central bank will reduce the funds available in the banking sector for lending until the desired increase in interest rates is achieved. It can also raise the interest rate paid on deposits commercial banks hold at the central bank so that they will have less incentive to lend to the private sector at rates below the policy rate.

Similarly, a shortage of borrowers relative to savers is usually associated with a weak economy, in which case a lower policy rate might be needed to avert a recession or deflation. In this case, the

central bank will increase the funds available in the banking system for lending until the desired decrease in interest rates is attained.

With fiscal policy, the government itself borrows and spends money to build highways, airports, and other social infrastructure. In this case, the government is effectively filling the gap between private-sector savings and borrowings to keep the economy from contracting.

Whereas monetary policy decisions can be made very quickly by the central bank governor and his or her associates, fiscal policy tends to be very cumbersome in a peacetime democracy because elected representatives must come to an agreement on how much money to borrow and where to spend it. Because of the political nature of these decisions and the time it takes to implement them, most recent economic fluctuations have been addressed with central bank monetary policy.

Two Reasons for the Disappearance of Borrowers

Now consider an economy in which the savings generated by the private sector far exceed its borrowings even at near-zero interest rates. There are at least two sets of circumstances in which such a situation might arise.

The first is one in which private-sector businesses cannot find investment opportunities that will pay for themselves. A business will borrow money only if it believes it can pay back the debt with interest. And there is no guarantee that such money-making opportunities will always be available. Indeed, the emergence of such opportunities often depends on scientific discoveries and technological innovations, both of which are highly irregular and difficult to predict (these issues are discussed further in Chapter 5, which covers economic growth).

A more relevant version of the investment opportunity question in today's globalized economies is that businesses may find overseas investment opportunities to be more attractive than those available at home. If lower wages and other factors result in higher returns on capital in emerging markets, for example, pressure from shareholders will force businesses to invest more abroad while reducing borrowings and investments at home. If a business finds that its competitors are investing abroad because of cheaper labor, it may also be forced to do the same in order to remain competitive.

Since expanding operations abroad requires funds denominated in foreign currency, these firms will increase borrowings abroad, but not at home. In this case, the businesses are still maximizing profits, but because they are investing abroad, domestic operations and their macroeconomic impact resemble those of companies that are not borrowing at all. In globalized modern economies, this pressure from shareholders to invest where the return on capital is highest may play a bigger role than any technological breakthroughs, or lack thereof, in deciding whether to borrow and invest at home. And this return on capital issue is the key defining element of the concept of "pursued economy" that is explained starting in Chapter 3.

In the second set of circumstances, private-sector borrowers have sustained huge losses and are forced to restore their financial health by paying down debt or rebuilding their savings. For example, businesses that borrowed heavily to develop a new product may end up in such a predicament if the product they brought to market turned out to be a flop. And there will always be businesses that experience financial difficulties or go bankrupt because they lost out to competitors, even when the economy is doing well. But as long as these companies with financial difficulties are a small minority and the corporate sector as a whole is forward-looking, the economy itself will continue to move forward.

When a nationwide debt-financed asset bubble collapses, however, the number of businesses and households experiencing financial difficulties explodes. This is because the debt incurred to buy assets remains at its original value, but the assets purchased with those borrowed funds have collapsed in value. Balance sheets that were balanced before the bubble burst are now underwater, with liabilities far exceeding assets. Facing a huge debt overhang, these borrowers have no choice but to pay down debt or increase their savings—regardless of the level of interest rates—in order to restore solvency.

For businesses, negative equity or insolvency implies the potential loss of access to all forms of financing, including trade credit. In the worst case, all transactions will have to be settled in cash because no supplier or creditor wants to extend credit to an entity that may seek bankruptcy protection at any time. Many banks and other depository institutions are also prohibited by government regulations from extending or rolling over loans to insolvent borrowers in order to safeguard depositors' money.

For households, negative equity means savings they thought they had set aside for retirement or a rainy day are no longer there. Many families are likely to find such a situation extremely stressful and will do whatever they can to replenish their savings.

Both businesses and households will respond to these life-threatening conditions by placing highest priority on restoring their financial health—*regardless of the level of interest rates*—until their survival is no longer at stake. This means they will not only stop borrowing money but may also start repaying debt or increasing savings despite zero interest rates. After a nationwide asset bubble bursts, therefore, the entire private sector may become a large net saver. And that is exactly what happened after asset bubbles burst in Japan in 1990 and in the West in 2008.

A similar rush to replenish savings by businesses and households may take place after the COVID-19 recession that started in early 2020. This is because those who had to withdraw savings to make up for the loss of income during the lockdowns may want to rebuild their savings once incomes return to normal. And they are likely to continue replenishing savings, regardless of the level of interest rates, until a level deemed safe is reached.

