BETWEEN DEBT AND THE DEVIL

MONEY, CREDIT, AND FIXING GLOBAL FINANCE

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CONTENTS

PART II

Dangerous Debt

THE MOST IMPORTANT REASON the 2008 crisis was followed by such a deep recession and weak recovery was excessive private credit creation in the preceding decades. Part II focuses on why that growth occurred, why it caused harm, and how it was possible even though inflation remained low and stable.

Chapter 3 describes why debt contracts can be valuable but also dangerous and how banks create credit, money, and purchasing power. Chapter 4 analyses the different economic functions of various categories of credit and explores the implications of the rising importance of urban real estate in modern economies. Together these two chapters explain why banking systems left to themselves are bound to create too much of the wrong sort of debt, instability, and crisis.

Excessive leverage growth before the crisis produced a severe post-crisis debt overhang, faced with which all policy levers appear blocked. As Chapter 5 describes, that means that fixing the banks will not be sufficient to fix the economy. More radical policies will be required.

Chapter 6 discusses how securitization and shadow banking fit into the story. Increased interbank trading activity and financial innovation, far from making the system more efficient and stable, amplified the inherent instability of the credit cycle and made the debt overhang effect worse. And the very risk management tools that were meant to reduce risks actually magnified them. Meanwhile, at the aggregate level intense intrafinancial system activity in the asset management industry is a zero-sum game, making society no better off, but generating costs that reduce end customer returns. The summary scorecard on three decades of financial innovation is thus almost entirely negative.

Chapter 7 addresses an apparent dilemma. Excessive credit growth before 2008 produced crisis and debt overhang, but it seemed at the time that we *needed* rapid credit growth to achieve adequate economic growth. Chapter 7 argues, however, that we could grow modern economies without excessive credit growth, but only if we address three drivers of "unnecessary" credit growth—rising real estate values, increasing inequality, and global imbalances—and only if we recognize that direct government stimulus of demand, through money financed deficits, is sometimes less dangerous than private credit creation. It may indeed be the only effective response to secular stagnation, that is, to a long-term rather than merely cyclical problem of chronically deficient demand.

THREE

DEBT, BANKS, AND THE MONEY THEY CREATE

> The cycle of manias and panics results from procyclical changes in the supply of credit … Money always seems free in manias.
>
> —*Charles Kindleberger,* Manias, Panics and Crashes: A History of Financial Crises*, 1978*[1]

Charles Kindleberger's classic history of financial crises documents the never-changing potential for financial markets to generate booms, busts, and financial instability. His examples cover equities, tulips, real estate, and various commodities and are drawn from Scandinavia, Japan, Korea, the United States, the United Kingdom, and many other countries. The precise patterns of behavior and economic implications vary. But his conclusion, supported by numerous other researchers, is clear: the booms and busts that result in the greatest economic harm (rather than merely losses for some speculators) are driven by "procyclical" credit supply, with a rapidly growing and easily available supply of credit in the boom, followed by a dearth of credit in the subsequent downswing. The potential for irrational exuberance exists in all asset markets, but when it is financed by debt, severe economic harm results.

In the decade running up to the 2007–2008 crisis, private credit grew rapidly in almost all advanced economies: in the United States at 9% per year, in the United Kingdom at 10% per year, in Spain at 16% per year.[2] In most it grew far faster than nominal GDP; as a result, private leverage—the ratio of private credit to GDP—significantly increased. But that ten-year pattern was a continuation of the far longer-term sixty-year trend of increasing real economy leverage described in Chapter 1.

Total UK private-sector leverage grew from 50% in 1964 to 180% by 2007; in the United States it grew from 53% in 1950 to 170% in 2007. More recently the pattern has been repeated in emerging economies. South Korea's private leverage grew from 62% in 1970 to 155% before the Asian financial crisis of 1997: it is now even higher at 197%. The ratio of Chinese debt to GDP has grown from 124% in early 2008 to more than 200% today.[3]

Real economy leverage grew, because private credit grew faster than nominal GDP. That suggests a fundamental question: was such rapid credit growth needed to deliver a reasonable rate of economic growth, or could we have achieved economic growth without ever rising indebtedness? Chapter 7 addresses that issue. This chapter and the next three explain why rising debt levels led to crisis and post-crisis recession.

The Positive Role of Debt Contracts . . . and Banks

A recent history of debt by the anthropologist David Graeber is titled *Debt—The First 5000 Years*.[4] Human societies have used debt contracts for as long as they have used money—indeed, Graeber argues for longer. And for much of that time, some philosophers and religions condemned interest-bearing debt as intrinsically unjust. In a debt contract the lender is due a return even if the borrower's business project fails: tenant farmers, for instance, have to pay interest to a landlord who lends them money even if the harvest is poor. Interest-bearing debt contracts can therefore magnify initial inequalities and not just in agricultural societies; Chapter 7 discusses the two-way link between debt and inequality in advanced societies today. Islam prohibits usury; medieval Christianity was deeply suspicious of it. Aristotle in *The Politics* described usury as a "most hated sort" of way to accumulate wealth.[5]

But modern economic theory sees debt contracts as vital to spur economic growth. Moreover, it is precisely their fixed nature—the fact that the returns to lenders are largely independent of the success of the business project—that makes them valuable.

