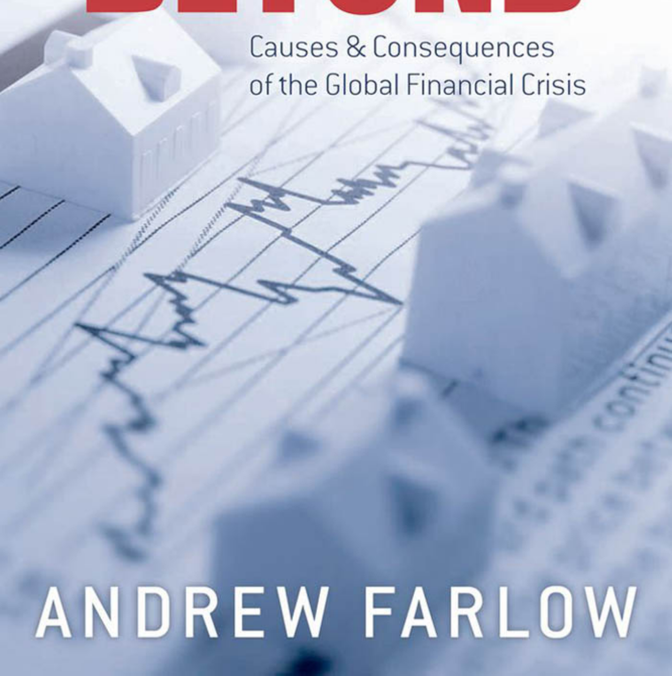
CRASH & BEYOND

Causes & Consequences of the Global Financial Crisis



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In memory of my mother,
Margaret Jean Farlow,
and with gratitude to my father,
William Kenneth Farlow

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PREFACE

Who would have believed it? By now we are accustomed to mid-crisis life—and yet, had this book been published just five or so years ago, its author would have been roundly condemned as completely and utterly mad. Its fanciful speculation about the future, and not its sober reflection on the past, would have been a danger to the banking system and to all those whose lives depend upon it. Back then, we were living in the best of times, the season of light. The consensus of educated opinion was that we were wise too. Never before had we had such sophisticated financial models to predict and, some said, to control the future. We had everything before us, even Heaven—which in those days, by recent convention, meant economic stability—itself. By day, gentle words of 'no more boom and bust' mesmerized and numbed our senses. By night we slept soundly, safe in the knowledge that never again would we be plunged into such frightening economic nightmares.

But the nightmares did not stay away. Slowly at first, then surely, they swept back in. One by one, our delusions were washed away. Millions watched on helplessly as their savings, and income from savings, sank, debts spiralled, and homes fell in value. Unemployment became the daily curse of many, austerity the grim reality of most. It gradually dawned that in our past we had squandered our future, and that in our future the reward of our every effort, and that of our descendants, would be eaten away by debt repayments and higher taxes as far as our eyes could see. Our hopes had turned to doom, our dreams had turned to dust. We had been willing participants not in an age of wisdom, but in an age of folly. We had sipped on lies and we had liked them. We had asked for more and we had been given it. Greed and credulity had been our bedfellows. And now we were going to pay.

President Obama seemed to understand this. In February 2009, in his first address to a joint session of Congress, he declared, 'We have lived through an era where too often, short-term gains were prized over long-term prosperity; where we failed to look beyond the next payment, the next quarter, or the next election. A surplus became an excuse to transfer wealth to the wealthy instead of an opportunity to invest in our future. Regulations were gutted for the sake of a quick profit at the expense of a healthy market. People bought homes they knew they couldn't afford from banks and lenders who pushed those bad loans anyway. And all the while, critical debates and difficult decisions were put off for some other time on some other day. Well that day of reckoning has arrived, and the time to take charge of our future is here.'[1] Then again, he could say such things; the past belonged to someone else.

In the United Kingdom, where the writing of this book was underway, the past belonged to those still in power—at least for a little bit longer. In mid-2010, in the midst of a general election campaign, according to focus-group evidence—for that is the way we do sound public policy these days—the average voter was not unlike a sick patient pondering through a dizzy haze three smartly suited surgeons in the hope that the illness would be less severe, and the cure less painful, if only the one with the nicest prognosis and the most reassuring smile could be picked. Astonishingly, with the country rapidly heading towards a government debt of a trillion, in the last televised debate before the election the three protagonists batted back and forth just six of those thousand billions. Nastier medicine was on the way, but talking about it now would only scare the patient.

By the middle of 2012, as the book went to press, the truth was out. It was not a pretty sight. In the United States, with a Presidential election fast approaching, the Tea Party, on flights of peculiar economic fantasy, had made inroads into Obama's vote. In the UK, a coalition government was engaging in the biggest ever experiment in UK peacetime austerity, and the economy was dipping its toes back into recession. Europe was tearing itself to pieces because of its seemingly irreconcilable economic and political contradictions. And China and a range of emerging economies were starting to wonder whether the next crash had some of their names scribbled all over it.

The causes and consequences of the recent crash are multi-dimensional, entangled like a ball of string, layered like an onion. Yet a book can only be written in a linear fashion. We have to prise the individual bits apart, stretch them out, pin them to the page—one after the other—and, sometimes with tears in our eyes, try to make sense of the blur. I have done this by separating material into three parts with a preface and some closing thoughts to seal the ends and keep the material from falling out.

Part I looks at the causes of the crash. Some go back forty years, others proliferated in less than ten. Of special interest are the interacting weaknesses in the financial and economic systems. For the crash was as much of economies as it was of banks.

Part II, no sadder than the first but hopefully just as informative, tells the story of the crash and of the efforts made to save the banking system.

Part III—half the book—looks at how policymakers set about rescuing their economies and the unemployed, dealing with collapsing housing markets, tackling long-term sovereign debt difficulties, handling the eurozone crash, managing global instabilities, and reforming monetary policy, financial regulation, and banking. It is both a chronicle and an analysis of the events and of the thinking of these years.

Throughout I strive to be critical but fair. Yet, since I know that there is nothing more irritating than a thoroughly balanced argument that is not the least bit opinionated, I will try to take a position as and when I feel the evidence supports it.

Of the many themes running through the book, one is an evaluation of President Obama's economic presidency. It would not be unfair to say that Obama arrived equipped for a very different kind of presidency to the one thrust upon him when the global banking system collapsed just weeks before his election. Arriving without the requisite economic and financial skills, how did he cope? Another is a necessary corrective to the account of the crash by former UK finance minister and prime minister Gordon Brown, published at the end of 2010, which glossed over the many failures that led to disaster for the UK. In contrast to Obama, for thirteen years Brown positioned himself as 'an expert renowned for his remarkable financial acumen ... Long admired for his grasp of economic issues'.[2] Yet, in his account, Brown described the crash as a complete surprise to him, and even accused banks of tricking him. Surely, posterity will record that when it comes to financial acumen and the grasp of economic issues, Brown was not modest but had much to be modest about. Merkel, Sarkozy, Berlusconi, Cowen, Wen Jiabao, Papandreou and others will get their moments in the spotlight.

These days it is de rigueur for commentators to claim prescience of the events of the crash. It would be remiss of me to break from such an agreeable new tradition. To my advantage—and unlike some who threw themselves into the bright lights in their shiny new chameleon hues—a series of papers on which I base my own modest claim can be readily found online, placed there a few years before the crash.[3] In those papers I did not buy the story that we were living in the best of times, the season of some shimmering new economic light. In the first paper I tried to pick apart the explanations given for recent rapid rises in house prices, especially, but not exclusively, in the UK.[4] The prevailing justification was that the world was now so much more stable, real (i.e. adjusted for inflation) interest rates so much lower, and credit constraints so much reduced that a permanently higher level of house prices was the rational and decent way to go. I could not make the logic work and it worried me. In the second paper I argued that house buyers, and the banks supplying them with their credit, were pumping a bubble that one day would collapse.

It seems I was not alone. In 2010, out of the blue, and not requested by me, I was sent a small package, the result of a Freedom of Information request to the office of the British prime minister. It transpired that—by the deft hand of Martin Wolf of the *Financial Times*[5]—the logic of those papers had reached in and twanged a raw, if rather brow-beaten and somewhat sedated, economic nerve in the head of the British Prime Minister of the day, Tony Blair. As part of a power-sharing deal, Blair had long ago relinquished all but the tiniest crumbs of economic policy to his finance minister, Gordon Brown. Even Blair's 2010 autobiography does not deal with the economy until its postscript, written after the crash. There never had been a British prime minister so blissfully unengaged in the economic affairs of the nation. Or so it had seemed.

