

Lessons from the 2007 financial crisis

Ever since the credit crunch began last August, unleashed by reckless mortgage lending in America, central banks, politicians and ordinary borrowers have puzzled over its causes. In a new CEPR paper, Research Fellow **Willem Buiter**, a former member of the Bank of England's Monetary Policy Committee, examines this financial 'perfect storm,' offers his own analysis of what brought it about, and delivers a robust critique of central banks and regulators' response.

At the heart of the problems that spread like wildfire through the financial markets of the world's biggest economies was the widespread practice of 'securitisation'. Instead of the old-fashioned 'originate and hold' banking model, where financial institutions lent long-term, and kept the debts on their books, an 'originate-and-distribute' model has become increasingly common. Banks have been making loans, then 'slicing and dicing' them into ever more complex financial instruments, differentiated by their riskiness, and selling them on to investors.

The proliferation of these 'asset backed securities' appears to increase financial efficiency, by allowing investors to choose assets with a precise risk profile. 'It made marketable the non-marketable; it made liquid the illiquid', Buiter says. But it also has intrinsic problems. Just as it allows some investors to hedge risks better, it also allows others to load themselves up with extremely risky assets.

Securitisation also creates information problems: the originator of the loan, who carries out the assessment of the borrower's creditworthiness, no longer works for the institution that will collect the debt. So there is less incentive to make checks; and what information there is about borrowers is in the wrong place.

The problems created by large-scale securitisation have been exacerbated by the off balance sheet vehicles used by many of the major banks to facilitate the process. A myriad of special purpose vehicles (SPVs) were created to hold the asset-backed securities, often funding themselves on a short-term basis in the wholesale

money markets.

In most cases, Buiter argues, these SPVs had nothing to do with economic efficiency, and everything to do with 'regulatory arbitrage' - hiving off borrowing, to meet, in letter at least, the requirements of the Basel accord, which set minimum limits on the capital banks must hold. 'Off balance sheet vehicles tend to have little or no capital, little or no transparency, and opaque governance,' Buiter says. He argues that regulators may need to make it much harder for the banks that are ultimately responsible for the vehicles to hide them in this way.

Ratings agencies, already much criticised by politicians seeking to explain the credit crunch, did indeed have an important role in propagating it, in Buiter's assessment. The slice-and-dice securitisation model depended on the peculiar assets receiving favourable ratings from Moody's, Standard and Poor's or Fitch.

But these companies were in no position to assess the default risks of borrowers of, say, sub-prime mortgages in the US. They were paid by the sellers of the asset-backed securities, not the buyers; and the products were often so complex that they had to use the mathematical models of the financial whizz-kids who had devised the securities in the first place. Not only that, but - like the equities analysts criticised for hyping worthless internet stocks in the dotcom boom - they were often providing a range of other, lucrative consultancy services to the same clients.

Buiter says solutions to the rating agencies' inherent conflicts of interest are difficult, but investors should be better educated to understand that their models have limited application: they are only assessing the default risk, not the chance that an asset-backed security suddenly plummets in value because, for example, liquidity dries up. And even the most sophisticated financial models are of little use in financial crises, each of which is different from the last.

Because of these limitations, Buiter argues that the ratings agencies should lose their quasi-regulatory role.

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Under the Basel capital adequacy requirements, the amount of capital a bank is obliged to hold is determined by its 'risk-weighted assets,' with the rating agencies' judgements - as well as banks' internal risk-management models - determining how risky a particular asset is.

With confidence in both the ratings agencies' assessments and the banks' internal risk controls completely shattered by the events of the past six months, Buiters argues that this means the new Basel II requirements are 'holed below the waterline', and should be abandoned, or radically reformed.

Rating agencies, he argues, should be forced to become 'one product firms,' instead of selling a range of services alongside credit ratings, to the same clients. There should be more competition in the market; and the firms should be paid by the buyers, not the sellers of the assets they are rating - perhaps through a levy on all ratings users across the market.

More generally, Buiters argues that the conjunction of events that led to the seizing-up of the money markets last summer was in the end the result of years of competitive de-regulation, by financial regulators that are also, to some extent, champions for their own markets.

In the UK, he says, the government's much-vaunted 'light touch' approach has actually been a 'soft touch' - and it is time for some of the rules to be tightened.