Financial systems facilitate the mobilization of capital. In theory that could be achieved entirely by an equity market: all capital could flow from investors to entrepreneurs and businesses in the form of equity

contracts, savers would hold all their claims on businesses as equities, and businesses would be 100% equity financed.

But from the earliest days of the Industrial Revolution, capital accumulation in fact involved a major role for debt capital markets and banks as well as equity markets. And economic theory provides good reasons for believing that without debt contracts, capital mobilization would be more difficult.

In an equity contract, the return to the investor varies with the success of the business projects being financed. But those results are unknown in advance to either entrepreneur or investor. And once projects are completed, entrepreneurs or business managers know far more about the true results achieved than do investors. So they can act to the investors' disadvantage, for instance, by paying themselves higher salaries, which reduce investors' returns.

Equity contracts thus leave investors facing risks that they cannot control. Finding out the full truth about project returns is expensive and difficult: in the language of finance theory, investors face the challenge of "costly state verification." In contrast, debt contracts offer a return that is specified in advance and is fixed as long as the business project does not actually fail.[6] As a result, they support capital mobilization from savers who would be unwilling to fund investment projects if all contracts had to take an equity form. Without railway company debt issues as well as equity issues, private-sector investment in the railways of nineteenth-century Britain would almost certainly have proceeded more slowly.

This benefit could be delivered by debt contracts that take a simple "direct" form, with an investor holding bonds issued by companies. And liquid bond markets can make it possible for the investor to fund long-term investments while holding an asset they can sell for cash in the short term. As Chapter 2 describes, such liquidity transformation, in either debt or equity markets, can also play an important role in enabling capital mobilization.

But banks that intermediate between savers and borrowers further enhance this transformation function, since they enable depositors to hold claims that not only are rapidly or immediately available but also maintain an apparently certain capital value. The development of "fractional reserve banks" (that is, banks that hold only a small proportion of their deposits in liquid money form while lending the rest out on longer

maturities than their liabilities) therefore also probably played an important role in enabling economic development. Writing in *Lombard Street*, his famous 1878 description of the British banking system, Walter Bagehot argued that Britain's more developed banking system, compared with that of much of continental Europe, enabled wider pools of savings to become "borrowable" by entrepreneurs, rather than merely hoarded.[7] The economic historian Alexander Gerschenkron argued that investment banks in late nineteenth-century Germany played a role as important as industrial technologies in driving economic growth.[8]

It is therefore not surprising that empirical studies have found evidence of a beneficial effect of financial deepening—measured as either the ratio of private debt to GDP or that of bank assets to GDP—as countries progress through the early stages of economic growth. And in some emerging countries today, such as India, a strong case can be made that the extension of banking into small towns and rural areas would facilitate capital formation by small and medium enterprises, which would not occur if capital accumulation required either equity or direct debt contracts between investor and entrepreneur.

Debt Contract Dangers

But while debt contracts and banks play economically valuable roles, the very character that makes them valuable also makes them potentially harmful. Debt contracts appear to provide certain returns—but that very fact increases the danger of irrational booms and amplifies the impact of subsequent busts. Five related features of debt contracts make them potentially dangerous.

First, debt contracts can fool us into ignoring risks. Their return does not depend in a precise fashion on the success of the business projects they finance. But that does not mean that debt contracts are riskless: instead, the risks take a particular form.

When an investor buys an equity, she knows that the most likely expected return is only one among many possible results, and that both considerably higher or considerably lower return is possible. Moreover, the daily variation in equity prices makes the investor continually aware of this inherent risk. In contrast, a debt contract has a high likelihood of

one specific return—the debt paying off in full and with prespecified interest—and there is no possibility of an upside above that fixed return. But there is a small probability of a very significant downside.

This pattern of return tends to induce myopia, or as the economist Andrei Shleifer and colleagues have labeled it, "local thinking": investors in good times assume that full payout is not only likely but certain, and they exclude from their consideration the possibility of loss.[9] In the upswing of the crisis, there is thus a danger that risky loans and bonds are treated as close to riskless. As a result many bonds may be bought by investors and many bank loans made, which, as Shleifer and colleagues put it "owed their very existence to neglected risk." This was undoubtedly the case in the United States in the years running up to 2008. Market imperfections of the sort described in Chapter 2 can lead to price instability in all financial markets. But in the debt market, they can generate debt contracts that in a rational market would never even have existed.

Second and as a result of feature 1, debt markets can be susceptible to "sudden stops" in new credit supply as investors or bankers who previously ignored risks suddenly become aware of the full range of possible results and are therefore unwilling to lend new money. The nature of debt contracts therefore creates the danger that debt finance, whether by bonds or banks, will be first provided on excessively easy terms and then denied at almost any price. Credit supply in Ireland grew on average at almost 20% per year from 2004 to 2008; from 2009 to 2013 it contracted by about 1.3%.[10] Both the bonanza and the sudden stop caused harm.

Sudden stops in debt finance are far more harmful than in equity finance, because of the specific maturity of debt contracts and the need for debt rollover. Once made, equity investments are permanent: there is no commitment to return the capital at some specific time, and even income payments (dividends) are to a degree discretionary. As a result one could imagine an economy in which new equity investment markets closed entirely for a number of years. Over time there would be economic costs, but business operations and new investment would still continue. An economy with large debt contracts outstanding relies, however, on the supply of new credit, without which many debt-dependent companies would cease investment and in some cases close. A more debt-intensive economy—in particular, one with extensive short-term

debt commitments—is more vulnerable to sudden falls in investor confidence or to sudden reductions in bank lending capacity than an equity-intensive one would be.