It turned out that Blair, breaking momentarily from habit, was sufficiently worried that he immediately sought advice from the UK Treasury. As a parable of the way economic decisions were made in the UK a few years before the crash, a substantial (by the standards of such things) briefing paper duly arrived at the door of Number 10,[6] and gently reassured the prime minister that all his fears were unfounded. As one journalist put it, '[I]t turns out Blair was rather more worried about the state of the economy than you might have thought... It underlines the simple fact that the Treasury under Gordon Brown was blind to the possibility that things could go horribly wrong—even within the confines of Downing Street. It turns out no-one was allowed to challenge the "end to boom and bust" trope—even Tony Blair himself.'[7] In the Irish parliament, the two papers triggered a question about the state of the Irish economy. Didn't this indicate that the Irish housing market and the Irish economy were heading for a crash? Irish prime minister Bertie Ahern, like Brown a self-styled economic visionary, had taken to labelling naysayers as 'cribbers and moaners', and he and his colleagues were having none of it. It is always nice to hear that people in high places get to hear one's views. It is a little less encouraging to know that it doesn't make the slightest jot of difference.

In 2005 I wrote a third paper in which I made a number of arguments that, according to various banking colleagues, economists, and journalists, turned out to be highly prescient in the light of what was to come. I was, as it were, one of the few to join up all the dots. To borrow an analogy from the music industry, the papers were an instant hit. The head of my department's IT unit expressed astonishment at the extremely high number of downloads in one year of just those three papers. The general public was interested. Wouldn't it be exciting to hear that Blair and others were too? Indeed, as Blair revealed for the first time in his autobiography, this was the time of greatest pressure from his supporters to sack Brown. He did not because in his view Brown 'was the best chancellor for the country', and having Brown 'inside and constrained was better than outside and let loose'.[8]

Just for the record, and to frame the thinking in this book, this seems the appropriate place to review the arguments I made a few years before the crash that attracted such interest. After all, this book gains some of its credibility from such a background. The reader can read the original papers for themselves; by agreement with the Oxford University Press, the content of this book is totally new so that those papers can stay available online. Having waited patiently for several years, I hope the reader will pardon me my little peccadillo. If nothing else, it might encourage the casual browser to make his or her purchase, an act that I can assure them will, in these straitened economic times, be very good for the economy.

Like many others, I identified the unsustainable imbalances in the global economy in the years before the crash, in particular between China and the US. I discussed the increasingly unbalanced nature of economies such as those of the US and the UK, as unsustainable levels of debt and property-based bubbles generated their apparent economic 'success' stories. I argued that extremely low interest rates and heavy banking competition had encouraged the rising indebtedness of banks, the 'chasing of yield', and the mispricing of risk on a global scale, with large levels of speculative investment in mortgage markets and housing, exploiting the belief that house prices could not fall. I argued that, on the contrary, property-market risk was being grossly underpriced. I also discussed the vulnerability of many US mortgages. Low interest rates could have encouraged productive investments, but I argued that all too often they had not.

I warned that house-price bubbles made financial firms' balance sheets look healthier than they truly were, falsely suggesting an ability to take on much more risk, while giving consumers an illusion of greater wealth than they really had, distorting their spending and saving decisions. I suggested that the effect of the implicit government guarantee of the US mortgage industry was being spread outside the borders of the US. I argued that holders of mortgage-backed securities (MBSs) needed to continuously roll over their positions, and that sooner or later this would not be possible. I discussed the various directions from which the crisis—essentially a bank run—might come, including from falling house prices, rising interest rates, and a reversal of bubble-generated low volatility. I explained how financial contagion would spread to the rest of the world via, in particular, mortgage bank and government balance sheets, and with it real economic contagion. Many were worrying about the imbalances between the US and China, but fewer had spotted that the real danger of a crisis was lurking in the US banking system. Indeed, it was not at the time by any means the conventional wisdom.

I described how, in response to the collapse of the equity-based bubble that expanded over the 1990s, policymakers had fed a debt-based bubble in the 2000s. I argued that debt-based bubbles are much more dangerous than equity-based bubbles, because of the underlying properties of debt. Eventually the burden would be shifted to sovereign (that is government) debt. I urged therefore a reduction in the government budget deficit[9] of economies such as those of the US and the UK to help give more of a cushion to deal with the impact when it came. I identified in particular the poor ability of UK public finances to withstand a crisis that was likely to be particularly severe in its impact on the UK (previously, I had written too about the long-term fiscal problems of the US).[10]

I contended that the past mispricing of assets and of risk would leave many households in countries such as the US and the UK with too much debt and too little saving, including savings in their pension funds. I noted that when the downswing came, the efforts of households to correct their 'balance sheet' mistakes by saving more and deleveraging (i.e. scaling down their debts relative to their asset worth) would coincide with governments finding themselves much more fiscally burdened by the shifting of the consequences of the collapsing bubble onto *their* shoulders and needing to support demand in their economies by running larger fiscal deficits. I argued that inflation had morphed from traditional measures based on goods and service prices into measures based on asset prices, in particular house prices, that when standard interest rate tools were unable to go below zero per cent unconventional monetary policy would be needed, and that recovery would be complicated by the knife-edge balance between inflation and deflation in a balance sheet recession. I concluded that failure to take early action was feeding imbalances that would become ever more difficult to unwind, and that policymakers were simply pushing off a 'day of reckoning' and by doing so making that day much worse.

A fourth and fifth paper were in the pipeline, about 80% complete, dealing with the risk and liquidity problems in global property and mortgage markets.[11] At that point I wondered why I should release these for free when the evidence suggested there would be good sales if all could be combined in a book. But 2006 was quite unlike 2007 and even less like 2008. The academic publisher I approached politely wondered if there would be a market for a book about a crash that had not happened, especially one involving such a prominent role for the US. The trade publisher proposed something 'hard-hitting' (could I 'do left-wing polemic'?) and thought it helpful to suggest that I write under a *nom de plume*. I did not have the standing to take the ridicule of academic colleagues or to be seen as a maverick, and a pseudonym would be the kiss of death in academia. The book went on hold.

My inbox filled up with invitations—they sit there still, polite witnesses to a more innocent era—Lehman Brothers, Credit Suisse First Boston, UBS, Goldman Sachs, the Bank of England, the Financial Services Authority (FSA), HM Treasury, and various US policy think tanks. There were hedge funds and others wondering if I might be interested in making a buck or two when the housing market crashed. However, I was getting increasingly involved in the field of 'global health'. Given my concerns about the state of the global economy, the recent financial flows into global health were vulnerable, and, it seemed to me, the efficiency and financial sustainability of global-health initiatives needed to be improved. Over just a few years I wrote about three-quarters of a million words on various areas of global-health policy and took a series of stands that, though often painful at the time, eventually started to bear some fruit.

In August 2008, a few weeks before the collapse of Lehman Brothers, the book shot up the agenda again. A group of investment bankers arranged a meeting with me in London in which they explained how the original papers had spread by word of mouth through their company following the financial collapse over 2007 and early 2008 along lines I had described. All summer long they had struggled without success to get the UK Treasury and the office of Prime Minister Brown to take the dangers seriously and recapitalize the banking system. In the US, a presidential election campaign had raged all year and there was no chance of action there. They urged me to get back to writing the book. With evidence at last that the exercise would be worth it, and thinking that the prescience of the prior papers would help sell a copy or two, the delegates of the Oxford University Press commissioned the book.

Usually, by the time historians pan the murky streams of time, at least some of the particles of evidence have settled to the bottom. When John Kenneth Galbraith produced his book on the 1929 crash, he had the good sense to wait 25 years.[12] Freidman and Schwartz published their analysis of the monetary policy mistakes that followed the crash of 1929 a thoroughly sensible 34 years after it.[13] Surely only a foolhardy person would write a book when events are still spinning? We live in a different era. These days the just-in-time media presence at the scene of the latest financial crash generates a veritable avalanche of instant data and analysis. Every dimpled, crumpled, jagged edge of the wreck gets gawped at, photographed, and written about, and then it's on to the next exciting story even before the full consequences of the last one have fully settled in. We will know a great deal more in five or ten years about exactly what happened and why. By then, econometricians will have processed the life out of every speck of data that passed through every ministry of finance in the world, through umpteen rounds of refinement that will have polished them into permanently stable lines and columns on a graph. But the time to learn the lessons and change direction is now.

