

The origins of the financial crisis

Crash course

The effects of the financial crisis are still being felt, five years on. This article, the first of a series of five on the lessons of the upheaval, looks at its causes

Sep 7th 2013 | From the print edition

THE collapse of Lehman Brothers, a sprawling global bank, in September 2008 almost brought down the world's financial system. It took huge taxpayer-financed bail-outs to shore up the industry. Even so, the ensuing credit crunch turned what was already a nasty downturn into the worst recession in 80 years. Massive monetary and fiscal stimulus prevented a buddy-can-you-spare-a-dime depression, but the recovery remains feeble

compared with previous post-war upturns. GDP is still below its pre-crisis peak in many rich countries, especially in Europe, where the financial crisis has evolved into the euro crisis. The effects of the crash are still rippling through the world economy: witness the wobbles in financial markets as America's Federal Reserve prepares to scale back its effort to pep up growth by buying bonds.

With half a decade's hindsight, it is clear the crisis had multiple causes. The most obvious is the financiers themselves—especially the irrationally exuberant Anglo-Saxon sort, who claimed to have found a way to banish risk when in fact they had simply lost track of it. Central bankers and other regulators also bear blame, for it was they who tolerated this folly. The macroeconomic backdrop was important, too. The “Great Moderation”—years of low inflation and stable growth—fostered complacency and risk-taking. A “savings glut” in Asia pushed down global interest rates. Some research also implicates European banks, which borrowed greedily in American money markets before the crisis and used the funds to buy dodgy securities. All these factors came together to foster a surge of debt in what seemed to have become a less risky world.

Start with the folly of the financiers. The years before the crisis saw a flood of irresponsible mortgage lending in America. Loans were doled out to “subprime” borrowers with poor credit histories who struggled to repay them. These risky mortgages were passed on to financial engineers at the big banks, who turned them into supposedly low-risk securities by putting large numbers of them together in pools. Pooling works when the risks of each loan are uncorrelated. The big banks argued that the property markets in different American cities would rise and fall independently of one another. But this proved wrong. Starting in 2006, America suffered a nationwide house-price slump.

The pooled mortgages were used to back securities known as collateralised debt obligations (CDOs),



which were sliced into tranches by degree of exposure to default. Investors bought the safer tranches because they trusted the triple-A credit ratings assigned by agencies such as Moody's and Standard & Poor's. This was another mistake. The agencies were paid by, and so beholden to, the banks that created the CDOs. They were far too generous in their assessments of them.

Investors sought out these securitised products because they appeared to be relatively safe while providing higher returns in a world of low interest rates. Economists still disagree over whether these low rates were the result of central bankers' mistakes or broader shifts in the world economy. Some accuse the Fed of keeping short-term rates too low, pulling longer-term mortgage rates down with them. The Fed's defenders shift the blame to the savings glut—the surfeit of saving over investment in emerging economies, especially China. That capital flooded into safe American-government bonds, driving down interest rates.

Low interest rates created an incentive for banks, hedge funds and other investors to hunt for riskier assets that offered higher returns. They also made it profitable for such outfits to borrow and use the extra cash to amplify their investments, on the assumption that the returns would exceed the cost of borrowing. The low volatility of the Great Moderation increased the temptation to “leverage” in this way. If short-term interest rates are low but unstable, investors will hesitate before leveraging their bets. But if rates appear stable, investors will take the risk of borrowing in the money markets to buy longer-dated, higher-yielding securities. That is indeed what happened.

From houses to money markets

When America's housing market turned, a chain reaction exposed fragilities in the financial system. Pooling and other clever financial engineering did not provide investors with the promised protection. Mortgage-backed securities slumped in value, if they could be valued at all. Supposedly safe CDOs turned out to be worthless, despite the ratings agencies' seal of approval. It became difficult to sell suspect assets at almost any price, or to use them as collateral for the short-term funding that so many banks relied on. Fire-sale prices, in turn, instantly dented banks' capital thanks to “mark-to-market” accounting rules, which required them to revalue their assets at current prices and thus acknowledge losses on paper that might never actually be incurred.

Trust, the ultimate glue of all financial systems, began to dissolve in 2007—a year before Lehman's bankruptcy—as banks started questioning the viability of their counterparties. They and other sources of wholesale funding began to withhold short-term credit, causing those most reliant on it to founder. Northern Rock, a British mortgage lender, was an early casualty in the autumn of 2007.

Complex chains of debt between counterparties were vulnerable to just one link breaking. Financial instruments such as credit-default swaps (in which the seller agrees to compensate the buyer if a third party defaults on a loan) that were meant to spread risk turned out to concentrate it. AIG, an American insurance giant buckled within days of the Lehman bankruptcy under the weight of the expansive credit-risk protection it had sold. The whole system was revealed to have been built on flimsy foundations: banks had allowed their balance-sheets to bloat (see chart 1), but set aside too little capital to absorb losses. In effect they had bet on themselves with borrowed money, a gamble that had paid off in good times but proved catastrophic in bad.

Regulators asleep at the wheel

Failures in finance were at the heart of the crash. But bankers were not the only people to blame. Central bankers and other regulators bear responsibility too, for mishandling the crisis, for failing to keep economic imbalances in check and for failing to exercise proper oversight of financial institutions.

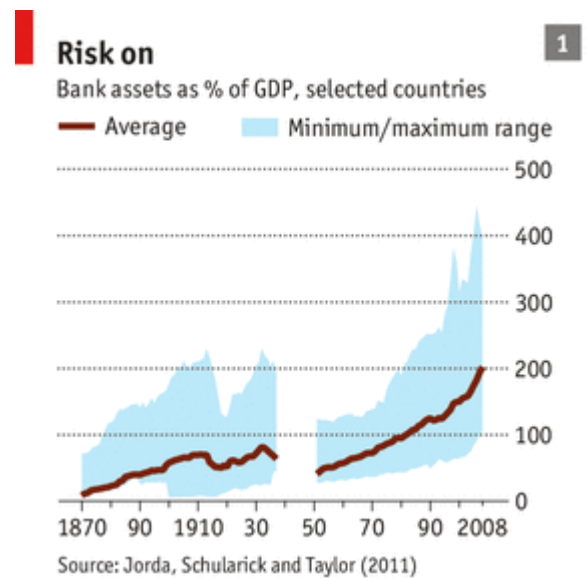
The regulators' most dramatic error was to let Lehman Brothers go bankrupt. This multiplied the panic in markets. Suddenly, nobody trusted anybody, so nobody would lend. Non-financial companies, unable to rely on being able to borrow to pay suppliers or workers, froze spending in order to hoard cash, causing a seizure in the real economy. Ironically, the decision to stand back and allow Lehman to go bankrupt resulted in more government intervention, not less. To stem the consequent panic, regulators had to rescue scores of other companies.