Mechanism of Deflationary Spirals

What happens when borrowers disappear for the two reasons previously noted? As indicated in the preceding example, if there are no borrowers for the $100 in savings despite zero interest rates, total expenditures in the economy will drop to $900, while the saved $100 remains in the financial sector. The economy has effectively shrunk by 10 percent, from $1,000 to $900. That $900 now becomes someone else's income. If that person decides to save 10 percent and there are still no borrowers, only $810 will be spent, causing the economy to contract to $810. This cycle will repeat, and the economy will shrink to $730 if borrowers remain on the sidelines.

This $1,000–$900–$810–$730 process of contraction is driven by people who are all doing the right and honorable thing, which in this case is to restore their financial health by paying down debt and increasing savings. But because they are all doing it at the same time, the economy falls into what is called a deflationary spiral. Depending on the size of the bubble and the amount of savings that has to be

replenished, this process can go on for many years, and sometimes even for decades.

The $100 that remains in the financial sector will still be invested in various asset classes. Financial institutions entrusted with this money will try their best to find borrowers or promising assets to invest in. But if there are no borrowers in the real economy, institutions can only lend to those who want to buy or invest in existing assets, such as stocks or real estate. Their asset purchases may even foster mini-bubbles from time to time. But without borrowers in the real economy, those savings will never be able to leave the financial sector and support transactions that add to GDP or lift inflation. In other words, the deflationary spiral will continue as long as there are no borrowers in the real economy.

The $1,000–$900–$810–$730 deflationary process previously described does not continue forever since the savings-driven leakages from the income stream end once people become too poor to save. If a person cannot save any money on an income of $500, the entire $500 will naturally be spent. If the person who receives that $500 as income is in the same situation, she will also spend the entire amount. The result is that the economy finally stabilizes at $500 in what is typically known as a depression. And that is exactly what happened during the Great Depression in the 1930s, when the United States lost 46 percent of its nominal gross national product (GNP).

The Paradox of Thrift as Fallacy-of-Composition Problem

John Maynard Keynes, the father of macroeconomics, had a name for a situation in which everyone wants to save, but is unable to do so because no one is borrowing. He called it the paradox of thrift. It is a paradox because if everyone tries to save, the net result is that no one can save because they all end up in the $500 world.

The phenomenon of good behavior at the individual level leading to bad collective outcomes is known as the "fallacy of composition." An example would be a farmer who strives to increase his income by planting more crops. If all farmers do the same, and their combined efforts result in a bumper crop, crop prices will fall, and farmers will end up with less income than they had originally expected.

The paradox of thrift is one such fallacy-of-composition problem, but macroeconomics is full of such problems. Indeed, the *real* reason to study macroeconomics—as opposed to microeconomics or business administration—is to learn to identify these often counterintuitive fallacy-of-composition problems and thereby avoid their pitfalls.

Put differently, if one plus one always equaled two, one would only need to add up the actions of individual households and businesses to obtain an aggregate result. In that sort of world, if A and B in the previous example both wanted to save $100, total savings in the economy would be $200. There would then be no reason to separate the disciplines of macro- and microeconomics. But when interactions and feedback loops among the various actors cause fallacy-of-composition problems, one plus one seldom equals two, and that is where macroeconomics (as opposed to the simple aggregation of microeconomic results) has a role to play. In that sense, macroeconomics is a science of feedback loops, whereas microeconomics and business administration take the external environment as a given.

Until Keynes realized the prevalence of fallacy-of-composition problems in an economy and developed the concept of aggregate demand, most people thought that one plus one always equals two, and the discipline of macroeconomics did not exist. It is for this reason that his *General Theory*, first published in 1936 in the midst of the Great Depression (the $500 economy), is considered the starting point of macroeconomics. These fallacy-of-composition problems become particularly troublesome when borrowers disappear.

The Importance of Borrowing for Economic Growth

The same fallacy of composition operates in reverse when the economy is growing. For an economy to expand, someone must spend more than he earns, usually by borrowing money. If everyone spends only as much as she earns, the economy will be stable, but it will not grow. For it to expand, some entities must *over-stretch* themselves—either by borrowing money or drawing down savings.

A business will do so if it finds an attractive investment opportunity that seems to offer returns that exceed the borrowing costs.

A household might borrow money or reduce its savings if it finds an item that it feels it cannot live without. In other words, economic growth requires the continued emergence of attractive investment opportunities for businesses and must-have products for consumers that are worth borrowing for.

When a large part of the private sector is over-stretching, incomes will also be rising. That makes the initial decision to over-stretch less onerous than feared and may encourage even more people to over-stretch. This (positive) fallacy of composition accelerates economic growth. The conditions needed to prompt businesses to borrow money are discussed in detail in Chapter 5.