I wish to extend my huge appreciation to colleagues and friends in Oxford and especially in Oriel College. I am enormously grateful too to all at the *Wissenschaftskolleg zu Berlin*, where I spent the academic year 2010–2011, for their generosity and kind hospitality. Maintaining my sanity while writing the book had much to do with being surrounded by a truly wonderful group of fellows, partners, and families. The OUP economics and production editors, in particular Sarah Carro, Adam Swallow, Aimee Wright and Kizzy Taylor-Richelieu, deserve very special thanks. They repeatedly, and graciously, went well beyond the call of duty. Every time they panicked that the crisis would be over long before I made any sales, I simply reassured them with the rather unprepossessing proposition that I knew enough about crashes, and this one in particular, to know that its consequences were going to drag out for years on end, and that—when I was being especially eloquent—watching and reflecting upon policy responses was a timely and even wise strategy.

All financial crashes have been compared to that of 1929. One suspects that in time this crash will take on some of the mantle of the 1929 crash. Maybe this will be for good reason—because policymakers handled it in some respects better than that one. But it might also be because this one turns out to be a great deal more intractable, and marks a turning point in our understanding of global capitalism. Or perhaps we will have done the usual, and forgotten the lessons until next time.

Oxford and Berlin *June 2012*

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I

Global Imbalances and the Rise of Debt

The Great Moderation Myth

On 4 December 1928, in his final State of the Union address, President Calvin Coolidge, looking back over 150 years, observed that 'No Congress of the United States ever assembled, on surveying the state of the Union, has met with a more pleasing prospect than that which appears at the present time. In the domestic field there is tranquillity and contentment . . . and the highest record of years of prosperity.' As Coolidge was speaking, the US stock market was approaching its zenith and, within a year, its nadir, the crash of 1929, and the economic infamy of the 'Great Depression'. The US economy would contract by nearly 30% from peak to trough. Unemployment would soar until one in four in the US was without work. Thousands of banks would collapse with little or no protection for tens of millions of savers. Up to three-quarters of all mortgage holders in the US would default. Monetary policy would be contractionary, as the US strapped itself tightly to the gold standard, and deflation would set in. Many countries would respond with trade protectionism; by 1933 US trade was 33% of its pre-crash level.[1] Taxes would be raised and government spending cut to balance the books, as the US economy dug itself into an even deeper hole. Before the crash, Coolidge had made a virtue out of inertia; as journalist Walter Lippmann observed in 1926, 'This active inactivity suits the mood and certain needs of the country admirably.'

On 16 March 2005, in his budget speech to Parliament, the UK's finance minister, and subsequent prime minister, Gordon Brown—not the sort ever knowingly undersold—declared, 'Britain is today experiencing the longest period of sustained economic growth since records began in the year seventeen hundred and one.'[2] He praised 'Britain and North America that have over the last eight years grown at twice the rate of most of our G7 competitors, our living standards also rising twice as fast'. He rebuked the French, Germans, and, for good measure, Americans for their lackadaisical employment records. He gallantly deflected the warnings of the International Monetary Fund (IMF), Bank for International settlements (BIS), and the Organization for Economic Cooperation and Development (OECD), and defied all who had made 'predictions of a recession—predictions wrong in 1997, wrong in 1998, wrong in 1999, wrong again in the years from 2000 to now'. Even as Brown was speaking, the banks of the global financial system were bulging ever closer to bursting point and a flood that would scour and transform the global financial landscape forever. Within a couple of years, like a dropped ball of string atop a very steep hill, the UK's economic 'success' story would be unravelling fast, with Brown chasing and struggling to catch it.

Perhaps presidents and prime ministers get a bit carried away at times? A touch hubristic perhaps? A hazard of the job maybe? A more useful observation is that both Coolidge and Brown *could* point to economic data to support their claims, if only with just the right angle of light and the occasional bit of torture to make the data confess—and their views were not out of line with the mood and certain needs of their times. We now know that there was something about the very fact that they *could* say such things that should have warned us that something was wrong. Many of the 'good' signs—vibrant stock markets, record rates of economic growth, and rapidly rising house prices—were themselves signs that risks were increasingly being stored up like energy in a spring. Truly, it was both the best of times and the worst of times. Fancy sat right next to fact, abundance to austerity, pleasure to pain.

In economic circles the justification for such high hopes was known as the 'Great Moderation', a phrase coined by Ben Bernanke in 2004[3] to describe the 'remarkable decline' of inflation and output volatility in the US and other developed economies (though not, by then, Japan) over the previous 20 years.[4] Bernanke argued that rather than structural change or 'luck'—by which he meant a pattern of shocks that had been unusually fortuitous but which would not last—'improvements in the execution of monetary policy can plausibly account for a significant part of the Great Moderation'. That is, policymakers should take the credit.

Lower inflation volatility improves the functioning of markets and makes economic planning more certain. Lower output volatility makes employment and income more stable, which reduces economic uncertainty to households. In a world of lower macroeconomic volatility, households and financial firms could feel more confident that interest rates, and therefore loan repayments, would be more stable, and the holding of debt less risky. They *could* increase the ratio of the stock of their debts to the stock of their assets—that is, more heavily leverage their balance sheets.[5] House prices *could* take a heady journey upwards, given a helping hand by financial innovations. Equity prices *could* surge on the back of rising productivity thanks to lower macroeconomic risk. The all-time one-off gains of the Great Moderation could be amortized in one giant leap in asset prices and a matching rise in the level of sustainable debts.

We notice straight away that even this 'rational' explanation implies only a transitional period, when rates of growth of asset prices and debt temporarily surge on the path to their new higher levels, and not that they climb vertiginously skywards for ever. Sadly, human nature is not very good at dealing with economic transitions. In experimental economics, supposedly rational human guinea pigs, who look as though they have come out of the cold attracted by no more than the promise of a cup of tea and the chance of a small financial reward, get caught up in the momentum of group psychology that takes them way beyond any rationally 'efficient' level. Besides, for those motivated to do so, there are rich pickings in convincing the more gullible, or simply the less well informed, that momentum will take them higher. Even if the Great Moderation was a true phenomenon, there was always the danger that humans would overreact.

There was also the danger of misinterpreting temporary flow-based phenomena as something far more permanent. The Soviet growth surge of the 1950s and 1960s worried the West into thinking that the USSR would 'overtake' it. It is popularly believed that this galvanized the US into going to the moon as a statement of political and economic virility. We now know that the surge in Soviet growth was almost entirely a statistical property of the mobilization of large flows of capital, including human capital (with a generous dose of exaggeration by officials). Because there were only so many workers who could be shifted from agriculture into factories and only 24 hours in a day, without a productivity breakthrough, growth would fall back when the mobilization ended. Similarly, a large proportion of the Asian economic 'miracle' of the early to mid-1990s was caused by the shifting of labour from the countryside into urban areas, including a huge increase in the average number of hours worked.[6] The phenomenon attracted much praise from international bodies, and investment banks flooded in to share the spoils. But the phenomenon inevitably passed. In the 2000s, in countries like the US and the UK, a range of flows—the shifting of consumption from future generations to the current generation, re-mortgaging into falling interest rates, and forms of borrowing based on property price rises—temporarily boosted measured performance, yet had their natural limits.

But had the business cycle really been tamed? Was lower macroeconomic volatility a true and permanent fixture of the new economic order? The problem was that rising debts, debt-fuelled asset price bubbles, and global imbalances that got ever more stretched, could for a while create the low volatility on which such suppositions of moderation were built. The first big global imbalance was in patterns of trade and current accounts (which measure the net *flows* over a period of time, usually a year, of the following: exports and imports; interest, profits, and dividends on holdings of assets; and transfers[7]). The US for years ran a persistent current account deficit (meaning that its debits exceeded its credits) that rose from a little over 3% of US GDP at the end of the 1990s to a peak of 6% of US GDP in 2006. Between the end of the Asian financial crisis of 1997–1998 and mid-2007, the cumulative current account deficit of the US totalled about $4.6 trillion. At its height, the US accounted for more than two-thirds of all the world's current account deficits. Since the balance of payments always balances, the current account deficits of the US were matched by changes in official reserve holdings of, and capital flows into the US from, surplus countries. The surplus countries included China, other emerging Asian economies, major manufacturing exporters such as Germany and Japan, and oil-exporting countries. By such munificence China and Asia ended up financing at least half of the US current account and budget deficits; but they were not the only ones.

Such flows were not a gift to the US. The US was able to consume, year after year, beyond its domestically-generated output only because others were amassing a stock of claims against it. Little did ordinary Americans seem to notice or even care, and their political leaders had little incentive to draw their attention to it. It is the stocks, and not the flows, that cause the headaches. First, if there is a sudden loss of investor confidence in a country with large outstanding stocks of claims against it, it is the total stock of claims that is at risk of being withdrawn. Second, if any assets that get purchased by the surplus country turn out to be of much poorer quality than first believed, losses on them will, like a nasty virus, spread and harm the surplus country too.