But the regulators made mistakes long before the Lehman bankruptcy, most notably by tolerating global current-account imbalances and the housing bubbles that they helped to inflate. Central bankers had long expressed concerns about America's big deficit and the offsetting capital inflows from Asia's excess savings. Ben Bernanke highlighted the savings glut in early 2005, a year before he took over as chairman of the Fed from Alan Greenspan. But the focus on net capital flows from Asia left a blind spot for the much bigger gross capital flows from European banks. They bought lots of dodgy American securities, financing their purchases in large part by borrowing from American money-market funds.

In other words, although Europeans claimed to be innocent victims of Anglo-Saxon excess, their banks were actually in the thick of things. The creation of the euro prompted an extraordinary expansion of the financial sector both within the euro area and in nearby banking hubs such as London and Switzerland. Recent research by Hyun Song Shin, an economist at Princeton University, has focused on the European role in fomenting the crisis. The glut that caused America's loose credit conditions before the crisis, he argues, was in global banking rather than in world savings.

Moreover, Europe had its own internal imbalances that proved just as significant as those between America and China. Southern European economies racked up huge current-account deficits in the first decade of the euro while countries in northern Europe ran offsetting surpluses. The imbalances were financed by credit flows from the euro-zone core to the overheated housing markets of countries like Spain and Ireland. The euro crisis has in this respect been a continuation of the financial crisis by other means, as markets have agonised over the weaknesses of European banks loaded with bad debts following property busts.

Central banks could have done more to address all this. The Fed made no attempt to stem the housing bubble. The European Central Bank did nothing to restrain the credit surge on the periphery, believing (wrongly) that current-account imbalances did not matter in a monetary union. The Bank of England,



having lost control over banking supervision when it was made independent in 1997, took a mistakenly narrow view of its responsibility to maintain financial stability.

Central bankers insist that it would have been difficult to temper the housing and credit boom through higher interest rates. Perhaps so, but they had other regulatory tools at their disposal, such as lowering maximum loan-to-value ratios for mortgages, or demanding that banks should set aside more capital.

Lax capital ratios proved the biggest shortcoming. Since 1988 a committee of central bankers and supervisors meeting in Basel has negotiated international rules for the minimum amount of capital banks must hold relative to their assets. But these rules did not define capital strictly enough, which let banks smuggle in forms of debt that did not have the same loss-absorbing capacity as equity.

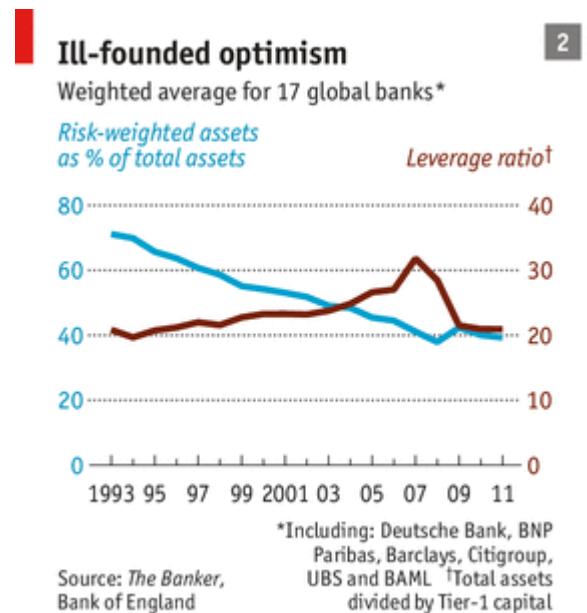
Under pressure from shareholders to increase returns, banks operated with minimal equity, leaving them vulnerable if things went wrong. And from the mid-1990s they were allowed more and more to use their own internal models to assess risk—in effect setting their own capital requirements. Predictably, they judged their assets to be ever safer, allowing balance-sheets to balloon without a commensurate rise in capital (see chart 2).

The Basel committee also did not make any rules regarding the share of a bank's assets that should be liquid. And it failed to set up a mechanism to allow a big international bank to go bust without causing the rest of the system to seize up.

All in it together

The regulatory reforms that have since been pushed through at Basel read as an extended *mea culpa* by central bankers for getting things so grievously wrong before the financial crisis. But regulators and bankers were not alone in making misjudgments. When economies are doing well there are powerful political pressures not to rock the boat. With inflation at bay central bankers could not appeal to their usual rationale for spoiling the party. The long period of economic and price stability over which they presided encouraged risk-taking. And as so often in the history of financial crashes, humble consumers also joined in the collective delusion that lasting prosperity could be built on ever-bigger piles of debt.

From the print edition: Schools brief



The dangers of debt

Lending weight

The second in our series of articles on the financial crisis looks at the role debt and deleveraging have played in the turmoil

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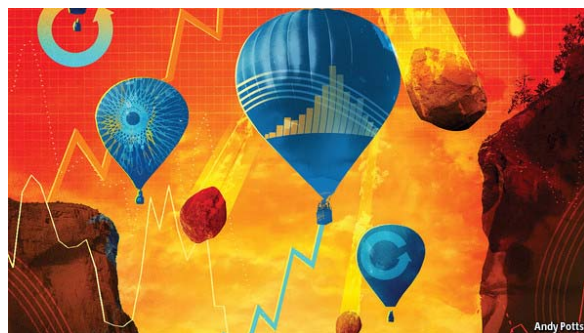
IT WAS the growing rate of default on home mortgages in America that precipitated the financial crisis five years ago. These delinquencies, although not enormous in themselves, became impossible for some investment banks to bear, thanks partly to their own heavy debts. As the contagion spread throughout the financial sector in 2007-08, nervous or cash-strapped banks and other creditors stopped lending, thereby infecting the rest of the

economy. Deep recessions and big financial rescues then led to a surge in government debt. That, in turn, raised fears about the solvency of various countries in the euro area, culminating in Greece's default in 2012. Debt was, then, both a cause and a consequence of the crisis, and remains a big reason for its continuance.

Economists tend to see debt as a useful means to get money where it is most needed, from creditors with an excess of it, to borrowers who are short of it. The broadening and deepening of international credit markets that preceded the financial crisis was considered a spur to growth, since it gave ever more borrowers access to bigger loans at lower rates of interest. When disaster struck, however, debt turned from a ladder into a chute. Working out what went wrong, and when debt turns dangerous, has become a preoccupation of economics in recent years.

Debt is possibly the oldest financial instrument, older even than money. Archaeologists have unearthed Babylonian tablets of sun-dried clay recording obligations incurred in the third millennium before Christ. But despite its venerability, debt is not much respected. In German, the word for debt (*Schuld*) also means sin (a view that many Germans still seem to hold). Those who run up debts are assumed to be profligate and those who chase them down mercenary and unfeeling. That is because debt is a peculiarly unforgiving instrument: it must be paid in full and on time, come what may. That distinguishes debt from some other financial liabilities, such as shares, which are more flexible, promising only a cut of the profits, whatever they may be.

Before 2008 most macroeconomic models made little room for debt (especially of the private, domestic sort), let alone default. At the level of the economy as a whole, after all, borrowers and lenders cancel each other out: every dollar owed by someone is also owed to someone. Thus the liabilities of all



debtors and the assets of all creditors add up to zero. That makes debt seem trivial.