No Follow-Through on Keynes's Insights after World War II

Until 2008, the economics profession considered the contractionary equilibrium of a $500 economy to be an exceptionally rare occurrence—the only recent example was the Great Depression, which was triggered by the stock market crash in October 1929 and resulted in the loss of 46 percent of nominal GNP in the United States. Although Keynes recognized the paradox of thrift problem in macroeconomics, he failed to apprehend the $1,000–$900–$810–$730 deflationary mechanism driven by people trying to repair their balance sheets. Ben Bernanke, an expert on the Great Depression, even wrote in 1995 that anyone who can explain how the United States lost so much GNP in the Depression will have found the holy grail of macroeconomics.[2] Although Japan fell into a similar predicament when its asset bubble burst in 1990, its lessons were almost completely ignored by the economics profession[3] until the West was hit by the collapse of Lehman Brothers in 2008 and the Great Recession that followed.

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[2] Bernanke, Ben S. (1995), "The Macroeconomics of the Great Depression: A Comparative Approach," *Journal of Money, Credit, and Banking*, 27(1).

[3] One exception was the National Association of Business Economists in Washington, D.C., which awarded its Abramson Award to a paper by the author titled "The Japanese Economy in Balance Sheet Recession," published in its journal *Business Economics* in April 2001.

Economists failed to consider the scenario of a shortfall of borrowers because when macroeconomics was emerging as a separate academic discipline after World War II, all the damage private-sector balance sheets incurred in the Great Crash of 1929 had been repaired by massive government procurement during the war. When the government started placing orders with companies for thousands of fighter planes and tanks, even businesses with less-than-stellar balance sheets could obtain loans from the banks to expand production. The banks became willing lenders because they knew the borrowers had orders from a highly credible buyer, the government. That started a positive feedback loop in which everyone was over-stretching to build more fighter planes and tanks. The resulting rapid increases in income, in turn, allowed everyone to repair their balance sheets.

Technological advances during the war also resulted in plentiful postwar investment opportunities for businesses as new "must-have" products ranging from washing machines to television sets were brought to market. With businesses eager to start or expand production of these new products, there was an abundance of private-sector borrowers, and interest rates were quite high.

It was indeed a great irony in the history of macroeconomics that when Keynes was writing about the importance of aggregate demand in the midst of the Great Depression, the United States was suffering from a $1,000–$900–$810–$730 deflationary spiral caused by a lack of borrowers. When the war ended 10 years later and the importance of aggregate demand was finally recognized, the borrower shortfall had already disappeared because massive government procurement during the war had repaired private-sector balance sheets. Keynes's death in 1946 also added to the irony. How the world changed before and after the war is touched on again in Chapters 7 and 10.

With borrowers no longer in short supply, economists' emphasis after the war shifted to the availability of savings and the correct use of monetary policy to ensure that businesses obtained the funds they needed at interest rates low enough to enable them to continue investing. Economists also disparaged fiscal policy—that is, government borrowing and spending—when inflation became a problem in the 1970s because of concerns that the public sector would squander precious private-sector savings on inefficient pork-barrel projects.

The phenomenon of government borrowing preventing the country's private sector from borrowing the limited amount of savings to finance supposedly more productive private-sector investment is known in economics as "crowding out." It is one reason why economists view such borrowing with disdain.

Before 2008, economists also assumed the financial sector would ensure that all saved funds were automatically borrowed and spent, with interest rates moving higher when there were too many borrowers relative to savers and lower when there were too few. This assumed automaticity is why most macroeconomic theories and models developed prior to 2008 contained no financial sector.

However, the advent of major recessions starting in 1990 in Japan and in 2008 in the West demonstrated that private-sector borrowers can disappear altogether—even at a time of zero or negative interest rates—when they face daunting balance sheet problems following the collapse of a debt-financed bubble. In both post-1990 Japan and the post-2008 Western economies, borrowers vanished due to the sequence of events described in the following section.

Borrowers Disappeared When Faced with Solvency Constraint

It all starts with people leveraging up in an asset price bubble in the hope of getting rich quickly. If the value of a house rises from $1 million to $1.2 million in a year, a person who paid cash for the home enjoys a 20 percent return. But if the same person makes a 10 percent down payment and borrows the rest, she will have increased her initial investment of a $100,000 down payment to $300,000, for a return of 200 percent.

If the interest rate on the $900,000 loan is 5 percent, she will have made $200,000 less the interest cost of $45,000, or $155,000, representing an annual return of 155 percent. The prospect of easily earning 155 percent instead of 20 percent leads many people to leverage up during bubbles by borrowing and investing more.

When the bubble bursts and asset prices collapse, however, these people are left with huge debts and no assets to show for them. In the preceding example, if the value of the house falls by 30 percent to $700,000 but the buyer is still carrying a mortgage worth $900,000, the mortgage will be $200,000 underwater. If the owner has little in

the way of other assets, she will be effectively bankrupt. People with underwater balance sheets have no choice but to try to restore their financial health by paying down debt or rebuilding savings. With their financial survival at stake, they are in no position to borrow even if interest rates drop to zero. Regulatory constraints also prevent banks from lending to bankrupt borrowers.