Instead of investing in real foreign assets, many of those running current account surpluses, especially China, invested in foreign currencies that they held in their central banks as foreign-exchange reserves. Remarkably, China was running both a current account surplus *and* a capital account surplus, by fixing the nominal exchange rate between its currency, the renminbi, and a basket of currencies linked to the US dollar. It soaked up any excess demand for renminbi (of those in the US and elsewhere buying China's goods and services who needed to exchange their currencies for renminbi to make their purchases) by having the People's Bank of China (PBOC) issue fresh renmimbi to buy the US dollars. The PBOC added the dollars to its already large pile of foreign-exchange reserves.

By the summer of 2007, total global foreign-exchange reserve holdings had gone from $1.6 trillion (dollar equivalent) at the time of the Asian crisis, to about $6 trillion, with US dollar reserves rising from about $800 billion to $2.5 trillion. Asia accounted for 80% of the increase and held about 70% of the total global stock of reserves.[8] In the pre-1971 Bretton Woods fixed-exchange-rate regime, global reserve holdings had never exceeded 2% of global GDP. Now it was 9%. Meanwhile, according to the US Treasury, the gross external debt of the US grew nearly fourfold over the nine years up to the end of 2007, hitting $13.4 trillion. By any metric, these were extraordinary numbers.

At the time, it was argued—and it needed to be, because otherwise policy would have to change—that there was a perfectly rational explanation for the persistent current-account deficits of the US. If a country has strongly favourable investment opportunities, the economically sensible thing is to allow its current residents to consume some of the future fruits of that investment *now* by borrowing from the rest of the world, investing in the new technologies, building up a stock of financial obligations to the rest of the world, and repaying those obligations later in the shape of real goods and services from the much higher output consequent on those highly productive investments. For the budding economists amongst the readers, let's just say that the decision as to how much to consume now is the product of two effects: a standard income effect (i.e. consume more in all periods, including now, consequent on the superior expected investment returns) and a substitution effect (i.e. consume less now and invest more so as to reap even more in future periods). Access to a flow of cheap capital enables more of an income effect and a surge in current consumption. It's pudding now, and pudding later—just the sort of thing most voters and politicians like. If the 'Great Moderation' had caused a surge in US productivity, a temporary surge in the growth of debt held by the US would be part of a transition phenomenon. If, as many argued, the superior productivity would last for decades, the effect on current account deficits could be very large and still be of little concern. Nevertheless, even if the favourable opportunities persisted, the level of the stock of debt would reach a new steady state,[9] and so even this was not a story of ever-spiralling debts.

Clearly, resources needed to be invested in the highly productive investments on which such reasoning was based. Sadly, this was not so. Most of the inflow to the US was used to finance public and private consumption, and wars. In 2005 I bluntly observed: '[The] grave suspicion must be that the US is simply "living beyond its means", rather than consuming early from an inheritance that it is actively creating. A consumption-bubble can only be sustained if the economy can keep sucking finance in to cover it... a false sense of security has been created.'[10]

The next big global imbalance, related to the first, was in patterns of savings and consumption. Global gross savings as a percentage of global GDP rose from about 21.5% in 2001 to about 24.5% in 2007.[11] Not that dramatic, it might seem. However, on closer inspection, the increase is found to comprise a sharp drop in the average savings rates of industrial economies (with the United States leading the race into negative savings territory), and a surge in savings rates in emerging economies. The US alone, representing only about 5% of the world's population, accounted for about a third of the total increase in global consumption between 2000 and 2006, and it did it mostly by dis-saving. In the Middle East and in China, savings rates were plus 50% and 58% respectively (a rise from about 34% and 38% in 2001). Such rates get economic historians to sit bolt upright. Even during the fabled 'Industrial Revolution', saving rates were only ever a fraction of these. Contemporaneously, in a number of emerging Asian economies investment rates over the 2000s were below their peaks of the mid-1990s, and in other countries investment rates rose but by nowhere near enough to match the rise in their domestic savings. Something had to give.

The Long-term Forces at Work

These imbalances reflected forces at work over very long stretches of time. One was the shift of global production towards countries with much lower labour costs, with an ever-growing share of income going to the owners of capital. Those being employed in places like China were being paid a small proportion of the value of what they produced. The corporates that employed them were saving a high proportion of what they were generating. Hence those being employed were not contributing much to the global aggregate demand that would absorb what they produced. Meanwhile, the shift in production also put downward pressure on wages in richer countries, amongst those who might ordinarily have been thought of as the source of demand for the output. In the US—and readers may find this utterly astonishing—real (i.e. inflation-adjusted) wages for many in the population stagnated for forty years. Wage stagnation was further reinforced by the downward pressure on wage bargaining power, the result of labour-market reforms and low inflation. As firms chased insufficient demand, it seemed that one solution was for them to cut costs even more and further shift their activities offshore. This, of course, intensified the underlying problem. Meanwhile, a range of oil-exporting countries was taking migrant workers, paying them less than the full social costs of their human capital, converting this into surpluses, and further squeezing global aggregate demand. In Russia and in the Middle East, the rise of oligarchs and crony capitalism was also fuelling the squeeze on global aggregate demand. Global supply was not creating its own demand as all the textbooks said it should. And something had to give.

Over 40 years, Western Europe and then Japan, and then China, Asia, and other emerging economies, upped their production and pushed down costs. The overcapacity pushed down the rate of profit of US manufacturers.[12] Indeed, the lowest annual profit rate in the US industrial sector of the 'long boom' of 1948–1973 was higher than the highest rate of profit in the 'long bust' during the Reagan and Clinton years.[13] US companies increased their scale of production to compensate, but reduced the number of workers. As a side effect, wages in the US for whole swathes of the population collapsed. It was not that US manufacturing was shrinking; it grew by nearly 4% per annum between 1997 and 2007. However, huge physical capital investments and developments in production methods improved US labour productivity by nearly 7% per year, and the US needed to add manufacturing capacity just for employment to stand still. This did not happen and the US lost nearly 6 million manufacturing jobs in about a decade. En route, the US became a nation of importers.

There were some troubling parallels with an earlier period about which, if one is not careful, one can become quite nostalgic. Back in the 1970s, oil-exporting countries were generating big balance of payments surpluses. These were 'recycled' through the global banking system to developing- and emerging-market borrowers, especially in Latin America. Before the Latin American debt crisis of the 1980s, this 'petro-dollar' recycling was praised by many of the key policymakers of the day for the way in which it fed countries that had supposedly high productivity and good growth prospects. In the 2000s, a similar recycling was underway. This time the flows were into the US, and petro-dollars were being supplemented by flows from a range of emerging economies running current account surpluses that had switched from borrowing to lending. This time the flow was into a capital-rich developed economy from a mix of oil-rich and high-income economies and what we would normally think of as capital-needy emerging economies. It was like an especially tasty honey and, although some of it flowed back out, quite a lot of it stuck. Because financial firms were sophisticated (or maybe just smart enough to work out on which side of the bread to layer the honey), a chunk of these flows ended up pumping mortgages. Thus, poorer segments of emerging economies—via those more privileged there, especially corporates—ended up funding the activities of relatively poorer and of some speculative groups in richer economies. In the debt-fuelled parts of the world (the US, Ireland, Spain, 'emerging' Europe, and parts of the Middle East in particular), the composition of investment shifted dramatically towards real-estate construction. This 'uphill' flow of capital was reminiscent of that of the 1920s into the US chasing a similar phony story of superior productivity. Then, as this time, much fed real-estate and other speculative investments.

And so it came to pass that credit- and property-related bubbles expanded to boost otherwise insufficient global aggregate demand and to enable economies—especially richer importing economies—to continue to grow and consume when it was not achievable by more 'natural' means. The demand to borrow was created by the very same forces that created the supply of those willing to lend—the re-circulated dollars filling US and other banks. At first, the credit bubbles involved the middle classes and those with good credit histories. Eventually, by a sort of perverse trickle-down effect, the poor and those with poor credit histories were pulled in too. Supply was brought into equilibrium with demand, but at the cost of creating a long-term risk of instability.

Another long-term factor was the role of the US dollar. In 1971 the Bretton Woods international monetary system, based on the US dollar linked to gold, collapsed and was replaced with a system in which the dollar and other currencies floated against each other. The US dollar became the de facto global currency. This created a contradiction. The way for countries to get dollars was to run trade and payments surpluses while the US ran trade and payments deficits and used its power of 'seigniorage'[14] to create the necessary dollars. Eichengreen calls this the 'Exorbitant Privilege' of the dollar.[15] The first year in the twentieth century when the US imported more than it exported was 1971. Over the next 40 years, only in two recessions did the US balance of trade momentarily go positive. If the deficits and the supply of dollars got too large relative to the demand for them, it would risk a run on the dollar and a collapse of the global economy. This might not happen for decades.