Clearly, debt is far from trivial, and its unwinding not always a zero-sum game. Yet including it in economic models requires macroeconomists to wrestle with awkward complications, such as “heterogeneity” (dividing the economy into debtors and creditors) and “discontinuity” (allowing for the abrupt breach of economic relations that default represents).

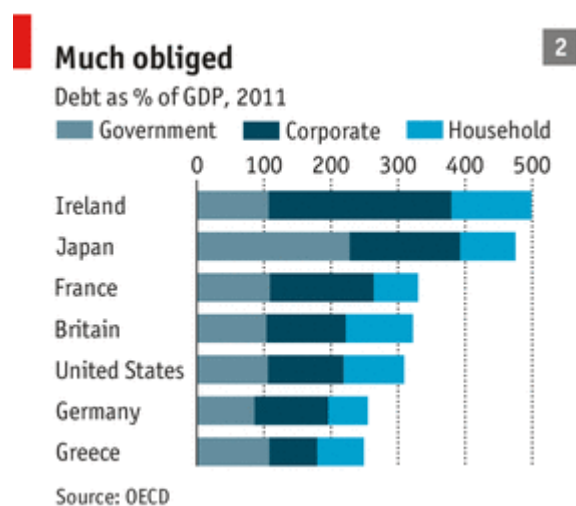
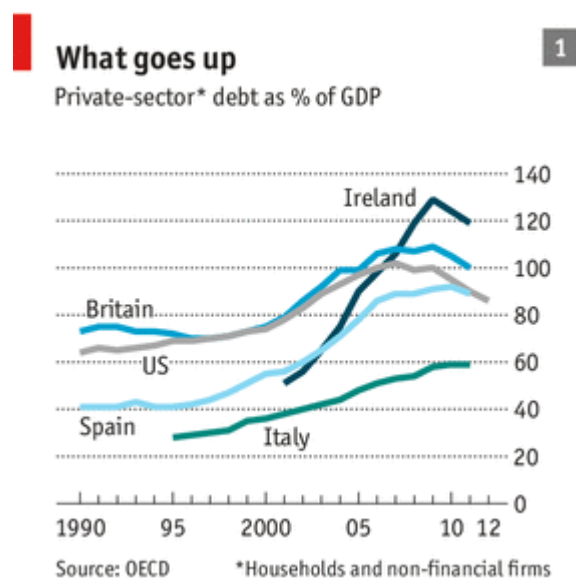
The alternative is to focus instead on empirical studies, poring over the historical record to find out when debt becomes dangerous. Those dangers, it turns out, differ depending on who owes the debt (governments, households, firms or financial intermediaries) and what kind of debt they owe (loans or bonds, short-term or long), as well as the currency in which they owe it.

Most empirical studies look at government debt (the subject of a later brief in this series). But the origins of the 2008 financial crisis lay instead in private-sector liabilities, especially mortgages, which account for a big part of household debt, and massive borrowing by the banks. The debts owed by non-financial firms played a big role in Japan’s crisis in the early 1990s but not in the global crisis in 2008. Chart 1 shows the expansion of household and corporate debt in recent years for a variety of rich countries, expressed as a percentage of GDP; chart 2, on the next page, shows all three kinds of debt.

Much of what companies, households and governments owe, they owe to banks and other financial firms, which extend loans and also buy securities. These financial firms, in turn, owe a lot of money themselves: to their depositors, their bondholders and a variety of other “lenders to the lenders”. Banks are in essence middlemen (or “financial intermediaries”) that borrow in order to lend. They hold a lot of assets and a lot of liabilities at the same time.

Leveraging the lenders

In fact, the debts of financial companies often dwarf the debts of governments, households and non-financial firms. According to the OECD, a club of rich countries, Luxembourg’s financial sector had debts worth over 4,900% of the country’s GDP in 2011. The dinky duchy is an extreme case. But the figures are also striking in other countries with prominent financial sectors, such as Ireland (where financial-sector debt amounted to 1,434% of GDP) and Britain (837%). The scale of these debts can seem alarming, although in theory financial firms are also supposed to hold assets of comparable value.



When firms or households hold a lot of debt, however, even a small fall in the value of their assets can bring them to the brink of bankruptcy. If a family owns a \$100,000 home and owes \$90,000 to the bank, their net worth is \$10,000. But if the value of their home drops by 5%, their net worth halves. The steep fall in asset prices during the crisis caused even more severe losses: many families found their homes were worth less than their mortgages, while financial institutions that had borrowed heavily to invest found that their losses exceeded their equity (the money the owners put into the business).

As well as being vulnerable to declines in asset prices, the highly indebted are also more exposed to fluctuations in their incomes. Their past borrowing leaves them less room for further borrowing to cushion financial blows. Thus highly indebted households find it harder to “smooth” their consumption and similarly burdened firms find it harder to invest when their revenues dip.

To assess the threat debt poses to economic stability, Douglas Sutherland and Peter Hoeller of the OECD have calculated trend rates of debt to GDP, smoothing out the cyclical ups and downs. They note that financial-sector debt tends to exceed its trend during big, long booms of the kind most rich countries enjoyed before the crisis.

But the build-up of this financial-sector debt makes it more likely that the boom will come to an end, Messrs Sutherland and Hoeller find. And the busts are often deeper, as has been the case this time. Much the same is true of household borrowing. They calculate that the odds of a recession are about one in ten when household debt is in line with its trend. But when it exceeds that trend by 10% of GDP, as it did in some of the worst afflicted countries before the crisis, the chances of a recession rise to about 40%.

Rather than looking at borrowing, other economists look at lending. They worry when credit from banks and other lenders to households and firms grows much faster than GDP, as it did before America’s crisis in 2008, Japan’s in 1991 and the Asian crisis of 1997. Economies can succumb to long “financial cycles”, according to Claudio Borio and his colleagues at the Bank for International Settlements. Whereas a traditional business cycle manifests itself in the rise and fall of growth and consumer-price inflation, the financial cycle consists of longer, wider swings in credit and asset-price inflation.

Credit growth as a canary

Why does credit sometimes depart from its prior trend? It may depend on what it is spent on, argues Richard Werner of Southampton University. When a bank makes a loan, it credits the money to the borrower’s deposit account. In so doing the loan adds to the money supply. If that money is spent on a new car, factory or other freshly produced good, it contributes to demand, helping the economy to make fuller use of its productive capacity. If the economy is already near full capacity, it will probably just raise prices instead. But either way, the bank lending will add both to debt and to nominal GDP, the money value of economic output, leaving the ratio of debt to GDP largely unchanged.

However, loans can also be spent differently. They can be used to buy existing assets, such as homes, office-blocks or rival firms. Since the asset already exists, its purchase does not add directly to GDP,

which measures only the production of new goods and services. As a consequence, debt increases, but GDP does not.

Furthermore, the purchase of an asset, such as a home, will help push up the market price of that asset. Other homeowners will then become more willing to take on debt (because they feel wealthier) and more able to do so (because their home's value as collateral has risen). In the years before the crisis, the net worth of American households continued to rise despite their accumulation of debt, because their home and other assets appreciated even faster. Borrowing to buy assets thus has a self-reinforcing effect: one person's purchase makes another's borrowing both more desirable and feasible.