Nor will there be many willing lenders—especially when the lenders themselves have balance sheet problems, which is frequently the case after a bubble bursts. This happens because banks lent vast amounts of money to bubble participants who are now effectively bankrupt and unable to service their debts. With nonperforming loans (NPLs) increasing rapidly, banks are forced to cut lending to preserve their capital. These banking issues are discussed further in Chapter 8.

Households and businesses therefore shift their priority from profit maximization to *debt minimization* once they confront the solvency constraint posed by a debt overhang. Since asset bubbles can collapse abruptly, the private sector's shift to debt minimization can also happen quite suddenly.

Economists Never Considered Recession Driven by Debt Minimization

Although it may come as a shock to non-economist readers, the economics profession did not envision a recession driven by private-sector debt minimization until quite recently. In other words, the $1,000–$900–$810–$730 deflationary process resulting from over-leveraged borrowers desperately trying to repair their balance sheets was never discussed. The recessions considered by economists were limited to those caused by inventory swings during the course of the business cycle and by central bank tightening of monetary policy to rein in inflation. As previously noted, even Keynes failed to recognize the mechanism of a deflationary spiral driven by a private sector that is minimizing debt.

Economists failed to consider recessions caused by private-sector debt minimization when building their theories because they assumed the private sector would always be trying to maximize profits. But two conditions must be satisfied for the private sector to maximize

profits: it must have a clean balance sheet, and it must have attractive investment opportunities.

By taking it as a given that the private sector is always maximizing profits, economists assumed, mostly unconsciously, that both conditions are always fulfilled. And that was indeed the case for most of the postwar era—at least until Japan's asset bubble burst in 1990 and the West's own bubble collapsed in 2008. Those collapses resulted in the impairment of millions of private-sector balance sheets, which not only led to the disappearance of borrowers but also prompted many borrowers to begin paying down debt despite record-low interest rates. And the amounts involved were enormous.

The Scale of the Deleveraging Problem

Flow-of-funds data for the advanced economies indeed show a massive shift in the private sector's behavior before and after 2008 (Figure 1.1). Flow-of-funds data show whether a sector is a net supplier (= saver) or borrower of funds in the economy by examining changes in its financial assets and financial liabilities. The data divide the economy into five sectors: household, nonfinancial corporate, financial, government, and foreign sectors.

If a sector's financial assets increased more than its financial liabilities, it is considered to be running a financial surplus—in other words, it is a net saver or a net supplier of funds to the economy. If the sector's financial assets increased less than its financial liabilities, it is considered to be running a financial deficit, which means it is a net borrower of funds. The data therefore show who saved and who borrowed within the economy. These five sectors should add up to zero because the financial liability of one group is always the financial asset of another.[4]

It should be noted that the concept of a financial surplus in the flow of funds data is not the same as the frequently used "savings

[4] Note that in U.S. data the five sectors do not sum to zero. This is because the Federal Reserve, which compiles them, believes it is better to publicly share the raw data it collects rather than go through the additional iteration of adjustments and estimations needed to ensure the numbers add up to zero.

Average annual private-sector[1] financial surplus(+) or deficit(-) (% of GDP)

	5 years to 2008 Q3	**From 2008 Q4 to present[4]**	Latest 4 quarters
UK	–0.18	**2.65**	7.39
US	3.31	**7.01**	9.52
Canada	–0.03	**–0.82**[5]	5.92
Japan	7.38[2]	**8.08**	10.22
Korea	–1.80	**3.48**	3.61
Australia	–7.37	**2.14**	9.37
Eurozone	1.29	**5.11**	9.54

Average annual private-sector[1] financial surplus(+) or deficit(-) (% of GDP)

	5 years to 2008 Q3	**From 2008 Q4 to present[4]**	Latest 4 quarters
Germany	8.03[3]	**6.41**	6.17
France	2.83	**4.14**	9.19
Italy	1.35	**4.55**	10.69
Spain	–7.93	**7.64**	10.10
Greece	0.33	**1.68**	6.68
Ireland	–4.94	**0.62**	16.16
Portugal	–3.79	**4.29**	4.47

[1] Private sector = household + corporate + financial sectors.

[2] Entered balance sheet recession in 1990.

[3] Entered balance sheet recession in 2000.

[4] Until 2021 Q3.

[5] Except Canada.

FIGURE 1.1 Private-Sector Borrowers Disappeared after 2008

Source: Nomura Research Institute, based on flow of funds and national accounts data

rate" because the latter is adjusted for depreciation and other factors that affect net additions to the saver's wealth.

These data, like many macroeconomic statistics, are frequently revised as more complete information becomes available. And as noted in the author's previous work,[5] these revisions can be quite large. Anyone who uses these data must therefore view each statistic with a certain amount of latitude given the possibility of subsequent

[5] Koo, Richard C. (2015), *The Escape from Balance Sheet Recession and the QE Trap*, Singapore: John Wiley & Sons, pp. 143–146.

revisions. The numbers used in this book reflect the information that was available online as of March 7, 2022. In this book, the term *private sector* is used to mean the sum of the household, nonfinancial corporate, and financial sectors.