Generations of US voters liked the arrangement because they benefited from the US sucking in spare global savings at an artificially-deflated cost. US banks liked it because they got to borrow short-term very cheaply and lend long-term at higher rates, and take the profits. Generations of US politicians liked it because they got to run huge budget deficits, ignore long-term fiscal challenges caused by US demographical changes and rapidly rising medical costs, and pursue military operations abroad without needing to raise taxes at home to pay for them. Not wanting to make their own exports uncompetitive by driving down the US dollar, first Japan and then China invested their surpluses in the US. Indeed, in the early 1980s, Japan, with its trade surplus peaking at about 40% of the US trade deficit, was viewed in a very similar way to China in the 2000s. For 30 years, the US managed the post-Bretton-Woods contradiction. Then the dot-com bubble burst at the end of the 1990s, and the US entered a decade of low growth. A housing bubble was a brilliant ruse to help hide what was going on, but it was only a temporary fix.

The Dance, and the Warnings Ignored

The relationship between the US and China over the 1990s and 2000s, after Japan had withered, is an important part of our story. For a decade or more China and the US were in a 'mutually self-reinforcing economic embrace'.[16] Sometimes they might swagger, and sometimes gracefully waltz. Sometimes they might tread on each others' toes, by accident or intent. But, at heart, they enjoyed the dance too much and—seeing no other partner ready to take the floor—danced on regardless. Increasingly it became clear that a range of countries, with the US in the lead, needed to cut domestic overconsumption, and China and other South-East Asian and oil-exporting countries needed to expand domestic consumption, and all needed to realign their patterns of economic activity. A similar dance was taking place between Germany and much of Europe, and a similar rebalancing was needed there. We shall explore this in Chapter 10.

Why did China—ranked below the hundredth in the world in terms of per capita income—come to run a current account surplus and capital account surplus uninterruptedly for two decades and lend heavily to the world's richest country? More bizarrely, why did China buy up piles of US Treasuries while becoming one of the world's biggest foreign direct investment (FDI) recipients, effectively lending money it had borrowed at a very high rate back to its creditors at a very low rate? The social rates of return from investing in health, education, transport, and housing must have been high in rural China, yet the Chinese authorities preferred to hold US Treasuries on which the rate of return was low. Indeed, the rate was pushed lower the more China pursued the policy. Even *more* bizarrely, to the extent that China had not pulled its positions in time (if it even could), a revaluation of the renminbi against the dollar by, say, 20% or 30% would wipe hundreds of billions, if not over a trillion, dollars off the value of China's holdings of US Treasuries and foreign-currency. For sure, China held a buffer that protected it from externally-driven shocks, the whims of capital markets, and the vagaries of the IMF and others, but it came at a very heavy cost to itself.

Of course, the lenders and borrowers were not the same. The outflow from China into US Treasuries and the increase in dollar reserves reflected China's statist economic model. The inflows of private capital into China reflected an open-door policy on the part of China towards foreign investors willing to exploit what could be got out of resources, especially human resources, in China. Both reflected the export-led growth model of the Chinese government, which hinged on holding down the value of the renminbi relative to other currencies to make Chinese goods more competitive in global markets. An undervalued exchange rate also reduced the value of Chinese household income by raising import prices. This acted as a kind of hidden consumption tax on imported goods, which transferred income from Chinese households to Chinese corporates, and further depressed global aggregate demand.

In China, household saving was high as a proportion of household income, but not unduly so. Household saving was not abnormal as a share of national income because household income was a small share of national income. The biggest component of the rise in China's savings came from its corporate sector. It was this that drove China's current account surplus from 2.8% of GDP in 2003 to 11% at its peak. This reflected (ironically, given what happened next) the undeveloped Chinese financial system. The only way ordinary Chinese people could save was via bank deposits, but the authorities controlled the banks. The PBOC set both a minimum lending rate, below which banks could not lend, and a maximum deposit rate, above which banks could not pay. By setting these rates well below the going market rate, the PBOC transferred huge amounts of wealth, around 5%–8% of China's GDP per year, from depositors to corporate borrowers. In the West, depositors would have walked away from such dire financial repression. But in China depositors were trapped. There were no bank competitors offering higher rates, and tight capital restrictions prevented ordinary people taking their capital out of the country. The ruling Communist Party guarded its power by controlling the banking system and aligning itself with state-owned enterprises to the neglect of the more general population. En route, by draining Chinese households of interest income, financial repression further drained the global economic system of aggregate demand.

The counterpart to China's external reserve accumulation was an internal imbalance in favour of the tradable sector, to the detriment of the non-tradable sector. This had happened in Japan throughout the 1980s, leading to stock market and real-estate bubbles that collapsed leaving Japan with overstretched balance sheets—the genesis of Japan's long deflation. Chinese manufacturing, with an emphasis on tradables, expanded to exploit a pool of low-skilled workers, especially from rural areas, and emphasized cutting costs and serving multinationals. However, by having a financial system that favoured capital over labour—labour was cheap, but capital was practically free—the PBOC encouraged manufacturing methods that under-used Chinese labour and skill and over-used physical capital. The profits were quite literally hoarded abroad.[17] Other Asian countries were conveyer belts to China, which was the last stage of assembly for products that got shipped especially to the US and Europe. At least until recently, it was not a model of development based on much technical innovation, and Chinese workers were achieving only about 12% of the productivity of US workers on the eve of the crash. The physical capital that embodied such innovations came from places like Germany and the US.

The effect was reinforced by uneven economic and political reform in China—in turn related to distorted political structures in the country. During the 1990s, China had removed the 'iron bowl' of social protection provided by state-owned firms that had virtually guaranteed jobs and welfare for life. While enterprises cut or stopped pension provision, free housing and free healthcare, a modern social welfare system was not put in its place. The financial demands on corporates to pay for social welfare—via the standard taxation mechanisms of developed economies—did not rise. The true costs of labour (which included all the associated human-capital maintenance) did not show up in the bottom line of Chinese corporates, who instead saw their profits and savings soar.

At the same time, the Chinese state enacted policies enforcing smaller families. This increased average dependency ratios. Individual households—not collectively via the state—had to save more to protect themselves against life-shocks, especially related to old age. In response, Chinese households over-saved. First, being risk-averse and unable to pool risks, they held more insurance than they would have held in a collectively-pooled mechanism. Second, the precautionary motive exaggerated this; that is, individuals were concerned about the consequences of extreme and not just average outcomes, and over-saved compared to what they would have done if only the average outcome mattered. Third, individuals did not have the 'shock absorber' of being able to borrow from future generations. Instead of re-circulating resources to rural areas through social programmes, China essentially privatized social welfare by attracting into its industrial regions workers who then sent their remittances back to rural areas. Something similar was going on in many oil-rich surplus countries, where migrant workers usually came from outside the borders of the host country, invariably from much poorer countries.

China was achieving annual rates of growth of 8%–10% (from a very low base). Its boom, and those of many other emerging and oil-rich economies, was partly the product of extremely lax US monetary policy that sent investors scurrying to seek higher yield elsewhere. Lax US monetary policy was in turn a function of China's economic policy. China was also able to run more negative real interest rates than the US and other more developed countries because of its heavy administrative controls. These controls distorted market signals and led to poor investment decisions and bubbles in China, including in its very own property markets.[18] Domestic inflation in China was pumped too. This was probably a reasonable price to pay for rapid rates of economic growth, and was anyway less of a worry than if it had been happening in the US where economic growth rates could never reach such high (catch-up) levels. Furthermore, it would have been difficult for China to raise interest rates to fight inflation without attracting yet more foreign capital.

In sum, the global imbalances on the eve of the crash reflected the awkward integration of China and a range of other emerging economies into the global economy, the inefficient social, political, and economic developments inside such countries, and distortions in the global economy related to the reserve-currency status of the US dollar. Incidentally, on this interpretation, the undervaluation of China's currency cannot explain all, and its revaluation would be no instant panacea. Even with revaluation, Chinese corporate savings would persist, at maybe a lower level, and still at the cost of China's poor.

According to JK Galbraith,[19] inequality, which peaked in 1928, was one of the four key drivers of the crash of 1929. Inequality peaked again in the 2000s, and both the IMF and the World Economic Forum identified this as a driving factor of the crash.[20] As global wealth and income became more skewed, economies became dependent on high levels of investment and luxury consumer spending, and there was insufficient global aggregate demand and deflationary pressures. Policymakers responded by pumping asset price bubbles and by relaxing regulation so as to feed credit bubbles and mortgages to boost aggregate demand. However, this 'coping' mechanism eventually led to instability and disaster.