Eventually the financial cycle peaks. Borrowers realise they do not have the income required to service further debt. At that point the cycle goes into reverse: as asset prices fall, collateral constraints tighten, squeezing borrowing, which results in further falls in prices. Unfortunately, one thing does not fall: the size of the debts that households and firms have incurred. The value of their liabilities remains obstinately fixed, as if written in sun-dried clay, even as the value of their assets plunges.

Households and firms will respond by "deleveraging", seeking to lighten their debt burdens. They can do this in three ways: by defaulting, by selling assets or by spending less than they earn (and using the proceeds to repay debt).

Although deleveraging helps repair household and corporate finances, at the level of the economy as a whole it can make things worse. Since one person's outlay is another person's income, depressed spending will hurt incomes, resulting in what Richard Koo of Nomura Research Institute has called a "balance-sheet recession". Even if incomes and prices do not actually decline, they will fall short of their previous trajectory, while the money value of debts remains unchanged. The economic weakness caused by debt can thus make debt even harder to bear, a trap that Irving Fisher, a Depression-era economist, called "debt deflation".

The deleveraging of the financial sector can be particularly deep, quick and nasty. Deep because banks hold a lot of debt relative to their equity (they are highly "leveraged"). Quick because those liabilities are typically of shorter maturity than their assets, giving banks little time to put their balance-sheets in order. Nasty because the process hurts their rivals and their customers alike. In 2007 and 2008 fire sales of securities by investment banks and other dealers depressed their prices, devaluing the portfolios of other banks with similar assets. Banks and other lenders also started calling in loans or at least withholding new ones, inflicting a credit crunch on the broader economy.

Is such a wrenching balance-sheet recession avoidable? In principle, as debtors spend less, savers could spend more, helping to sustain demand. To encourage this, the central bank can cut interest rates, easing debt-servicing costs for borrowers and discouraging saving by the thrifty. The Federal Reserve cut its policy rate from 5.25% in the summer of 2007 to 0-0.25% in December 2008 and the Bank of England followed suit.

In addition, the government can spend more than it collects in taxes, so that the private sector can earn more than it spends. In another paper Mr Sutherland and his co-authors show that run-ups in

borrowing by firms (especially financial firms) tend to cause subsequent increases in public debt. That is precisely what happened in many rich countries in the aftermath of the crisis, when heavy government spending helped to compensate for severe cuts in corporate and household budgets—and sparked a fiery debate about the risks that entails.

From the print edition: Schools brief

Monetary policy after the crash

Controlling interest

The third of our series of articles on the financial crisis looks at the unconventional methods central bankers have adopted to stimulate growth in its wake

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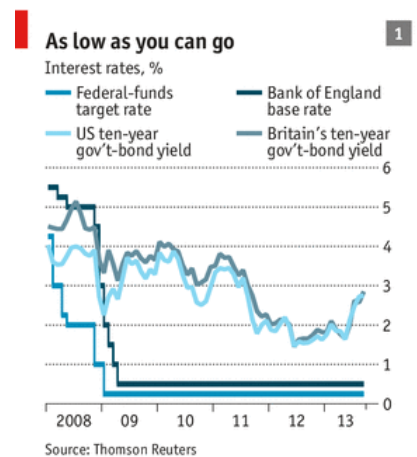
BEFORE the financial crisis life was simple for central bankers. They had a clear mission: temper booms and busts to maintain low and stable inflation. And they had a seemingly effective means to achieve that: nudge a key short-term interest rate up to discourage borrowing (and thus check inflation), or down to foster looser credit (and thus spur growth and employment). Deft use of this technique had kept the world humming along so smoothly in the decades before the crash that economists had declared a “Great Moderation” in the economic cycle. As it turned out, however, the moderation was transitory—and the crash that ended it undermined not only the central bankers’ record but also the method they relied on to prop up growth. Monetary policy has been in a state of upheaval ever since.



The recession that accompanied the credit crunch in the autumn of 2008 delivered a massive blow to demand. In response central banks in the rich world slashed their benchmark interest rates. By early 2009 many were close to zero, approaching what economists call the “zero lower bound”. Even so, growth remained elusive. Pushing rates below zero, though technically possible, would not have helped. Negative rates would merely have encouraged depositors to withdraw their money from banks and hold it as cash, on which the rate of return, at zero, would have been higher. Central banks in the developed economies faced a frightening collapse in output and soaring unemployment without recourse to the tool that had been the mainstay of monetary policy-making for a generation.

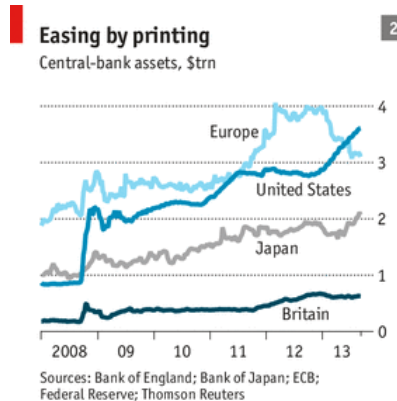
Central banks were not entirely unprepared for this challenge. In the 1990s the Japanese economy had slumped following an asset-price crash. Facing weak growth and deflation the Bank of Japan had slashed rates to near-zero before embarking on a series of experiments with unconventional monetary tools. Although the Bank of Japan’s performance was widely considered disappointing, if not an outright failure, the rich world’s central banks began by drawing upon its playbook.

Unconventional policy falls into two broad categories: asset purchases and “forward guidance”. Asset purchases are a natural extension of central banks’ more typical activities. America’s Federal Reserve, for instance, has long bought Treasury bills and other bonds with short maturities to increase the money supply and reduce short-term interest rates. After its benchmark rate fell close to zero the Fed began buying longer-term securities, including ten-year Treasury bonds and mortgage-backed securities, to bring down long-run borrowing costs (see chart 1).



Printing money to buy assets is known as “quantitative easing” (QE) because central banks often announce purchase plans in terms of a desired increase in the quantity of bank reserves. The Bank of Japan first attempted QE in 2001 when it promised to buy {Yen}400 billion-worth of government bonds a month in order to raise the level of reserves to {Yen}5 trillion. The central banks of America, Britain and Japan have all engaged in QE since the crisis struck, buying up a vast stock of financial assets (see chart 2).

Economists reckon QE works in a few ways. Central bankers emphasise the “portfolio-balance effect”. When a central bank buys bonds from investors with newly created money, they use the proceeds to rebalance their portfolio by buying assets of different risk and maturity. In doing so they boost asset prices and depress interest rates (increased demand for bonds allows them to be sold at lower rates). Cheaper borrowing, in turn, prods businesses and households to invest.