According to these data, which are shown in Figure 1.1, the entire U.S. private sector was saving an average of 7.01 percent of gross domestic product (GDP) per year from the third quarter of 2008 through the third quarter of 2021 (and 6.16 percent of GDP through the last quarter of 2019, just before the onslaught of COVID-19), a period in which Lehman Brothers' collapse led to mostly zero interest rates. Under ordinary circumstances, zero interest rates should have prompted the private sector to borrow more, but that was not what happened: in fact, the opposite did. The U.S. private sector increased its savings from an average of 3.31 percent of GDP during the five years prior to the Lehman shock—when interest rates were much higher—to 6.16 percent of GDP after interest rates fell to zero. In other words, sharply lower interest rates were accompanied by an 86 percent increase in savings as a percentage of GDP, from 3.31 percent to 6.16 percent.

Similar shifts in private-sector behavior were also observed in Europe. Savings by Spain's private sector moved from –7.93 percent of GDP to +7.64 percent of GDP post-Lehman. The corresponding figures for Ireland were –4.94 percent before and +0.62 percent after, while for Portugal it was –3.79 percent before and +4.29 percent after. The fact that these massive changes took place at a time of zero or negative interest rates suggests that Europe's private sector also sustained heavy balance sheet damage when the housing bubble burst in 2008.

In Japan, whose bubble burst in 1990 and where interest rates have been essentially zero or negative since 1997, the private sector was saving an average of 7.38 percent of GDP in the five years prior to Lehman's failure in 2008 and an average of 8.08 percent in the 13 years that followed. In Germany, which experienced no housing bubble because the dot-com bubble in the Neuer Markt, the local equivalent of the tech-heavy NASDAQ index, burst in 2000 and threw the economy into serious recession, the private sector was saving a full 8.03 percent of GDP *before* Lehman failed and 6.41 percent thereafter.

The Economics Profession Failed to Consider Deleveraging Economies

These large and positive savings numbers at a time of zero interest rates are very disturbing statistics. Businesses and households should be massive *borrowers* at such low interest rates, but instead they have been huge savers because they are trying to repair damaged balance sheets. In effect, the private sectors in all the advanced countries except Canada are operating outside the realm of textbook economics. And Canada is an exception only because it is the one country whose housing bubble has yet to burst.

The abrupt shift from the pre-Lehman to the post-Lehman world was nothing short of spectacular. In Spain, for example, the private-sector swing from borrowing to saving amounted to well over 10 percent of GDP—and that is comparing the five-year average before Lehman with the 13-year average after Lehman.

The shift in private-sector behavior immediately before and after the Lehman failure was even bigger, reaching well over 20 percent of GDP in many countries. Such a huge and abrupt swing from net borrowing to net saving will throw any economy into a recession. And households and businesses will not resume borrowing until they feel comfortable with their financial health, a process that can take years.

For each borrower who went bankrupt after a bubble burst, there were probably dozens of honest and responsible borrowers who sought to avoid that ignominious fate by paying down debt to restore their financial health and respectability. And it was the collective actions of these honorable borrowers that pushed the economy into the $1,000–$900–$810–$730 deflationary spiral.

When there is enough of this sort of deleveraging to tip the entire private sector into a financial surplus, even entities with clean balance sheets, who may still constitute a majority, are hurt as their income shrinks along with the economy. The contraction also hurts the banking system because borrowers, in general, have less income, even if those bankers and borrowers had no hand in the bubble.

Yet economists continue to assume implicitly and often unconsciously that borrowers are always plentiful because their models and theories all assume the private sector is maximizing profits.

Their forecasts for growth and inflation, which are based on those models and theories, have consistently and repeatedly missed the mark since 2008 because the assumption of a profit-maximizing private sector is no longer valid in the post-bubble world.

When Bank of Japan (BOJ) Governor Haruhiko Kuroda and Deputy Governor Kikuo Iwata stated confidently at the start of their terms in 2013 that they would achieve the 2-percent inflation target within two years, they were assuming that Japan's economy was still in the textbook world. Iwata was so confident of reaching the 2-percent objective that he pledged to resign if the BOJ failed to hit the target within two years. Their utter failure to come anywhere near the target despite negative interest rates and astronomical amounts of monetary easing demonstrated that the Japanese economy is nowhere near the textbook world.

All the Western economists—in both the public and private sectors—who have continued to miss their inflation and growth targets since 2008 are making the same mistake. The problem is that because the assumption of a profit-maximizing private sector is so fundamental to their models and theories, most economists are still unaware that their models have foundered because this critical assumption is no longer valid. Most of them, together with the average public, are not even aware of the disturbing numbers shown in Figure 1.1.