Third, when debt contracts become unsustainable they do not adjust smoothly. As former Federal Reserve Chairman Ben Bernanke has commented, "in a complete markets world" (that is, in the world described by the Arrow Debreu model, discussed in Chapter 2) "bankruptcy would never be observed."[11] Debt contracts would instead specify in advance how losses should be shared between borrowers and lenders, enabling viable businesses to continue trading even if investors suffered disappointing returns. But in the real world, bankruptcy procedures often result in disruption, in large administrative costs, and in "fire sale" losses as assets are sold at just the wrong point in the economic cycle.

Fourth, asset price falls induced by a sudden stop in confidence and credit growth can further depress both confidence and credit supply. Fire sales resulting from default and bankruptcy can result in lower prices for the assets of failing companies. But reduced credit supply can make those asset price falls more widespread, as companies and households are less able and willing to buy assets with credit. And reduced asset prices can impair the solvency of banks, leading to yet further constraints on credit supply.

Fifth and finally, falling asset prices can produce a deflationary debt overhang effect. Faced with falling asset prices, borrowers may become suddenly concerned that they are overleveraged and cut consumption (in the case of households) and investment (in the case of businesses) in an attempt to reduce their debts and ensure their solvency. But the combined impact of this behavior by multiple households and companies depresses aggregate demand, economic growth, asset prices, and confidence. Chapter 5 argues that the severity of the debt overhang we now face is the most important reason that recovery from the 2007–2008 crisis has been so anemic.

The quasi-fixed nature of debt contracts, combined with inherently imperfect markets and potentially myopic human beings, can thus be powerful drivers of financial and macroeconomic instability. Together they drive overexuberant booms; and together they produce post-crisis recessions. In 1933 the economist Irving Fisher argued in a famous article that the United States faced a Great Depression because excessive

Fisher's debt deflation dynamics: key features

1. Debt liquidation leads to distress selling
2. Contraction of deposit currency (i.e., bank money)
3. Fall in the level of prices
4. Still greater fall in the net-worths of businesses, precipitating bankruptcies
5. A like fall in profits
6. Reduction in output, in trade, and in employment
7. Pessimism and lack of confidence
8. Hoarding and slowing down still more the velocity of circulation
9. Complicated disturbances in rates of interest—fall in nominal rates, rise in real rates

Figure 3.1.

credit creation had been followed by a self-reinforcing "debt deflation." Figure 3.1 summarizes his description of the processes at work.[12] The run-up to the 2007–2008 crisis and the subsequent Great Recession have seen us repeat that experience.

So debt could be dangerous, even if all debt took a direct, bond financed, form (particularly if the bonds were relatively short term). But the dangers are greatly increased by the fact that banks create credit, money, and purchasing power.

Banks and the Money They Create

Read an undergraduate textbook of economics, or advanced academic papers on financial intermediation, and if they describe banks at all, it is usually as follows: "banks take deposits from households and lend money to businesses, allocating capital between alternative capital investment possibilities."[13] But as a description of what modern banks do, this account is largely fictional, and it fails to capture their essential role and implications.

Banks create credit, money, and thus purchasing power. They make loans to borrowers, crediting an asset on the banks' balance sheet; at the same time they put money in the borrowers' account, creating a bank liability. The loan is repayable at a later date, but the money is immediately available. It is this "maturity transformation" that creates effective purchasing power. The borrower may, and almost certainly will, then pay out the money to another business or household, but that creates money in that person's account. The vast majority of what we count as "money" in modern economies is created in this fashion: in the United Kingdom 98% of money takes this form, and only 2% represents the notes and coins liabilities of the state.[14]

By creating credit and money, banks can increase purchasing power, and bank money creation therefore plays a crucial role in stimulating nominal demand growth. And bank credit and money creation can, as Chapter 8 describes, skew purchasing power toward investment, driving at least for a time faster economic growth. But it can also skew purchasing power toward asset speculations of the sort described by Kindleberger. How much credit banks create and to what purposes that credit is devoted are therefore issues of vital importance.

In fact, the ability to create credit and purchasing power, for good or ill purposes, is not unique to banks. If a company selling products or services to a customer is willing to accept a promissory note rather than cash, a form of credit is created. And if the creditworthiness of the customer is undoubted, the supplier may be able to use the promissory note to pay its own suppliers: in which case the credit note becomes in effect money. Spontaneously arising trade credit can thus increase spending power in an economy, and speculative booms are possible even without banks. Banks were largely irrelevant to the Dutch tulip bulb mania of 1638: instead innovations in vendor finance made possible a self-reinforcing rise in both prices and the value of trade credit outstanding. Shadow banking activities—as Chapter 6 describes—can create credit and money equivalents outside the formal banking sector.

But the existence of fractional reserve banks greatly increases the potential for credit and purchasing power creation. The Swedish economist Knut Wicksell provided a beautifully clear description of why this is the case in his 1898 book *Interest and Prices*.[15] In a system of bank-based credit—or as he labels it, "organized credit"—bank money be-

comes the dominant medium of exchange. For reasons of convenience and security, households and businesses hold almost all their money in bank deposits, and almost all payments involve transfers from one account to another, effected through the interbank clearing system. As a result, once bank money has been created by the extension of new credit, it is almost certain to remain in the banking system: very little is taken out and used in the form of notes and coins.