QE can stimulate the economy via a fiscal effect, too: lower interest rates reduce government borrowing costs and so lower expected future taxation. And QE also helps shape expectations of inflation. A central bank announcing a new, higher inflation target might use QE to convince markets it will meet it, since, other things being equal, an increase in the amount of money in circulation leads to higher prices. If people think their money will be worth less in the future, they have an incentive to spend more of it now.

Talking prop

Forward guidance, the other main unconventional tool, is an attempt to boost the economy by signalling central banks' future policies more clearly. The Bank of Japan first attempted to talk the economy back to health in 1999, when it promised to keep its main interest rate near zero "until deflationary concerns subside". The Fed and the Bank of England have since mimicked this approach. In early 2009 the Fed said its interest rate was likely to remain low for "an extended period". In August 2011 it sought to improve this formulation by adding a date, specifying that low rates would stick around until at least mid-2013.

In December 2012 the Fed adjusted its communications again. It announced that rates would stay low until the unemployment rate had fallen to at least 6.5%, as long as short-run expectations of inflation were no more than 2.5%. In August 2013 the Bank of England followed suit, stating that it would not raise rates until unemployment had fallen to 7%, provided financial markets behaved themselves and inflation remained subdued.

Like QE, forward guidance works in several ways. A promise to tolerate higher inflation in the future, if believed, can stimulate economic activity in the present, just as the threat of higher prices due to an expanded money supply does. By the same token, a promise to hold short-term rates low for a long time should reduce long-term rates too, since long-term rates are typically compounded short-term rates along with a premium to allow for rising inflation and other risks.

In addition, investors respond to the "real" or inflation-adjusted interest rate, which equals the "nominal" or advertised interest rate minus expected inflation. When inflation is expected to be negative, meaning that prices are falling, the real interest rate may actually rise. Deflation, by raising the value of a unit of money in terms of other goods, in effect increases the cost of borrowing. If a central bank credibly promises more future inflation, by contrast, the real interest rate can fall and even dip below zero. A negative real interest rate works where a negative nominal interest rate does not: holding cash does no good, since inflation reduces the purchasing power of hard currency as well as deposits. It is therefore in everyone's interest to save less, and to borrow and invest more.

From theory to practice

Studies of quantitative easing generally find that it has indeed reduced long-term interest rates. One rule of thumb has it that \$600 billion in purchases brings down long-run rates by 0.15-0.2 percentage points, equivalent in impact to a cut of 0.75 percentage points in the Fed's benchmark short-term interest rate. Lower rates are estimated to have raised real output in Britain and America 2-3% higher than it would have been without QE, even though borrowing costs remained stubbornly high for British banks.

Recent research also suggests that QE plays a strong role in reinforcing a central bank's forward guidance. The Fed's signalling, for example, seems to be responsible for much of the movement in the prices even of assets it is not buying itself. And market bets on future interest rates reveal that investors find central banks' promises to keep rates low more credible when accompanied by QE purchases.

Whether forward guidance is effective at boosting output is harder to say. There is some agreement that communication about future policy reduces long-term interest rates. But it is unclear why rates fall. They could drop because markets believe the central bank's promise to keep short-term rates low, which should encourage more investment and growth. But they could drop because markets read the central bank's guidance as a signal that the economy is weaker than expected, implying less demand for loans. That could actually prove counterproductive if it discouraged new investment.

Some recent Fed research suggests the first effect—the credibility of the promise—is more important. Other work indicates that guidance may be more powerful when it clearly represents a "commitment" to a particular policy rather than a "forecast" of future economic conditions and the policy that is likely to flow from them.

What is certain is that for all the experimentation, the rich world's big economies are still struggling. Output in Britain remains below its pre-crisis peak. Some 10m fewer Americans are now working than might reasonably have been expected in 2007. The euro area is only just escaping the second trough of a double-dip recession, and its unemployment rate remains in double digits. Unconventional monetary policy, in short, does not seem to be working as well as the conventional sort used to—but there is no agreement why.

Some economists maintain that monetary policy, conventional or otherwise, loses much of its power at the zero lower bound. Simon Wren-Lewis of Oxford University argues that monetary policy cannot stabilise the economy without fiscal easing, meaning more government spending or lower taxes, to transmit newly created money and low rates into the real economy. Others, such as Richard Koo of Nomura Research Institute, reckon that highly indebted firms and households are simply unable to respond to lower long-term interest rates by borrowing more.

Some believe that unconventional policy would work better if central banks only pursued it more vigorously. Soon after Japan ran into its own zero lower bound, Ben Bernanke, who was then an economist at Princeton University but is now chairman of the Fed, argued that the Bank of Japan needed to set a higher inflation target, buy more assets and devalue the yen by purchasing foreign currencies. Robert Hall of Stanford University suspects that pushing the real federal-funds rate down to -4% would be sufficient to get the American economy moving faster. As long as the Fed keeps inflation around 2%, however, the real interest rate can go no lower than -2% (a zero federal-funds rate minus the 2% rate of inflation).

Christina Romer of the University of California, Berkeley is one of the many economists who see a need for a psychological jolt to rouse the economy. She argues for "regime change", meaning not just a change in leadership, but also a dramatic shift in policy. She wants central banks to stop targeting inflation and to focus instead on total spending in the economy, or nominal GDP. Although in most circumstances the two approaches would deliver similar results, a nominal-GDP target gives a central bank more leeway to fight unemployment during steep downturns. Just as important, in her view, the policy change would signal to markets that the Fed meant to restore rapid growth once and for all.

Yet for every critic who believes that central banks have done too little, there is one who fears they have done far too much. By propping up asset prices

artificially, some complain, central bankers are stoking inequality, rewarding financial firms despite their past misdeeds and sowing the seeds of the next crisis. Many, especially on the right in America, give warning that the massive increase in the money supply QE entails can lead only to a debasement of the currency and hyperinflation. Others gripe that low interest rates in the rich world have sent a flood of hot money towards emerging markets, generating financial instability.

It is likely to take years to discern which of these criticisms are warranted. Not until 1963 did Milton Friedman and Anna Schwartz publish "A Monetary History of the United States", definitively establishing that misguided monetary policy had helped entrench the Great Depression. Unfortunately for the many countries still enduring sub-par growth, a similarly decisive resolution to today's monetary-policy debates is still far off.

From the print edition: Schools brief

Stimulus v austerity

Sovereign doubts

The fourth in our series of articles on the financial crisis looks at the surge in public debt it prompted, and the debate about how quickly governments should cut back

Sep 28th 2013 | From the print edition

ECONOMISTS are an argumentative bunch. Yet before the crisis most found common ground in the notion that fiscal stimulus was an obsolete relic. Monetary policy seemed wholly capable of taming the business cycle. Government efforts to increase spending or cut taxes to battle unemployment would only muck things up. When crisis struck in 2008, however, that consensus evaporated.

The frightening speed of the economic collapse spurred governments to action, in spite of economists' doctrinal misgivings. In 2009 many countries rolled out big packages of tax cuts and extra spending in the hope of buoying growth. This stimulus amounted to 2% of GDP on average among the members of the G20 club of big economies. Among Barack Obama's first steps as president in 2009 was to sign the American Recovery and Reinvestment Act, a stimulus plan worth \$831 billion, or almost 6% of that year's GDP, most of it to be spent over the next three years.