No Name for Recession Driven by Debt Minimization

Mikhail Gorbachev famously said, "You cannot solve the problem until you call it by its right name." When the economic crisis hit in 2008, the economics profession had not only neglected to consider the possibility of a recession caused by a debt-minimizing private sector, but it did not even have a name for the phenomenon. Indeed, the author had to coin the term *balance sheet recession* in the late 1990s to describe this economic disease in a Japanese context.[6] This term finally entered the lexicon of economics in the West following the housing bubble collapse in 2008.

[6] The author acknowledges the inspiration given to him by Mr. Edward Frydl, his former boss at the Federal Reserve Bank of New York, who used the term *balance sheet–driven recession* when we were discussing the U.S. economy of the early 1990s.

Economists' inability to envision a world in which borrowers stop borrowing or even start paying down debt has already led to some terrible historical outcomes, including the Great Depression in the United States and the rise of Adolf Hitler and the National Socialists in Germany during the 1930s. European policy makers' continued failure to understand balance sheet recessions has also enabled the emergence of similar far-right political groups in the Eurozone since 2008. These economic and political issues in Europe are addressed in Chapter 7.

The Paradox of Thrift Was the Norm before the Industrial Revolution

Economic stagnation due to a lack of borrowers, however, was actually the norm for thousands of years before the Industrial Revolution in 1760. As shown in Figure 1.2, economic growth had been negligible for centuries before 1760. Even then, there were probably

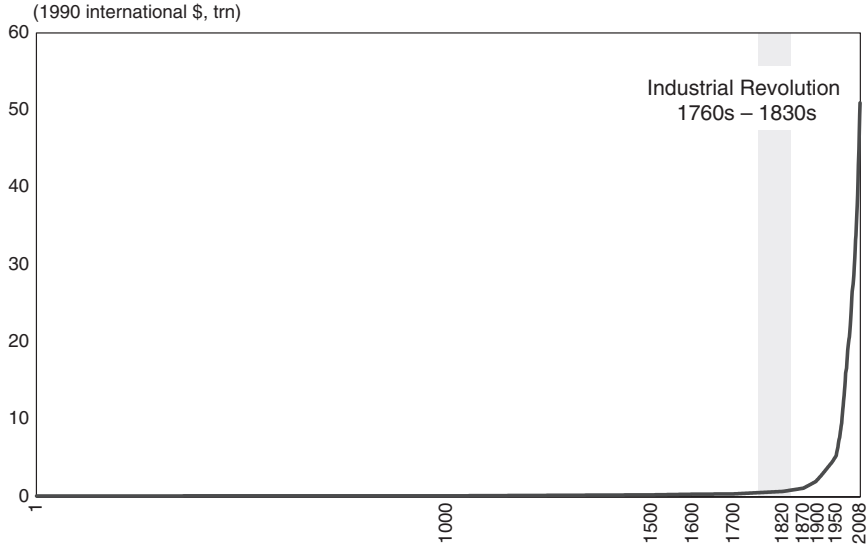

FIGURE 1.2 Economic Growth Became the Norm Only after the Industrial Revolution

Source: Angus Maddison, "Historical Statistics of the World Economy: 1-2008 AD." http://www.ggdc.net/maddison/Historical_Statistics/vertical-file_02-2010.xls

millions who tried to save—after all, human beings have always worried about an uncertain future. Preparing for old age and the proverbial rainy day is an ingrained aspect of human nature. But if it is only human to save, the centuries-long economic stagnation prior to the Industrial Revolution must have been due to a lack of borrowers.

Private-sector borrowing requires a promising investment opportunity. After all, businesses will not borrow unless they feel sure the debt can be paid back with interest. In other words, the risk-adjusted return of the project must be substantially higher than the borrowing cost. But before the Industrial Revolution, which was essentially a technological revolution, there was little or no technological innovation, and therefore few investment projects capable of paying for themselves.

Businesses also tend to minimize debt when they see no investment opportunities because the probability of bankruptcy can be reduced drastically by eliminating debt. Japan is home to many firms dating back several centuries, many of which are located in and around Kyoto and Nagoya. These firms typically do not borrow money for this reason. And if they do, they pay it back at the earliest opportunity in order to minimize the risk of bankruptcy. Except for tax and return-on-equity (ROE) considerations, therefore, it is reasonable for businesses to minimize debt until attractive investment opportunities present themselves. Given the dearth of such opportunities prior to the Industrial Revolution, it is not hard to understand why there were so few willing borrowers.

Amid this absence of investment opportunities and borrowers in the pre-1760 world, efforts to save only caused the economy to shrink. The result was a permanent paradox of thrift in which people tried to save but their very actions and intentions kept the national economy in a depressed state. These conditions lasted for centuries in both the East and the West.

Powerful rulers sometimes borrowed private savings and used them to build monuments or undertake social infrastructure projects. The vicious cycle of the paradox of thrift was then suspended as the government borrowed the private sector's savings (the initial savings of $100 in the previous example) and injected those funds back into the income stream, fueling rapid economic growth. But unless the project paid for itself—and politicians are seldom good at selecting investments that pay for themselves—the government, facing a

mounting debt load, would at some point get cold feet and discontinue its investment. The broader economy would then fall back into the stagnation that characterizes the paradox of thrift. Consequently, these regimes were often outlived by the monuments they created. The challenging task of selecting viable public works projects is discussed in Chapter 4.