Wicksell concluded that banking systems can therefore greatly increase potential purchasing power in the economy. And their ability to do so is further enhanced by interbank lending markets: for while any one bank alone might seem constrained by the need to hold some assets in liquid reserves (in case depositors wish to transfer their money to other banks), if the money can be borrowed back in the interbank lending market, the constraint disappears. The more liquid are interbank lending markets, the less constrained is the banking system's ability to create new credit and money.[16]

Wicksell therefore worried that, left to itself, a free market banking system might create too much credit and as a result induce harmful inflation. He proposed two responses to this concern. The first was that bank credit creation would be constrained if banks were *required* to hold a fixed proportion of their money liabilities as liquid reserves at the central bank, and if the central bank controlled that proportion. In fact, however, modern central banks have tended to move away from such quantitative controls.

The second was that the quantity of credit created would be appropriate and inflationary dangers avoided if central banks kept market interest rates in line with what Wicksell labeled "the natural rate of interest," that is, the rate of return available on real physical investment projects. As long as this relationship was maintained, Wicksell argued, entrepreneurs would only have an incentive to borrow money for investments likely to produce an increase in real productive potential in line with the additional purchasing power created. Purchasing power and output would therefore grow in a balanced noninflationary fashion

Pre-crisis central bank orthodoxy built, at least indirectly, on this strand of Wicksell's thought. Indeed, one of the most important statements of the pre-crisis orthodoxy, Michael Woodford's *Interest and Prices*, is titled in homage to Wicksell.[17] And central banks gravitated to

the belief that, provided interest rates were maintained at levels that ensured low and stable inflation, the amount of credit that the banking system created would be of no concern. Low and stable inflation was sufficient to ensure financial and macroeconomic stability.

But the crisis of 2007–2008 proved that assumption quite wrong. Excessive credit produced a crisis, even though inflation remained subdued. The explanation lies in two facts. First, all credit extension creates debt contracts, which can have the adverse consequences described in this chapter. Second, most credit in advanced economies is not used to finance new capital investment. Chapter 4 describes that reality.

FOUR

TOO MUCH OF THE WRONG SORT OF DEBT

> With very few exceptions, the banks' primary business consisted of non-mortgage lending to companies in 1928 and 1970. In 2007 banks in most countries had turned primarily into real estate lenders.… The intermediation of household savings for productive investment in the business sector—the standard textbook role of the financial sector—constitutes only a minor share of the business of banking today.
>
> —*Òscar Jordà, Moritz Schularick, and Alan Taylor, "The Great Mortgaging"*[1]

Textbook descriptions of banks usually assume that they lend money to businesses to finance new capital investment. Explanations of why financial deepening is valuable focus almost entirely on the beneficial impact of better credit flow to businesses and entrepreneurs.[2] But in most modern banking systems most credit does not finance new capital investment. Instead, it funds the purchase of assets that already exist and, above all, existing real estate.

In some ways that is inevitable, since real estate accounts for the majority of all wealth in advanced economies. Seen from an individual borrower's perspective, moreover, mortgage lending is clearly socially useful. And seen from a private bank's perspective, lending against real estate can appear the easiest and safest thing to do.

But the increasing importance of real estate and of lending against it has huge implications for financial and macroeconomic instability. Different categories of credit perform different economic functions and have different consequences. Only when credit is used to finance useful

new capital investment does it generate the additional income flows required to make the debt certainly sustainable. Contrary to the pre-crisis orthodoxy that the quantity of credit created and its allocation between different uses should be left to free market forces, banks left to themselves will produce too much of the wrong sort of debt.

Categories of Credit

Credit can be extended for the textbook purpose of funding new capital investment. But it can also fund increased consumption, and it can be used to finance the purchase of an asset that already exists, whether that be a painting, a house, an office building, or a company.

Figure 4.1 shows the breakdown of bank lending in the United Kingdom in 2012. Residential mortgages accounted for 65% and unsecured consumer loans for 7%. Of loans to companies, the majority funded commercial real estate development or investment.[3] These figures cannot be mapped precisely to the division among finance for investment, consumption, and existing assets. Residential mortgages can finance increased consumption as well as house purchase, and the houses purchased can be existing or newly built; commercial real estate lending finances a mix of investment in existing properties and new developments. But it is clear that credit to finance investment in non–real estate assets accounts for no more than 14% of the UK total, and the same broad pattern is found across the advanced economies and increasingly in emerging ones. To understand the roots of the 2007–2008 crisis and of the Great Recession that followed, we have to understand the different economic impacts of the various categories of credit.