Keynes to the rescue

Supporters of stimulus looked to the ideas of John Maynard Keynes, a British economist. Depression, his acolytes reasoned, occurs when there is too much saving. When too many people want to save and too few to invest, then resources (including workers) fall idle. Firms and families might save too much because of financial uncertainty or because they are rushing to "deleverage"—to reduce the ratio of their debts to their assets.

In normal times central banks would try to spur growth by adjusting interest rates to discourage saving and encourage borrowing. Yet by early 2009 most central banks had reduced their main interest rates almost to zero, without the desired result. Overindebtedness, some surmised, might have been preventing people from borrowing as much as they would like, whatever the interest rate. Governments, Keynesians reckoned, needed to make up for hamstrung firms and families, by borrowing and spending more (or taxing less) to put excess savings to work.

When there is slack in the economy, fiscal stimulus can be particularly powerful thanks to a "multiplier" effect. A dollar spent building a railway, for example, might go to the wages of a construction worker. He then spends the extra income on groceries, enriching a shopkeeper, who in turn goes shopping himself and so on. Every dollar of stimulus could thus result in two dollars of output—a multiplier of two. (Multipliers also apply to government cutbacks, amplifying the reduction in GDP.) That allows governments to deliver a hefty economic bang at moderate fiscal cost.

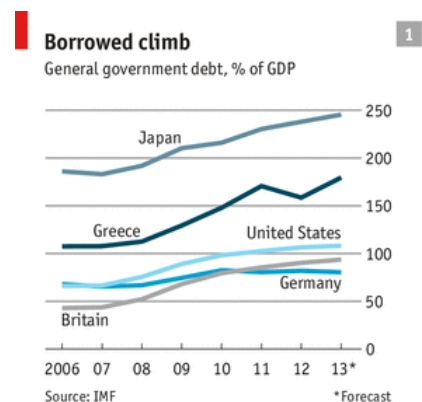
Yet fiscal stimulus is needed most when governments already have extra costs to bear. From 2007 to 2010 rich countries saw the ratio of their gross sovereign debt to GDP spike from 74% to 101% on average. British public debt jumped from just 44% of GDP to 79%, while America's leapt from 66% of GDP to 98%. Greece's soared by 40 percentage points, to 148% of GDP (see chart 1). Greece's deficit was so high that when the government revealed it, the admission set off a crisis of confidence in public finances in southern Europe, and thus in the viability of the euro itself.

Stimulus was not the main reason debt piled up: the biggest drag on public finances came from lower tax receipts, thanks to weak profits and high unemployment. Financial bail-outs added to the fiscal toll, as did "automatic stabilisers"—measures like unemployment benefits that automatically raise spending and support demand when recession strikes. The International Monetary Fund (IMF) estimates that almost 60% of the rise in government debt since 2008 stems from collapsing revenues, more than twice the cost of stimulus and bail-outs combined.

As growth returned in 2010 some leaders argued that it was time to trim public spending. Others worried that the recovery was too fragile to permit any hint of austerity. There was no question that "fiscal consolidation" would eventually be necessary, but much dispute about when it should start.

Britain moved quickly towards sobriety, ending its stimulus in 2010 and planning future cuts. From 2010 to 2011 the government pared its "structural" budget deficit (ie, adjusted to account for cyclical costs such as automatic stabilisers) by two percentage points, with further drops of a percentage point in 2012 and 2013. Several southern European countries had to make even deeper cuts as the crisis spread. But America kept spending, adding new tax breaks to the previous stimulus. As a result, its structural deficit declined more slowly (see chart 2).

The debate about these policies hinged on two crucial uncertainties. One was the size of the multiplier. Sceptics reckoned that it would be low, and that neither stimulus nor austerity would have much effect on output or jobs. Stimulus simply absorbs resources that would otherwise have been used by private firms, they argued. Moreover, firms and households would probably save their share of the proceeds, rather than bolster the economy by spending them, since they would assume that the government's largesse was only temporary and that tax bills would soon be going back up.



Those of a Keynesian bent downplayed these concerns. With unemployment high and private demand for loans low, there was little risk that the government would “crowd out” private activity. Indeed, in a “balance-sheet recession”, with indebted households forced by falling asset prices to pay off loans quickly, a boost to incomes from a fiscal stimulus would speed the financial adjustment, and thus generate a faster recovery.

The other question was how much debt rich governments could take on without harming the economy. Typically, lenders will demand ever higher rates of interest from spendthrift governments as public debts grow. That leads to higher rates for everyone else, crimping economic growth. But supporters of stimulus argued that a slumping economy with rock-bottom interest rates had no reason to fear the vigilantes of the bond market.

The academic evidence, inevitably, was also disputed. Carmen Reinhart and Kenneth Rogoff of Harvard University published a much-cited paper claiming that economic growth rates slow sharply when government debt tops 90% of GDP. Follow-on studies also turned up a negative relationship between growth and debt, although not always at the same threshold. Research by Alberto Alesina of Harvard and Silvia Ardagna of Goldman Sachs, an investment bank, showed that fiscal rectitude—especially in the form of spending cuts rather than tax rises—could actually boost growth.

Keynesians questioned Mrs Reinhart’s and Mr Rogoff’s conclusions, noting that slow growth might be a cause of high debt rather than a symptom of it. They also thought Mr Alesina’s “expansionary austerity” was a pipe dream. In the past, they observed, it had occurred only under quite different conditions. Had government borrowing been gobbling up scarce credit, pushing interest rates for private firms upwards, then lower deficits could reduce rates and trigger an investment boom. But in most of the rich world interest rates were already low; excessive saving was the problem.

What is more, the Keynesians asserted, multipliers are much higher during nasty downturns than at other times. Research by Lawrence Christiano, Martin Eichenbaum and Sergio Rebelo of Northwestern University suggests that when interest rates are near zero the multiplier could be higher than two, since people have a greater incentive than usual to spend rather than save. A financial crisis also elevates multipliers, other studies found. Work by Larry Summers, the architect of Mr Obama’s stimulus, and Brad DeLong of the University of California, Berkeley argues that given the cost of prolonged unemployment, stimulus during a long recession might pay for itself.

Time has begun rendering verdicts. Early last year a McKinsey study noted that financial deleveraging in America proceeded more quickly than in Britain and Europe. Also last year the IMF published an analysis of its economic forecasts which found that austerity crimped growth much more than it had expected. The larger the cuts a government planned, the IMF concluded, the farther below its forecast growth fell. The multiplier on spending cuts was perhaps twice what researchers had originally assumed. Spanish austerity reduced the government’s structural deficit by more than two percentage points from 2011 to 2012. But cuts helped push the economy into recession. Net government borrowing actually rose.

In April this year research from the University of Massachusetts undermined the Reinhart-Rogoff finding that growth slows sharply when debt tops 90% of GDP. An analytical error and questionable data choices, it turns out, had underpinned the result. There is no consensus among economists as to what level of debt harms growth, or whether it is even possible to establish such a rule of thumb.