Countries also tried to achieve economic growth by expanding their territories, that is, by acquiring more land, which was the key factor of production in pre-industrial agricultural societies. Indeed, for centuries before 1945, people believed that territorial expansion was desirable if not essential for economic growth (the significance of this date is explained in Chapter 3). This territorial drive for prosperity provided an economic rationale for colonialism and imperialism. But both were basically a zero-sum proposition for the global economy and also resulted in countless wars and deaths.

Ironically, the wars and resulting destruction produced investment opportunities in the form of postwar reconstruction activity. And wars were frequent occurrences in those days. But without a continuous flow of innovation, investment opportunities soon exhausted themselves and economic growth petered out.

Four Possible States of Borrowers and Lenders

The preceding discussion suggests an economy is always in one of four possible states depending on the presence or absence of lenders (savers) and borrowers (investors in the real economy). Either (1) lenders and borrowers are both present in sufficient numbers, (2) there are more borrowers than lenders, even at high interest rates, (3) there are more lenders than borrowers, even at low interest rates, or (4) lenders and borrowers are both absent. These four cases are illustrated in Figure 1.3.

Of the four, traditional economics only looks at Cases 1 and 2. This is because the presence of borrowers already assumes there are entities with acceptable balance sheets who see attractive investment opportunities and are maximizing profits. And they will indeed borrow as long as real interest rates are low enough. Put differently, those arguing that the central bank should ease monetary policy to stimulate the economy are making the unspoken assumption that the economy is in Case 1 or 2.

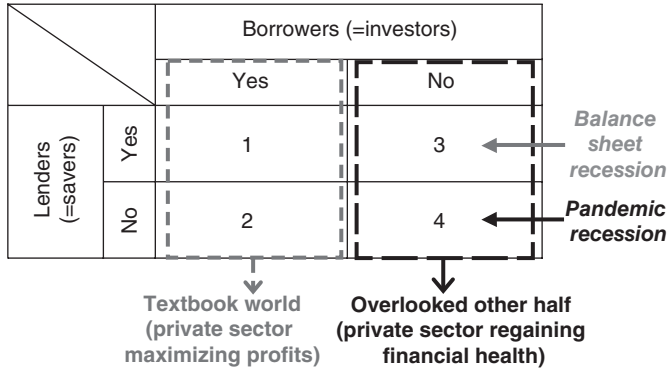

FIGURE 1.3 Borrowers and Lenders: Four Possible States

Of the two, only Case 1 requires a minimum of policy intervention—such as slight adjustments to interest rates—to match savers and borrowers and keep the economy from shrinking. This state of affairs is therefore associated with ordinary interest rates and can be considered the ideal textbook case.

A Shortage of Lenders Has Well-Known Remedies

Case 2 (insufficient lenders) can be caused by macro, financial, or cultural factors. The most common macro factor is when the central bank tightens monetary policy to rein in inflation. The tighter credit conditions that result certainly leave lenders less willing to lend. But once inflation is brought under control, usually within a year or two, the central bank typically eases monetary policy, and the economy returns to Case 1.

Financial factors weighing on lenders may also push the economy into Case 2. One such factor is a banking crisis brought about by an excess of NPLs on banks' books. When loans go bad, banks' capital is eroded. And when a bank's capital-to-assets ratio falls below the legally required minimum, it must desist from lending. When many banks find themselves in this situation and are unable to lend, the economy suffers from what is known as a credit crunch. Overzealous supervision of financial institutions by the authorities can also trigger a credit crunch, something that actually happened after the

disastrous late-1980s savings and loan debacle in the United States. When many banks encounter NPL problems at the same time, mutual distrust among the banks may lead not only to a credit crunch but also to a dysfunctional interbank market, a state of affairs typically referred to as a financial crisis. This type of crisis is discussed further in Chapter 8.

When lenders have NPL problems, the central bank's policy rate can diverge significantly from actual lending rates set by the banks. This happens because NPL problems in the banking system weaken the economy and prompt the central bank to lower interest rates. But because bank lending is constrained by insufficient bank capital, competition among borrowers for available funds pushes actual lending rates far higher than what is suggested by the central bank's policy rate. The resulting "fat spreads" mean only those willing to pay the high market rates will be able to borrow. Monetary authorities may also deliberately allow such fat spreads in certain circumstances to allow banks to earn more so that they can use those profits to recapitalize themselves.

Certain cultural and religious factors, such as prohibitions on lending, as well as income levels that are too low to allow people to save, may also result in an underdeveloped financial system and a shortage of lenders. These developmental issues are typically found in pre-industrialized societies and can take many years to address. The recent development of so-called Islamic finance is an attempt to overcome some of these religious constraints to lending in Muslim countries.