Credit-Financed Consumption

In most advanced economies only a small share of credit is explicitly and wholly related to consumption finance. In the United Kingdom, unsecured lending to households (by means of personal loans, overdrafts, and credit cards), is around 10% of GDP;[4] in the United States the equivalent figure is about 5%.[5] But these figures understate the role of

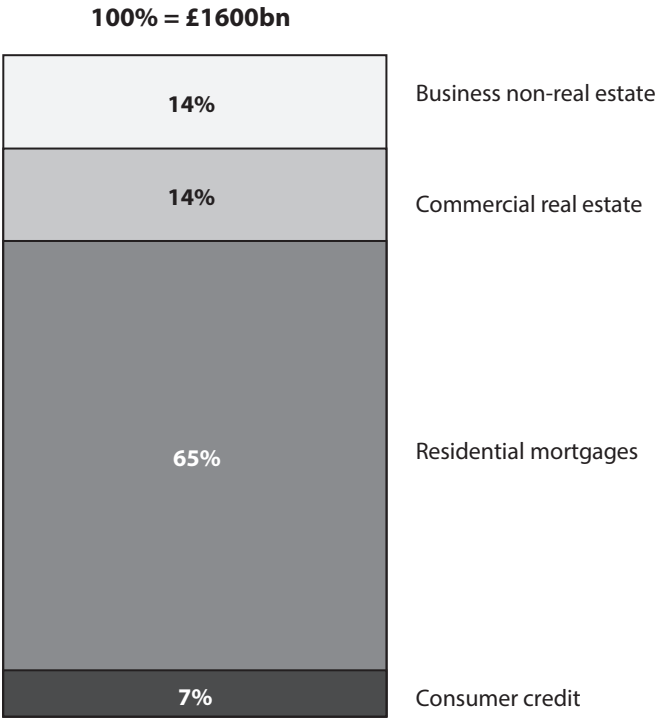

Figure 4.1. Categories of bank lending in the United Kingdom, 2012

Source: Bank of England.

credit-financed consumption, since mortgage borrowing can also be used to support consumption growth. Rapid growth of U.S. mortgage credit before the 2007–2008 crisis played a major role in spurring U.S. personal consumption.

Personal loans and credit cards enable people to smooth consumption in the face of fluctuating income: mortgage-financed consumption can allow them to smooth consumption across different periods of life, within the constraints of their total lifetime income. Such consumption smoothing has nothing to do with the mobilization or allocation of credit, but it can still be valuable—or "welfare enhancing," in formal economic terms.[6]

But consumption credit can also have harmful effects, both for individuals and for the macroeconomy. Particularly in the face of rising

inequality, individuals may borrow too much in an impossible attempt to maintain consumption that is objectively unaffordable, given their future income prospects. And they may face interest rates so high that the net result is a material reduction in their lifetime disposable income. As Chapter 7 discusses, rising indebtedness can be both part consequence and part cause of rising inequality.

Debts incurred to finance consumption can also contribute to post-crisis debt overhang effects. If secured against real estate, they can look increasingly affordable as long as house prices rise. But when prices fall, defaults and attempted deleveraging by overindebted households can depress the economy.

The overall point is simple. If credit finances consumption rather than useful investment, it is more likely that the debts created will subsequently prove unsustainable. We have always recognized that fact in relation to public debt: fiscal deficits that finance consumption rather than growth-enhancing investment are more likely to produce unsustainable public debt burdens. The same is true for private-sector credit creation.

Credit-Financed Investment . . . and Overinvestment

If credit is extended to finance useful investment, which increases future productive potential, it will be affordable: the investment will itself generate the income from which the debt is repaid. But the word "useful" is a crucial qualification, since even finance that results in new capital investment can produce waste and instability.

Credit creation can facilitate capital investment, and Chapter 8 discusses how directed bank credit creation was used by some developing countries to drive higher levels of investment and faster rates of growth than could otherwise have been achieved. But as both Friedrich Hayek and Hyman Minsky explored, it can produce cycles of overinvestment that leave behind wasted real resources and a debt overhang problem.[7]

Two factors combine to produce those cycles—inherent uncertainty about future returns and the length of time required to build new capital assets. Given these factors, there is no perfect market mechanism that ensures that the level of investment chosen by free markets will be rea-

sonable in the face of subsequent demand for the goods and services produced. Expectations of increased demand for a particular product or service, and thus for the capital assets required to produce it, can generate increases in the price of the current stock of those assets that stimulate a far bigger quantity of new investment than subsequently appears wise.

Cycles of credit-financed overinvestment have therefore been features of capitalism throughout its history, from the railway booms of the nineteenth century to the U.S., Spanish, and Irish real estate building booms of the 2000s. By 2006 Ireland was building 90,000 homes per year in a country of just over 4 million people.[8] Many of the builders and developers who built those homes have subsequently gone bankrupt. At least 20,000 homes on "ghost estates" are now being demolished, their construction an utter waste. But in the upswing of the cycle, building them and lending money to the builders appeared profitable. Indeed, from a purely private point of view it often was. The lucky builders who completed and sold their developments before summer 2008 made money, and the loans due for repayment before then were typically repaid in full. Up until 2008 free market price signals validated increased investment.

But the collective result was a disaster. Specific investments made money, but only because new credit supply for a time drove up the price of completed projects. In the terms defined by Hyman Minsky, the system had progressed from one in which credit was "Hedge" in form (financing assets with debt that could be repaid out of the income generated by that investment) to a "Speculative" system, in which new credit supply was essential to finance repayment of existing debts.[9]

A free market credit system can thus produce cycles of overinvestment, which in turn cause two types of harm. The first is misallocation of real resources: in Spain the construction sector swelled from 8% to more than 12% of GDP between the late 1990s and 2007, in Ireland the increase was from 4% to 9%, and in both the share of construction in total employment grew rapidly.[10] High unemployment was the inevitable post-crisis consequence, as it was too in several U.S. states that experienced construction booms, such as Florida and Arizona. The second is the debt overhang effect.