Imbalancies in wealth and income were visible everywhere. In late 2010, the top 10% of the US population controlled over 70% of all of US private-sector wealth, and the bottom 90% shared the remaining 30%.[21] The top 1% controlled nearly half of the wealth of the top 10% and earned 24% of all income. Between 2002 and 2007, 65% of all US income growth went to just 1% of the population, which is why the median average income hardly budged. For many, incomes fell. Figures for household earnings hid the fact that households needed several incomes just to keep treading the same patch of water, and they then weighed themselves down with an additional burden of debt. Similarly, in the UK, real incomes barely grew for all but the richest. Between the general elections of 2001 and 2005, despite the Labour government's rhetoric of 'equality', the real income of the poorest 20% fell. The pattern was repeated in many emerging economies, such as China, and amongst oil-rich producers, as the share of global income going to the top 1% of the world's population rose from 10% in 1980 to 23% in 2008.

Interest Rates

Many blamed the crash on very low real long-term interest rates. These were the rates on which consumer spending and most house prices were based. Various explanations were offered, not all mutually exclusive. One, the 'savings glut' hypothesis, famously promoted by Bernanke,[22] argued that it was surplus nations, like China, that were in the driving seat; global real long-term interest rates had to fall to achieve global equilibrium between saving and investment. However, while there was indeed a large gap between saving and investment outside the US—which may be the source of Bernanke's phrase—it was offset by an equal-sized gap in the US such that there was little, if any, aggregate *global* savings glut.[23] Indeed, the average global savings rate was about 5% lower than in the 1970s.

Another possibility was that a range of emerging economies in Asia and the Middle East had the urge to build foreign-exchange reserve 'buffers'. An indication of this is that some of the biggest increases in reserve holdings were in countries that previously experienced 'sudden stops' in flows of capital (South Korea, Taiwan, and Mexico stand out). Some said the buffers were a response to the Asian crisis of the late 1990s and the realization of just how much damage could be done by sudden reversals of capital flows. Partly, they argued, this was linked to the weak and sometimes capricious provision of buffers by organizations such as the IMF, such that countries now wanted to 'self-insure'. Partly it was shaped by the limitations of the development of financial systems outside of the US.[24]

There was a story too about emerging economies adopting export-led growth strategies and trying to prevent current account surpluses from pushing up their exchange rates. There is evidence also that undervalued exchange rates are associated with rapid economic growth because they encourage manufacturing employment.[25] China seemed a prominent example of these phenomena. There was also the notion that this was a period of (relatively) poor investment opportunities worldwide. Was it simply easier for the US to generate self-justifying reasons to pull funds in, including for example via its 'more sophisticated' financial and property markets? At some point, China had more than enough reserves to use as a buffer, yet it still kept adding more. This suggests the export-led explanation is more likely to be the right one.

Although global imbalances made it more difficult to act on long-term interest rates, the Federal Reserve still had control over short-term interest rates. Adjustable-rate subprime mortgages were based on these, and it was these types of mortgages, and financial instruments based upon them, that turned out to be especially dangerous. The US Federal Reserve led the way, lowering the overnight federal funds target rate from 6.5% in late 2000 to 1.75% in December 2001, to 1% in June 2003, a new record low, where it stayed for a full year. The real interest rate stayed below 1% between mid-2001 and the end of 2005, and for much of that period it was negative. The pattern was repeated in many major industrial economies. The European Central Bank (ECB) kept real short-term interest rates below 1%, which helped to finance Germany's reunification. In Japan, rates were held between 0% and 1% for the best part of a decade. There was limited ability outside the US to fight the Fed's low rates. Many emerging economies followed for fear that their currencies would appreciate if they set their interest rates higher. Had the Bank of England not followed the US, hot money would have flowed into the UK to exploit the interest rate differential; the Bank of England was not as autonomous as some suggested at the time. The Federal funds rate was finally raised starting in June 2004, but only very slowly. After seventeen 0.25% increments, it reached 5.25% in June 2006. It was too late, and such a slow upward path may have created a false sense of security; the knowledge that there would be no big correction in rates might have encouraged excessive leverage.

Why were interest rates pushed so low? The main driving force seems to have been the fear of deflation in the wake of the dot-com bust. Deflation would cause the real burden of debt to rise and weaken the balance sheets of households and businesses—the dreaded 'debt deflation'.[26] The travails of Japan heavily influenced thinking.[27] Nobody had foreseen Japan's deflationary slump. Japanese policymakers had thus missed an opportunity to sustain growth and inflation before it became too difficult. The lesson others drew was that once inflation turned negative, monetary and fiscal stimulus should be pushed beyond the levels implied by current forecasts of future inflation and economic activity, i.e. that policy should pre-emptively stimulate the economy even if the evidence to support this was not yet fully in place; by the time the evidence existed, it would be too late.[28]

Rates were then kept low for the standard reason that growth was sluggish and unemployment rising—the equally dreaded 'jobless recovery'. Even with cuts in interest rates, US unemployment reached nearly 4 million. Indeed, such low interest rates may even help to explain the jobless recovery, since they effectively subsidized capital in a world already suffering a 'capital overhang' legacy (the more labour-saving the capital, the greater the subsidy).[29]

It has been argued that by holding rates too low for too long, the Fed encouraged bubbles in global credit markets and in asset prices. Evaluating culpability is complicated by what was said above about inadequate global aggregate demand and about the role of China and others; this would indicate that policymakers had few alternatives if they were to avoid deflation and unemployment spiralling. Indeed, deflation was already taking place across a large number of consumer goods sectors in countries like the US well before the stock market collapsed in the late 1990s, and perhaps as far back as 1995. The surge in the stock market in the late 1990s masked this for a while with a wealth effect.

Perhaps the pre-emptive strategy in the early to mid-2000s was more riddled with dilemmas than policymakers realized at the time. It now seems—and we have the benefit of hindsight on which to base our observations—that policymakers faced something of a Faustian trade-off. Either they kept interest rates higher and allowed unemployment to rise and risked deflation anyway, or they pushed rates lower, avoided immediate deflation but risked pumping bubbles that might later cause an even bigger deflation and a jobless recovery from an even deeper economic pit. And they had little to guide them as to how big the risks of deflation were. The dot-com collapse was much less of a credit event than that experienced by Japan after its housing and stock market bubbles burst: Dot-com 'losers' did not have debt weighing down their balance sheets, banks were not significantly exposed to the losses and the collapse raised no concerns about their solvency. So it seems that policymakers used ultra-low interest rates to rescue the economy in the early 2000s from a mildly deflationary scenario only to face a genuine credit event with a high risk of deflation at the end of the 2000s, consequent on the impact of those ultra-low interest rates.

It is clear that very low interest rates in the early to mid-2000s may take some blame for what happened, but they do not explain everything. Housing market surges were just as prevalent in many other countries that had experienced less credit easing than the US. Indeed, the housing boom of the 1920s was accompanied by rising, and not falling, interest rates, which suggests that poor regulation is at least as much to blame. The big mistake in the US in the mid-2000s was to hold interest rates too low for too long. It is also clear that the peculiar dynamics of the global macroeconomic imbalances, and a bag of policy instruments that was nearly empty but for the one interest rate instrument, curtailed the policy options severely. Nevertheless, policymakers could have done more to curb excessive risk-taking if they had had macroprudential tools at their disposal (and been willing to use them), or if they had simply been a bit tougher on the non-interest rate aspects of credit growth. We shall return to this in Chapters 8 and 12.

In the mid-2000s, Federal Reserve chairman Alan Greenspan, realizing that bubbles might be developing, and perhaps recollecting his famous 'irrational exuberance' statement at the height of the stock market boom of the 1990s, at first tried to dampen the market euphoria, but then stopped bothering.[30] This was partly because of political pressure. Partly it was because inflation seemed so low. Companies were holding wages down even as growth was high. New technology was replacing workers and boosting profits, and the stock market was booming again. Surely, anyone who worried about market euphoria was being a bit of a party pooper? The main reason however, was that Greenspan didn't believe that the market was behaving inefficiently; after all, the point of his famous 'irrational exuberance' statement was to cast aspersions on the practical usefulness of the notion of 'irrational exuberance': 'But how do we know when irrational exuberance has unduly escalated asset values . . . ?'.