That does not mean that ballooning public debt is nothing to worry about, however. New research suggests that less-indebted governments are much more likely to resort to stimulus to foster economic growth, presumably because they feel they can afford to do so. It may be a long time coming (Japan’s government debt now totals 245% of GDP), but at some point too much red ink will yield a debt crisis. Worries about a country’s solvency will lead creditors to demand higher interest rates, which will then compound its fiscal woes.

Just when the bond market will turn depends on a number of factors. Economies seen as havens, such as America and Switzerland, have more latitude: economic upheaval tends to reduce their borrowing costs rather than raise them. It helps if most creditors are locals, too, as in Japan, since payments to them help boost the domestic economy.

Panic is more likely when debt is owed in a currency the government does not control, since the central bank cannot then act as a lender of last resort. Uncertainty over whether the European Central Bank would play this role fanned the euro-zone crisis, for example. Carried to extremes government-bond purchases may fuel worries about inflation. That in turn can lead to higher borrowing costs as creditors demand an inflation-risk premium. Yet during the crisis economies were so weak that central banks’ purchases of government bonds proved reassuring to investors rather than worrisome, partly due to the reduced risk of panic and default.

The day of reckoning may nonetheless be closer than it appears. Failing banks can swiftly transform debt loads from moderate to crushing. Before the crisis the assets of Ireland’s commercial banks swelled to over 600% of GDP. Ireland’s debts duly exploded from 25% of GDP in 2007 to 117% in 2012, thanks mostly to the government’s assumption of the banks’ debts after the crisis struck.

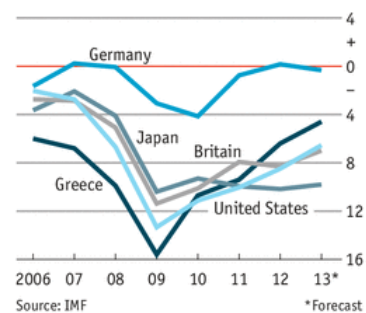
Every cut has its day

Austerity, in short, still has its place. But what sort? Whereas some economists recommend spending cuts, other research indicates that higher taxes can also work. Both approaches have costs. Taxing pay can distort labour markets; consumption taxes can lead to inflation, prompting contractionary monetary policy. Yet cutting spending is more unpopular and can exacerbate inequality.

The experience of the past few years has left little debate about timing, however. The moment to turn to austerity, ideally, is when the economy can bear it. Not all governments have that luxury, of course: Greece’s, for one, could not delay fierce cuts since it could no longer borrow enough to finance

Extended gap year

Government budget balances, % of GDP



its deficits. Those with more breathing space should aim to stabilise their debts in the long run, the IMF suggests, by laying out plans to reduce their deficits. The more credible their plans, the more leeway they will have to depart from them should conditions warrant it. As Keynes insisted, the time for austerity is the boom not the bust.

From the print edition: Schools brief

Making banks safe

Calling to accounts

The final article in our series on the financial crisis examines the best way to make banks safer without killing lending

Oct 5th 2013 | From the print edition

BANKS are a perplexing mix. The special institutions at the heart of capitalism, they provide an easy link between savers and borrowers: granting loans to those with the ideas and ambition to use them while at the same time providing peace of mind to squirrels who want to lock their cash away safely. Yet banks have a dark side too: they exist to manage risk, but often simply stockpile it. When they go bad they scythe away wealth and strangle economies. There is little argument that it was the banks that started the crisis five years ago. There is huge disagreement about how to put things right.



To see why banks are so vital, start with the finances of a typical household or firm. Their debts—mainly mortgages on homes, offices or factories—have fixed terms; they often have fixed interest rates too. In what is owed there is a lot of certainty. But firms' and families' financial assets are not bound by such rigid terms: deposits can be withdrawn with little notice, bonds and equity can be sold quickly if cash is needed or if investment tastes change. This combination of fixed-term debts and flexible assets is a comfortable set-up.

But one party's asset is another's liability. This means that corporate and personal finances have a mirror image in the balance-sheets of banks, where assets (the loans a bank has made) cannot be adjusted but where debts (its customers' deposits) can be called in overnight. That mix is risky: a rush of depositors demanding their money back can force cut-price asset sales. If debts are called in more quickly than assets can be sold, insolvency looms. Managing that risk is what banks do: by holding a risky balance-sheet they allow households and firms to have safe ones.

Since the maturities of their assets and liabilities do not match up, banks tend to give themselves some margin for error. They build resilience into their finances in two ways. Liquid assets—things like cash and government bonds that can be sold quickly and at relatively certain prices—are a safety valve. If investors suddenly shun a bank's bonds or depositors withdraw large sums, it can sell them. That allows the bank's balance-sheet to shrink safely, in line with creditors' demands.

But balance-sheets can shrink for other reasons too. The value of a bank's riskier assets—mortgages, bonds, loans to companies—can drop sharply if the prospects of the borrowers sour. The danger is that the value of the bank's assets could fall below its liabilities: with more owing than is owned, the bank would be bust. To forestall such failures banks maintain equity. This represents the money a bank's owners have invested in it. Equity takes the first hit when asset values drop. Since the bank's owners absorb the loss, its creditors—bondholders and depositors—can rest assured that they will not have to.

But a bank is not a charity, and the two shock-absorbers are costly. Some rough rules of thumb show why: the return on cash is zero, with liquid assets like government bonds yielding a measly 2-3%. In contrast, mortgages might generate 5% and unsecured lending closer to 10%. Picking safe assets lowers returns. In addition equity investors expect a return (via dividends or capital gains on their shareholding) of around 12%, compared with the 4% or so demanded by bondholders.

This sets up a tension between stability and profitability which banks' bosses must manage. Their failure to do so lies at the heart of the crisis. One simple equation explains their dire performance: Return on equity (RoE) = Return on assets (RoA) x Leverage

The idea is straightforward. A bank's equity-holders gain when the return on its assets rises. Maximising RoE means holding fewer safe assets, like cash or government bonds, since these provide low returns. When returns on all asset classes fall, as in the early 2000s, banks have another way to boost RoE: leverage (the ratio of their assets to their equity). Banks can increase their leverage by borrowing more from depositors or debt markets and lending or investing the proceeds. That gives them more income-generating holdings relative to the same pool of equity. In the short run, shareholders gain.

Risk on

Of course, skimping on safety mechanisms makes banks more risky. Yet the RoE formula is hard-wired into banking, familiar to every chief executive and shareholder. A 2011 report by the Bank of England showed that Britain's biggest banks all rewarded their senior staff based on RoE targets. Bosses duly maximised short-term profits, allowing liquid assets and equity to fall to historic lows (see chart 1).

By the mid-2000s leverage was out of control. Consider the Royal Bank of Scotland (RBS) and Citi, respectively the biggest banks in

Britain and America in 2007 (RBS was also the biggest in the world). Official reports show that these lenders had leverage ratios of around 50 when the crisis hit: they could absorb only \$2 in losses on each \$100 of assets. That helps explain why the American subprime market, although only a small fraction of global finance, could cause such trouble.