The problem of debt overhang can also arise even if the credit boom results in no new investment but is instead focused entirely on already

existing assets. Indeed, credit booms focused on already existing real estate assets can result in a supercharged version of the credit cycles described by Hayek and Minsky.[11]

Credit to Finance Existing Assets—The Dominance of Real Estate

Credit can finance the purchase of many different sorts of existing asset. In theory we could face a credit bubble that drove up the price of works of art valued only for their subjective aesthetic value. In the bubble of 1638, Dutch tulips were valued simply for their beauty.

Some non–real estate business finance, meanwhile, is also focused on existing assets. For instance, many private equity buyouts essentially leverage up existing companies, increasing potential return at the expense of increased risk but with no necessary consequences for the level of investment.

But by far most lending against existing assets is against real estate, and lending against already existing real estate represents the majority of all bank lending in most advanced economies and an increasing number of emerging ones.

It wasn't always like that. As research by Jordà, Schularick, and Taylor shows, what banks do in advanced economies has changed dramatically in the past 45 years (see Figure 4.2). In 1928 real estate lending averaged about 30% of all bank lending; by 1970 it had edged up to 35%; by 2007 it was approaching 60%. In addition, a significant proportion of the remaining 40% is likely to finance commercial real estate.[12] As Jordá, Schularick, and Taylor put it

> with very few exceptions, the banks' primary business consisted of nonmortgage lending to companies both in 1928 and 1970. In 2007, banks in most countries had turned primarily into real estate lenders. The intermediation of household savings for productive investment in the business sector—the standard textbook role of the financial sector—constitutes only a minor share of the business of banking today.

Some of that real estate lending finances investment in new real estate, whether residential or commercial. But the vast bulk finances the purchase of real estate assets that already exist, with households borrow-

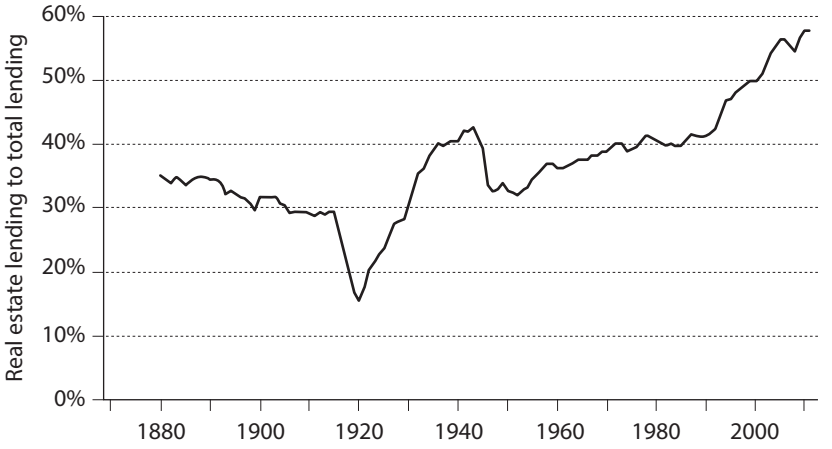

Figure 4.2. Share of real estate lending in total bank lending for seventeen advanced economies

Source: Jordà, Schularick, and Taylor (2014a). © 2014 by Òscar Jordà, Moritz Schularick, and Alan M. Taylor. All rights reserved. Used with permission.

ing to purchase already existing houses, and companies and institutional investors borrowing to make investments in existing commercial property. For instance, the UK mortgage credit and house price boom of 2000–2007—unlike the credit and price booms in Florida, Spain, or Ireland—was primarily an existing assets boom, with only a relatively small rise in new construction.

It is vital indeed to understand that an advanced economy in which there was *no* new investment in real estate at all would also almost certainly be one in which most new bank credit was extended to finance real estate. That reflects the inevitably rising importance of real estate as a share of wealth in increasingly rich societies.

The Rising Importance of Real Estate in Wealth

Thomas Piketty's *Capital in the Twenty-First Century* has focused attention on the remarkable increase in the ratio of wealth to income in advanced economies over the past 40 years.[13] In 1970 wealth typically amounted to about three times national income; by 2010, that number had grown to five to six times.