A country may also be too poor or underdeveloped to save. But if a country is too poor to save because of the paradox of thrift, it would be classified as being in Case 3 or 4 because the problems are actually attributable to a lack of borrowers.

Noncultural or religious causes of a shortage of lenders have well-known remedies. For example, the government can inject capital into the banks to restore their ability to lend, or it can relax regulations preventing financial institutions from serving as financial intermediaries. In the case of a dysfunctional interbank market, the central bank can act as lender of last resort to ensure the clearing system continues to operate. It can also relax monetary policy. Lender-side problems in Case 2, such as credit crunches and financial crises, are discussed in more detail in Chapter 8.

The conventional emphasis on monetary policy and concerns over the crowding-out effect of fiscal policy are justified in Cases 1 and 2, where there are ample private-sector borrowers but (for a variety of reasons in Case 2) not enough lenders.

The Absence of Borrowers and the "Other Half" of Macroeconomics

The problem is with Cases 3 and 4, where the bottleneck is a shortage of *borrowers*. When borrowers disappear for either of the two reasons previously noted, monetary policy loses its effectiveness because lower interest rates do not lead to an increase in borrowing. And without an increase in borrowing or private-sector overstretching, there is no reason for the economy to expand.

Fiscal policy—that is, government borrowing—then becomes indispensable in filling the gap between private-sector savings and borrowings. There is no reason for the economy to contract if the government borrows and spends the excess savings of the private sector (the $100 in the example previously given). Nor will such government actions cause crowding-out problems when there are no private-sector borrowers. This is the *other half of macroeconomics* that has been overlooked by traditional economists.

Fixation with Profit-Maximization Assumption Prevented Full Breakthrough

Keynes, writing during the Great Depression, realized that the macroeconomy is full of fallacy-of-composition problems and came up with the concept of aggregate demand as distinct from just a summing-up of individual wish lists. Although that was a revolutionary insight, he was still constrained by the traditional notion that the private sector is always maximizing profits. That fixation forced him to fashion a variety of convoluted explanations for why aggregate demand had suddenly shrunk in the early 1930s, when everyone was supposedly still maximizing profit. For example, he argued that there must have been a decline in what he called the marginal efficiency of capital that undermined the reasons to invest. He also argued that a sudden

increase in "preference for liquidity" made people less willing to spend money. But these theoretical concoctions could not explain why such changes had occurred so suddenly in the first place.

Since the post-1990 Japanese experience, it has become clear that what Keynes mistook for a fall in the marginal efficiency of capital and an increase in liquidity preference was simply the result of a private sector that was minimizing debt. And people were minimizing debt so as to restore their financial health after the collapse of a debt-financed bubble pushed them up against solvency constraints.

It was also said that "liquidity trap," where low interest rates failed to stimulate the economy, was due to lenders refusing to lend at such low interest rates. But post-1990 Japan and the post-2008 West proved that the trap is due to borrowers not borrowing money because of balance sheet problems. This also implies that "money demand functions" and "liquidity preference–money supply (LM) curves," the two pillars of Keynesian economics that all students of economics had to learn decades ago, are largely irrelevant concepts.

Keynes also coined the term *animal spirits* to account for shifts in people's behavior that he could not explain. But people will suddenly and understandably swing from profit maximization to debt minimization when they hit the solvency constraint. And they will continue to deleverage until their balance sheets are repaired, a process that can take years. A necessary condition for animal spirits to kick in and increase investments, therefore, is that the private sector has clean balance sheets.

As previously noted, there are two main reasons why private-sector borrowers might disappear. The first is that they cannot find attractive investment opportunities at home, and the second is that their financial health has deteriorated to the point where they cannot borrow until they repair their balance sheets. Examples of the first case include the world that existed prior to the Industrial Revolution and in advanced countries today, where the return on capital is lower than that in emerging economies. Examples of the second case are typically found following the collapse of debt-financed asset bubbles. The private sector's move to replenish savings depleted during the COVID-19 pandemic, if it happens, can be considered a variation of the second case.

Most advanced countries since 2008 have suffered from both of these factors, which served to reduce the number of borrowers

(Figure 1.1). In other words, these economies are all in Case 3 or 4, that is, they are in the "other half" of macroeconomics. Unfortunately, most policy makers and economists are still operating on the assumption that their economies are in Case 1 or 2. But policies designed for Case 1 or 2 are often counterproductive when the economy is in Case 3 or 4, something that is discussed in the rest of this book. The resultant failure of governments and central banks to meet their own growth and inflation targets is one of the key reasons why the public has grown so impatient with the establishment.

Because balance sheet problems can depress the economy very quickly and are therefore more urgent, they are discussed first, in Chapter 2. However, this book focuses on the second case and explores it in Chapters 3, 4, and 5. Readers who are already familiar with the concept of balance sheet recessions and are aware of the current status of the world's major economies may wish to proceed directly to Chapter 3.