The Growth of Debt and the Underpricing of Risk

One consequence of low interest rates was the growth of the stock of debt relative to income. In the US, the annual rate of growth of real household debt went from an average of 4% in the 1990s to 7.5% over the period 2000–2006. In the UK, the rate was an astonishing 10% for the decade running up to the crash. It was not something that Gordon Brown talked much about in budget speeches of the time. In Ireland, in 2006 private-sector debt was growing at 30% per year; in a low inflation environment, this should have flagged danger. In nominal terms, the total stock of UK household debt went from £570 billion in the summer of 1997, a ratio of just over 100% of net disposable income, to a little over £1,500 billion, or about 175% of net disposable income, on the eve of the crash. The ratio also rose significantly in Spain, Ireland, Australia, and France, but fell in both Germany and Japan. In the US, despite the tag 'subprime' and frequent references to the poor, most of the growth of household debt was in middle-income households that were desperately trying to sustain their living standards. In Spain, in contrast, it was poorer households who especially tanked up on debt.

Not only households took on lots of debt. Government, non-financial businesses and the financial industry were also doing so across a wide range of countries. Aggregating all sources of debt together, the ratio of debt to GDP was just under 300% in the US, stretching up to 365% in Spain and 465% in the UK, while even further beyond lay Ireland at over 700% (with its financial sector accounting for 420%) and Iceland on 1,200% (with about half of that in the financial sector).[31] Germany and Japan were non-participants in the debt-fuelled binge (although, to nip any moralizing in the bud, it should be noted that German banks and politicians happily encouraged such behaviour in others). In the run-up to America's Great Depression of the 1930s and Japan's travails of the 1990s, most private-sector debt was in non-financial companies, such that when balance sheet deflation set in, it hit these companies hard. In the 2000s, the big increases in debt were in the financial and household sectors. Compared to non-financial companies, there was a relative lack of workable resolution mechanisms for big banks in financial trouble and for households in mortgage distress. This made for a crash that was inherently more challenging to handle.

Low real interest rates, *ceteris paribus*, increase the present discounted value of any stream of revenue that is generated by an asset. The flipside is that asset prices rise. Global equity markets rose 90% between 2003 and the eve of the crash in mid-2007. Compared to the early 2000s, real house prices increased by more than 60% in the US[32] and by more than 90% in the UK. Along with gains on other financial assets, households could post net wealth gains even after taking on higher debts. Furthermore, while in the UK private-sector borrowing from the rest of the world was matched by a build-up in foreign investments (such that the net financial balance of the non-financial private sector stayed roughly in balance),[33] in the US it was not, and in some eurozone countries, such as Greece and Portugal, it decidedly was not.

Very cheap money also encouraged 'risk-shifting' behaviour—the collective ignoring of downside risk because all that matters is the upside.[34] Many asset management companies, pension funds, and other bodies had entered into long-term contracts that committed them to relatively high nominal rates of return. With bond yields very low, this was proving difficult. Pension funds, for example, could only get about 1.5% real yield to maturity compared to the 3.5% they had got in the past. In a bid to meet their obligations, maintain profitability, and attract and retain clients, they increasingly engaged in a desperate 'search for yield'. Indeed, pension funds, and others in a similar predicament, may have had no choice but to take on more risk. If they stayed with low-return but safe investments they were almost certain to default on their commitments. If they took on higher-return but riskier investments they might last long enough to see rates rise and so survive.

At low interest rates, hedge fund managers—typically paid about 1% of funds under management and 20% of any excess return above a minimum nominal return—were also encouraged to take on more risk. At high risk-free returns, they were paid well even if they took little risk. As the risk-free return fell, the fund may not be able to meet even the minimum return if little risk was taken on. Low interest rates meant it was much easier too for banks to borrow, and so banks also began searching aggressively for new places to invest. Adding yield without adding much risk would have been good, but this is not what happened.[35] Very low interest rates encouraged 'catastrophe chasing' strategies, a theme to which we shall return later.

Of course, this 'search for yield' across so many different financial players at once relied on an enabling environment: a world in which credit ratings and other models were signalling that risk was low when, to the contrary, it was high; shareholders and regulators applying ever-decreasing levels of scrutiny when, if anything, the need for scrutiny was getting greater all the time; and politicians and policymakers declaring an end to boom and bust when this was no more than a convenient myth. For a while, investors got their precious yield.

Since debt was central to the crash, understanding the properties of debt will help us better understand the challenges of tackling the crash. Debt is a perfectly natural phenomenon, both for an individual and for society. Debt enables consumption to be distributed more optimally over a lifetime or across many generations. However, debt, unlike equity, can default. The default possibilities in a debt contract are disciplining devices in a world of costly monitoring and asymmetric information.[36] When a lender is unable to monitor easily a borrower all the time, the debt contract requires the borrower to make periodic payments to the lender. So long as no payments are missed, the lender keeps his or her nose out. Only when a payment is missed—a sign of possible distress—does the lender investigate the borrower more closely. This economises on monitoring costs. If the borrower defaults, there are well-specified penalties including confiscating the asset used as collateral for the loan and selling it to repay the debt. If the debt being defaulted is a mortgage, the asset is usually the property bought with the loan. Structuring the debt contract in this way also supposedly gives the borrower incentives to invest wisely in the first place, and to put in higher effort and thereby increase the probability of avoiding default. In contrast, equity is traded on an open market and its price comes to embody the information of the millions of participants in that market, and so fluctuates in response to new pieces of information, but it does not suffer from 'default' states as debt contracts do. Debt may also need to be rolled over in ways that equity does not need to be.

When debt-based bubbles crash, the mess is much harder to clean up than when equity-based bubbles crash. In 2005, I wrote: 'During a debt-backed bubble, the default states in the contracts, in a sense, bite "less than they really should" given the true underlying fundamentals. In particular, spreads tend to be based on a false sense of security, since the bubble masks the real risks being taken on. Post collapse, banks adjust upwards the true underlying risk of the contracts they offer... and hence raise loan spreads... This can aggravate price falls, but—in short—it is not unlike the crises that sometimes hit highly-indebted countries: as spreads rise, the burden of debt rises which hits debt-backed asset prices too, which makes the debt riskier, which increases the spreads, and the burden of the debt rises, and so on. Failure to coordinate by lenders compounds the crisis.'[37] When the stock market crashed in 1987, the consequences turned out to be minimal, and when the dot-com bubble burst at the end of the 1990s, policy responses were able to mitigate much, though clearly not all, of the impact on the rest of the economy. This was because these were equity-based collapses.

In spite of the default dangers inherent to debt, debt became highly favoured in the run-up to the crash. For a start, it became much easier and cheaper to issue debt than equity. Equity markets never really recovered to prior price-to-earnings ratios after the 2000 stock market crash, whereas bond-market spreads fell to historically low levels. Global imbalances, and responses to them, therefore inadvertently helped promote the use of debt.

One heavily worked pump for debt was that manned by private equity funds, whose instrument of choice was the leveraged buyout (LBO). As a disciplining device, debt requires firms to meet regular payments, and this helps to enforce cost efficiency. Financial institutions like this. After 2002, about half of the rise in US corporate net debt came through leveraged buyouts. Assets under the management of private equity firms peaked at about $600 billion in early 2007, 250% of their 2000 level. The big providers of loans to fund leveraged buyouts were household names, the top three being, in order, JPMorgan Chase & Co., Bank of America, and Citigroup.

Debt was also heavily used to make companies bigger. For executives paid according to company size this had a certain appeal. Investment banks also made fees out of issuance and acquisition and had an incentive to recommend activities based on debt. Economic models based on 'agency' theories show that firms with stable cash flows (perhaps consequent on the 'Great Moderation'?) also issue more debt.[38] Finally, greater leverage was also used to push up pay and returns to equity owners (executives and shareholders); the return to equity is equal to the return on assets multiplied by the ratio of assets to equity, so the bigger this ratio the greater the return to those who own the little bit of equity.

By the mid-2000s there were all kinds of signs that risk was being tolerated and mispriced as a side-product of all this frenetic debt-based activity. The differences, the 'spreads', between the returns on risky assests and the returns on risk-free assets narrowed very significantly, indicating a willingness to take on higher-risk investments at any given previous rate of return. For example, by the middle of 2007, an investor in junk bonds was getting only about 3% per year more return than an investor in 'risk-free' Treasuries of similar maturity. The historical average was 5%, and the differential had been under that average since 2003. This shrinking 'spread' would normally be interpreted as meaning that the perceived riskiness of junk bonds had fallen. Meanwhile, across the eurozone, investors were happy to lend to one and all at rates only slightly higher than Germany.