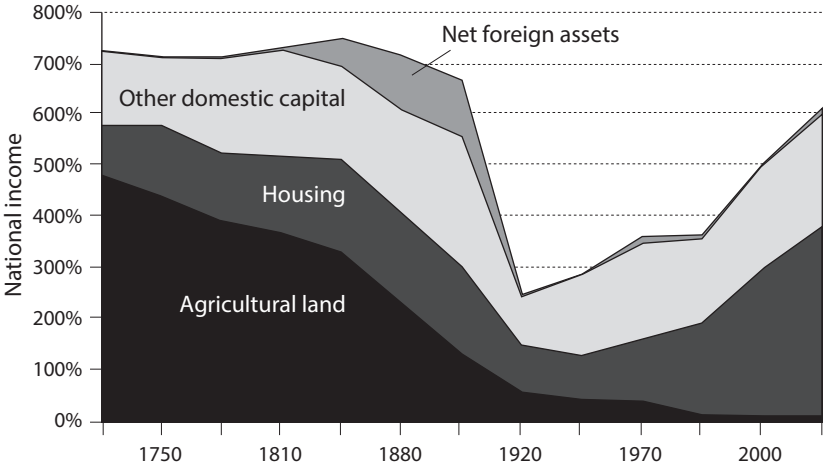

Figure 4.3. Capital in France, 1700–2010: Percentage of national income

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Several factors have driven this change. But by far the most important is the huge increase in the value of housing, which in most countries accounts for the majority of all wealth and for most of the increase in the wealth / income ratio. In France and United Kingdom, for instance, housing accounts for more than half of all wealth, and the increase in housing wealth relative to national income explains about 90–100% of the increase in the total wealth / income ratio since 1970. Housing wealth in the United Kingdom was about 120% of national income in 1970 and had reached 300% by 2010; in France, as Figure 4.3 shows, housing wealth grew from 120% of GDP in 1970 to 371% by 2010. In addition, though not separated in Piketty's figures, commercial real estate accounts for a significant share of non-housing wealth.

Much of this housing wealth—and in many countries the lion's share of the increase—reflects not the constructed value of the buildings but the urban land on which the buildings sit. In major cities such as London, Paris, New York, San Francisco, or Hong Kong, actual new expenditures on construction explain only a trivial part of the increase in real estate value. For advanced economies on average, 80% of house price increases between 1950 and 2012 can be attributed to rising land prices and only 20% to increases in the constructed value of the housing.[14] An increasing share of wealth in all rich societies, and more recently in many

emerging economies too, thus derives not from capital stock accumulated out of capital investment but from urban land, and in particular from land in the most desired and therefore highest-valued locations.

That may seem strange. Many economists talk of our "weightless" modern economy in which physical goods are of declining importance and in which software and applications play an increasing role: but the most physical thing of all—land—is increasing in importance. But paradoxically, the rising importance of land is in part the direct consequence of the remarkable progress of information and communications technology (ICT). And the faster ICT progresses in the future, the more the value of real estate and land may increase.

A recent book by MIT economists Eric Brynjolfsson and Andrew McAfee, *The Second Machine Age*, argues persuasively that ICT is a uniquely powerful technology because of two distinctive features: first, the price of hardware capacity along many different dimensions—processing power, memory, bandwidth—keeps collapsing roughly in line with Moore's law, halving every 1.5–2 years or so; second, once software has been developed, it can be replicated at close to zero marginal cost.[15]

These features enable ICT companies to create huge wealth with very little capital investment. In mid-2014 Facebook had an equity valuation of $150 billion: the software "machine" that runs it took at most 5,000 or so software engineer years to build. Compared with the investment that went into building automobile, airline, or traditional retail companies, this is trivial. And more generally, the two distinctive features mean that wherever the "machines" that drive businesses include a large ICT software or hardware element, they keep falling in price relative to current goods and services. IMF figures show that the price of capital equipment relative to prices of current goods and services fell by 33% between 1990 and 2014.[16]

The inevitable consequence is that an increasing share of investment is accounted for by those categories of capital expenditure where prices are not falling—and the most important of those is physical construction. A world in which the *volume* of information and communication capacity embedded in capital goods relentlessly increases is a world in which real estate and infrastructure constructions are bound to account for an increasing share of the *value* of all investment.

Meanwhile, the changing pattern of consumption increases the relative importance of locationally desirable land. As people on average get

richer, they choose to spend their increasing income on a different mix of goods and services. In some expenditure categories, people approach satiation, and both the volume and value of food, clothing, or household appliances consumed therefore grow more slowly than income. In some other categories, volumes consumed may continue to soar, but prices collapse in an offsetting fashion—so that while ever more tablets, mobile phones, and computer games are bought, total expenditure at best keeps pace with income.

Offsetting these "low-income-elasticity" goods and services, are others whose income elasticity of demand is far greater than 1, that is, for which expenditure grows faster than income. The most important of these is locationally specific housing, as consumers devote an increasing share of their income to competing for the ability to live in the most desired parts of town. But if the supply of desirable locations is scarce, and the land on which desired real estate is irreproducible, the only thing that can adjust is the price.

Thus the rising importance of real estate—and of the underlying land—in part reflects fundamental technological and consumer preference factors. Advanced economies are getting more real estate intensive, because they are more ICT intensive, and because they are on average getting richer. But awareness of rising real estate prices in turn gives further impetus to the effect, as real estate has become an "asset class" in which people invest not only to enjoy housing services but also in the anticipation of capital gain.

At the top end of the housing market, the "asset investment" motivation may indeed be the dominant one, with many super-luxury apartments in London, Dubai, or New York bought but rarely occupied. But the phenomenon reaches far beyond the top of the market. If people buy houses earlier in life than they otherwise would for fear of losing out as prices rise, they are effectively treating housing as an investment. For many people their own home is by far the most important investment they will ever make. And in the United Kingdom, investment in residential housing for rent—"buy to let" investment—has grown to account for 15% of the housing stock.

Advanced economies would therefore become more real estate–intensive even if leverage played no role. But increasing leverage is the inevitable consequence: and in turn it amplifies the effect.

Real Estate and Leverage—The Bias and the Cycle

Unlike 50 years ago, most bank lending—and in the United States most lending through capital markets—now finances the purchase of real estate. In part that reflects simply the increasing role of real estate in total wealth. In part it reflects the valuable social role that mortgage credit plays in lubricating the exchange of homes between different people, including different generations. But it also reflects a bias for banks to prefer to lend against the security of real estate assets.