Top-heavy, with brittle accounts, the banks were riding for a fall.

The main regulatory response has been a revision of international banking regulations first agreed in Basel in 1989. Basel III, as the latest version is known, is more stringent than its predecessors on four basic measures of safety: it requires banks to hold more equity and liquid assets, to leverage themselves less (the maximum ratio is now 33) and to rely less on short-term funding. In countries where bank bail-outs during the crisis caused outrage, however, or where the financial sector's liabilities are much bigger than the economy (making bail-outs ruinous), regulators are determined to go further.

The most radical option is to carve up lenders deemed "too big to fail". Splitting them into smaller and simpler banks would make oversight easier, and prevent a bankruptcy from upending the local economy or the government's finances. But unravelling and reappportioning assets and liabilities might be impossibly tricky.

An alternative is to ban banks from the riskiest activities. In America, a rule proposed by Paul Volcker, a former head of the Federal Reserve, will soon prevent deposit-taking banks from engaging in "proprietary trading" (in essence, investing in stocks, bonds and derivatives using its customers' money). In theory, the "Volcker rule" will shield deposits from traders' losses. In practice, it is difficult to distinguish between trading conducted with a view to serving customers and that done solely for the bank's benefit.

Regulators in Europe are taking a different tack. In both Britain and the euro zone, they have proposed "ring-fences" that will separate customer deposits from banks' other liabilities. Against them, banks would only be allowed to hold assets like cash, government bonds and loans to individuals and firms. Activities deemed riskier, such as trading in shares and derivatives and underwriting companies' bond issuance, would sit outside the ring-fence, backed by a separate stash of capital.

But even once the new ring-fences are in place, banks will still grant mortgages. That is a risky business. Take British commercial-property lending (loans on offices and shopping centres). It is a large part of the mortgage market, over 20% of GDP at its peak. It is also volatile: commercial-property prices fell by almost 45% between 2007 and 2009. In America the share of even the best "prime" mortgages in arrears topped 7% in early 2010. None of this risk would be outside the ring-fence, or blocked by the Volcker rule.

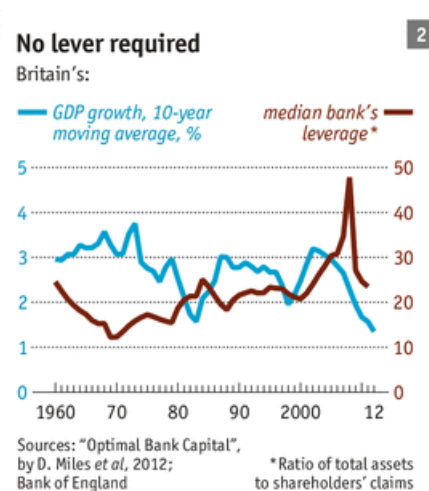
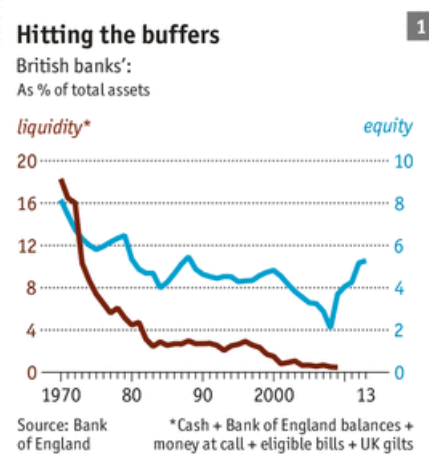
That is one reason some argue that banks should hold significantly more equity than the new rules require. In a recent book, Anat Admati of Stanford University and Martin Hellwig of the Max Planck Institute maintain that the cost of holding extra equity is overstated. For one thing, bigger buffers make banks safer, so the cost of other forms of funding (like bonds) should fall. In a related paper, David Miles, a member of the committee at the Bank of England that sets interest rates, estimates both the costs and benefits of increasing equity. The two are equal, he concludes, when equity is about 16-20% of banks' risk-adjusted assets—even higher than the Basel III rules require.

Bank bosses (most notably Jamie Dimon of JPMorgan Chase) regard that as far too high. Their concern is that banks are being forced to hold redundant equity. That would have two effects. First, it might reduce lending, since existing buffers would only be enough to cover a smaller stock of loans. Second, higher equity means lower leverage, which could reduce RoE below investors' expectations. That would make it hard to raise the equity regulators are demanding and—if sustained—prompt a gradual wind-up of the banks as investors opt to put their money elsewhere. The only alternative would be to raise RoA by charging borrowers much higher interest.

There is some truth on both sides. The academics are right to say that higher equity need not kill off lending. After all, equity is a source of funds, not a use for them. Historically much lower leverage ratios have been associated with strong growth in lending and GDP (see chart 2). Yet it is also true that without leverage to boost returns, banks might need to squeeze more from their assets: the cost of credit could rise.

There may be a third way. Some researchers think a better balance between equity and debt can be struck by using funding that has some of the attributes of both. They want banks to sell more "contingent capital" to investors. These IOUs act like bonds in normal times, paying a return and requiring full payback when they mature. But in bad times they change from debt into loss-absorbing equity.

Such ideas are attractive not just because they provide a clever solution to the debt v equity puzzle. Regulators are also pushing them for a related reason: they should encourage a bank's creditors to provide more oversight. Knowing that their bonds could be converted into risky equity, the theory runs, big investors like insurers and pension funds would go through banks' books with a fine-tooth comb,



spotting any leverage-pumping activities on the part of profit-hungry CEOs. How cheap contingent capital will prove is uncertain: investors will presumably demand a higher return than for debt, particularly from risky-looking banks.

That might actually be a good thing: ideally markets as well as regulators would encourage banks to act prudently. In a 2010 paper Andrew Haldane of the Bank of England argued that banks' borrowing costs are distorted. Since investors assume the biggest ones will be bailed out in times of crisis, they accept relatively low rates of interest on the bonds they issue. That, in turn, distorts the banks' decisions: since such funding is cheap it is hardly surprising that profit-maximising bank bosses gorge on it.

Rigging and milking

All this turns banks from champions of capitalism into affronts to it, reliant on rigged markets and taxpayer subsidies. Regulators are working to change that. In a 2012 joint paper the Bank of England and the FDIC, the agency that insures bank deposits in America, set out their approach. When the next bank big enough to threaten the entire financial system fails, regulators plan to use "living wills" that explain how to unwind its holdings. They will take control, replacing a bank's managers and doling out losses to bondholders as well as equity investors.

The message is clear: regulators are not trying to prevent failures, but to prepare for them. They hope this will make managers react by holding enough capital and liquid assets to keep banks out of trouble. Yet some banks remain too sprawling and opaque to liquidate in an orderly manner and too big to let fail. Their state support, implicit or explicit, seems likely to remain. Newly cautious by obligation but not by choice, the world's biggest banks remain a perplexing mix of freewheeling capitalism, subsidies and regulation.

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