Three novel features were at the heart of the crash. The first was the collapse of financial liquidity on an unprecedented global scale. History is littered with financial crises and crashes, but none before where the collapse of liquidity played such an extensive role.[39] With markets starved of liquidity, difficult-to-value assets (many based on underlying debt contracts vulnerable to default) took centre stage like never before. The second was the credit (as opposed to stock market) event nature of the crash, that made its fall-out especially difficult to manage. The third was the balance-sheet nature of the recession that followed. The balance sheets of a huge range of economic actors—corporates, financial firms, governments, and households—had got decidedly lopsided and fragile. Both the rescue of the financial system and economic stimulus would face the headwinds of mass deleveraging, especially of financial firms and households, because of the large amounts of debt and the preponderance of low-quality, high-risk activity favoured by debt in the years before the crash. We have come to think of the crash as about subprime, and subprime as being about only housing. In truth, lenders increasingly considered low-quality borrowers of all hues as fair game, not just those in mortgage markets. Even as they pursued them by all means fair or foul, lenders could still point to low measures of risk, just as naughty schoolboys might throw up their empty hands to suggest they are innocent of taking something they should not have.

Clouds Gathering

In the mid-2000s—I did not dare say it then, and I hardly dare say it now, except in the hope that the matter might be better addressed—the US was starting to look like the Roman Empire in about AD 200, according to one of the many interpretations of its demise. Under President Bush it was fighting, on various fronts, multi-trillion-dollar wars[40] that were funded by peoples abroad who would, under future presidents, have to be repaid in real goods and services that people in the US would have to produce. It was on a path of long-term decline, its problems temporarily papered over by a credit-fuelled property-pumped consumer-based binge and loose monetary and fiscal policy. Its people were living in denial but assured themselves that, as their political leaders often told them, they were owed what they were getting. To crown it all, Bush had no inkling of the impending crash, and so took no measures to forestall it. The only mitigating observation is that Bush was following in the footsteps of those who had gone before him. It was President Reagan who first over-sold to the US people the notion that they could live off ever-spiralling debt, especially government debt. President Clinton took the lesson and applied it to private debt, and presumed that rising housing and equity markets would make it sustainable.

There is a psychological element that economists sometimes miss. In the 25 years from 1982 until the crisis broke in the US in 2007, the US suffered only 16 months of recession, and these were much milder than in the decade or two before. Such a long period of steady, if not always spectacular, growth saw a whole baby-boomer generation go without experiencing a major economic downturn in their adult lives. This filled their minds with highly unrealistic expectations about returns, asset prices, and risks of all sorts.

When Gordon Brown condemned other countries in his budget speech of 2005, he forgot to mention that the UK's economic success story was also based on a string of unsustainable factors: soaring private-sector debt, growth in a public sector that employed 40% of the workforce, a bloated banking system, and heavily-pumped house prices. Under the Blair/Brown 'Third Way', the proceeds of the boom (totally misunderstood for what it really was) were siphoned off and showered on an expanding public sector, the cooperation of the middle classes was secured by a suite of highly agreeable benefits, and the City (and future generations of taxpayers) would pay. With the fortunes of the Labour Party depending on keeping the City happy, no awkward questions were asked about how the City made its huge profits. Macroeconomic policy should have been countercyclical against the credit boom in the private sector, but instead the UK government joined in, with a spending spree that was relentlessly procyclical. The government's (on-balance-sheet) budget deficit was pushed to 3% of GDP at the top of the cycle. In 2005, while Brown was touting 'record economic growth' and an 'end to boom and bust', those arguing that the UK should not be running high government deficits in a period of boom and low private-sector savings were simply ignored.

Not satisfied, Brown made sure that the UK government's financial cupboard was rattling with all manner of other skeletons. To the official government debt figures a generous sprinkling of off-balance-sheet liabilities was added: underfunded public pensions; student loans; the liabilities of quasi-public bodies; implicit guarantees (such as to bail out banks); and Private Finance Initiatives (PFIs), which were a way to borrow off-the-books, which got stretched to cover just about anything. Perhaps the reason Brown did not see the problems ballooning in the 'shadow banking system' was that so much of his own financial thinking was based on 'shadow' financial engineering that he could hardly tell the difference. Then there was a range of 'stealth taxes', such as the £100 billion taken from current and future pensioners by scrapping the tax relief on dividends paid by UK companies into pension funds, the proceeds of which did not find their way into any fiscal cushion. During the boom, and before the bust, in the UK nearly £400 billion went on welfare benefits, and still one in six UK households was without work, the UK was a highly unequal society, and child poverty was still for from eradicated. There was nothing magical about the UK's economic performance, and Brown and his advisors were no financial wizards, as they conjured up a present that had no future. The high renown on which the whole enterprise was based was mostly of the self-generated variety. In December 2010, Brown declared: '[E]conomic orthodoxies for which people are feted today will quickly come to be seen as the great misjudgements of history.' As a result, there would be a 'decade of decline for the West'.[41] Brown proffered these as words of wisdom and, it seems, did not spot that they were an equally apt summary of his 13 years in charge of the UK's public finances.

And so, numerous economic imbalances gathered, like clouds warning of an impending storm. They fed the 'Great Moderation' myth and were in turn justified by it. Politicians scrambled to take credit, even though it was a global phenomenon and may not have been all that it seemed. They did not stop to wonder whether the 'Great Moderation' was true and the reaction efficient, true and the reaction excessive, or just plain false. To the extent that the 'Great Moderation' was only a temporary mirage, many in the population would stagger to its inviting edge only to discover later that they were saddled with excessively high levels of debt that they would need to offload, and with insufficient levels of savings that they would need to replenish if they wished to continue on their journey in any hope of physical or emotional comfort.

Many economists were worrying that these imbalances portended instability. Obstfeld and Rogoff repeatedly wrote of the dangers.[42] Charles Bean, deputy governor for monetary policy at the Bank of England, observed in November 2008: 'We knew they were unsustainable and worried that the unwinding might be disorderly.... However, nothing very much was done about these imbalances.'[43] The Governor of the Bank of England, Mervyn King, observed in March 2009: 'Year after year international meetings expressed surprise, and indeed concern, that the imbalances continued to accumulate, but in the absence of a correction the theme became a worn groove in discussions and interest waned.'[44]

'Moderation'—such a reassuring word. In the sunny pastures of the 'Great Moderation', policymakers could reminisce about the bad old days of the 1970s and other such immoderate times and count their blessings. All over the world, an age-old political morality play ran in an endless loop: the political elites—in China, oil-rich nations, Germany and the European periphery, the

US, and the UK—were more likely to be re-elected (or hold on for even longer) if they prolonged a boom than if they tried to tame a bubble. No politician was going to give up the badge of policy credibility by suggesting that the boom was based on imbalances and an unsustainable debt binge when they could declare it the result of policy reforms they had so bravely driven through. The imbalances benefited them all.

First, by supplying many developed economies with cheap goods, the export-led growth strategies of China and a range of other emerging economies helped hold down their inflation. The Federal Reserve calculated that imports from China to the US lowered US inflation by about 0.1%–0.3% per year, while another calculation reckoned that, once the effect of Chinese competition on other producers was taken fully into account, the downward effect was nearer to 1% per year.[45] It is a paradox that some in the US blamed US outsourcing to China for a 'jobless recovery' in the early 2000s, given that US consumers benefited so much from cheap goods. The problem was that the benefits were widely dispersed while the suffering was concentrated, especially in declining rust-belt regions and in some politically sensitive (i.e. swing) states. Second, by making consumers feel wealthier through lower goods prices and higher asset prices, including house prices,[46] it reduced pressures for higher wages, which further helped the anti-inflationary efforts of Western central banks. Third, the deal appears even better once one realizes that the actions of China and other Asian economies knocked between 0.5% and 1% off US bond yields.[47] Fourth, the downward pressure on yields fed through to lower US and global mortgage rates. Americans could borrow and consume beyond their means on the cheap. They liked that. Sometimes they seemed a tad ungrateful to the poor in China for providing such considerate welfare support. The electorate did not understand the dangers, and it wasn't the sort of issue that they would give politicians much credit for sorting out. Facing an intractable policy conundrum that would take longer to resolve than the horizon of most presidents or prime ministers, political elites everywhere took the time-honoured route. They looked the other way.

The Great Moderation vanished over 2007–2008, and the world entered a period of extremely volatile output. We were left wondering how real was the Great Moderation in the first place. As Minsky[48] had observed, a long period of stability encourages the very behaviour—the tanking up on debt and speculation—that one day turns it into instability. For once Greenspan was clear, and, it turns out, prescient: 'A decline in perceived risk is often self-reinforcing in that it encourages presumptions of prolonged stability and thus a willingness to reach over an ever-more-extended time period... Such developments apparently reflect not only market dynamics but also the all-too-evident alternating and infectious bouts of human euphoria and distress and the instability they engender.'[49] If only he had listened to himself.