Lending to finance non–real estate business investment requires difficult and expensive assessment of project prospects and future cash flows: and if the project fails, the assets financed often have little resale value. But real estate, whether commercial or residential, usually has value for many alternative users. Taking security against real estate therefore seems to simplify risk assessment. Banks seeking rapid market share growth nearly always focus on real estate; safely expanding other types of lending requires the gradual and difficult build-up of customer relations and knowledge. And at least in residential real estate, though not commercial, actual loan losses are often low even in the face of major economic recession. In the latest crisis, it is true that U.S. losses from residential mortgage lending have reached 7% of total loan volumes, reflecting very aggressive subprime lending in the pre-crisis period. But while the United Kingdom also experienced a big mortgage credit boom, losses in the latest crisis have been less than 1%.[17]

Seen from the private perspective of individual banks, lending against real estate often therefore seems, and sometimes actually is, lower risk and easier to manage than other categories of lending. Before the mid-twentieth century, banks in several advanced economies were restricted or at least discouraged from entering real estate lending markets: in different ways, for instance, Japan, the United Kingdom, and Canada all constrained bank mortgage lending. Once the constraints were removed, these institutions increasingly became real estate lenders.[18]

But lending against real estate—and in particular against existing real estate whose supply cannot be easily increased—generates self-reinforcing cycles of credit supply, credit demand, and asset prices. Figure 4.4 illustrates the upswing. More credit supply produces rising real estate prices, which in turn increase both the net worth and the confidence

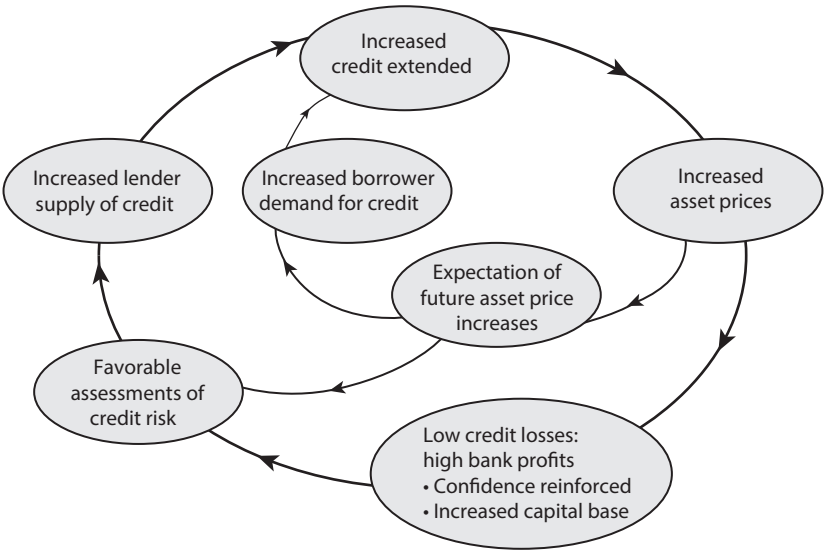

Figure 4.4. Credit and asset price cycles

of borrowers and lenders. As prices rise, lenders experience only small loan losses, which increases their capital bases, which makes it possible for them to make more loans; but low loan losses also reinforce bank management and loan officer confidence that further loans will be safe. Meanwhile, borrowers see their net worth rise, which enables them to borrow more for any given loan to value ratio (LTV), and the experience of rising prices generates expectations that further rises will continue at least for the medium term. Throughout modern economic history real estate credit and prices move together. In the latest upswing, from 2000 to 2007, mortgage credit in the United States increased by 134% and house prices by 90%; in Spain the increases were 254% and 120%; in Ireland, 336% and 109%.[19]

These cycles sometimes generate booms in new real estate investment. Ireland and Spain saw pre-crisis construction booms, and so too did U.S. states such as Florida and Nevada. But they can also generate booms and subsequent busts in the price of already exiting real estate, and of the irreproducible land on which the real estate sits. In the United Kingdom the boom and bust was mainly in existing house prices, as it was in U.S. cities where the ability to build is more constrained, such as

Manhattan and San Francisco.[20] Even in the countries or regions where a housing construction boom occurred, dramatic rises in the price of existing houses (for example, of central Dublin properties) played a major role in making new construction appear profitable.

At the very core of financial instability in modern economies thus lies an interface between an infinite capacity and an inelastic constraint. Banks, unless constrained by policy, have an infinite capacity to create credit, money, and purchasing power; so do shadow banking systems, as Chapter 6 explores. But the supply of locationally desirable real estate (and ultimately land) is always somewhat inelastic and in some cities close to fixed. Potentially infinite nominal demand and finite supply combine to make the price of locationally specific real estate indeterminate and potentially volatile. The resulting credit and asset price cycles are not just part of the story of financial instability in modern economies, they are its very essence.[21]

The upswing of the cycle drives real estate prices higher, accentuating the rising importance of real estate wealth apparent in Piketty's figures. But it also leaves the economy vulnerable to financial crisis and post-crisis recession as the cycle illustrated in Figure 4.4 swings into reverse. In the downswing, falling asset prices reduce both the net worth and confidence of both lenders and borrowers, curtailing credit supply and demand. The economy is left facing a debt overhang effect. Chapter 5 describes the consequences.