Buiters also sketches out the macroeconomic background that led to the financial crisis: the 'savings glut' caused by the growing financial resources of rapidly developing countries such as China and the commodity-rich Middle Eastern states, which have limited absorption capacity, and thus ploughed their surplus resources into bonds.

This process, combined with the policies of central banks, led by the Federal Reserve, to keep interest rates deliberately low after the dotcom crash, led to extraordinarily low long-term interest rates, and unprecedented slim credit risk spreads.

Once central banks began to restore rates to more normal levels, from 2005, and as the surplus countries found more productive homes for their cash, long-term rates were bound to rise - and with them, defaults.

Buiters predicts that the re-pricing that has already

taken place with mortgage-backed securities will be followed by similar corrections for assets backed by car loans, credit card repayments and other complex instruments.

He is particularly critical of the way the UK authorities handled the rapidly unfolding events of last summer. Northern Rock, the mortgage-lender that drew on the Bank of England's lender of last resort facilities, could have been left to 'sink or swim,' if the deposit insurance meant to protect savers was not so inadequate, he argues. As it was, it could have been swiftly taken into public ownership, and the deposits ring-fenced to protect savers.

He adds that the facts that Northern Rock was dependent on the wholesale markets for 75% of its funding and accounted for an extraordinary 40% of new mortgage lending in the first half of 2007 should have rung alarm bells at the Financial Services Authority long before.

Buiters offers thirteen lessons he believes banks and regulators should learn from the crisis, from reforming the tripartite arrangements by which the Bank, Treasury and FSA are meant to work together to safeguard financial stability, to the failure of Mervyn King, the Bank's governor, and Callum McCarthy from the FSA, to make a public announcement when the Northern Rock bailout first happened, telling the public 'your money is safe.'

Despite his pessimistic assessment of the regulators' responses, however, Buiters gives a more sanguine prognosis for the impact of the ongoing market turmoil on the global economy. The influence of Wall Street and the City will inevitably diminish for the time being - no bad thing, he argues - and the balance of global power will shift, as Sovereign Wealth Funds from Asia and the oil-states buy up large chunks of cash-strapped banks.

Unlike the dotcom boom, however, there is no painful overhang of investment that will take years to unwind - and Buiters argues that however devastating the effects of the crisis may seem, they should be contained largely within the financial sector.

CEPR DP6596 Lessons from the 2007 Financial Crisis by Willem Buiters

Impatient procrastinators

Everyone probably knows at least one of those frustrating people who apparently live life at high speed, seeking instant gratification, and impatient for results; yet seem puzzlingly unable to meet a deadline. Now their existence has been confirmed by

independent research.

CEPR Researchers **Paula Sapienza** and **Luigi Zingales** and co-author, Ernesto Reuben, used a series of experiments on students to probe the links between impatience and procrastination - two apparently

conflicting character traits, which psychologists have more recently suggested are one and the same thing.

There is a kind of person, the argument goes, who puts a heavy weight on the present. They are likely to favour small pleasures today, instead of husbanding their resources in the hope of bigger rewards in future. At the same time, they are also likely to weigh especially heavily the costs of carrying out a task now, rather than postponing it until tomorrow, or next week, or next year.

To examine whether these two traits are connected in reality, the authors use results from the Templeton Chicago MBA longitudinal study, which has involved subjecting more than 500 MBA students at the Graduate School of Business at Chicago University to a battery of tests, surveys and games.

After having participated in several games, the students were given a financial reward of up to \$300, according to how they had performed, to be paid by cheque; but they were then asked a series of questions about whether they would like to receive the amount now - or a larger sum, two weeks later.

By scrutinising the students' responses to a series of these questions, the authors are able to calculate their 'discount rate' - how heavily they downgrade the future value of a reward.

About a third of the students showed that they had a discount rate of 1% - they had to be paid an extra 1% to make them feel it was worthwhile waiting a fortnight to get their cheque. Two-thirds had a higher discount rate, with a tenth of the students refusing to wait a fortnight, even for 12% more money - far more than they could have got by, for example, taking the cheque now and investing it over that period. These people are the 'impatient' - they value immediate rewards much more highly than future ones.

Paying the winnings by cheque gave the experimenters another way of monitoring the students' behaviour, however: they could see how long it took them to cash it. On average, they took 3.7 weeks, with the longest being 205 days, and 37 never cashing it at all.

Simply carrying out a regression to analyse the connection between students' discount rates and their procrastination over cashing the cheques shows a small, but not statistically significant correlation between the two.

The authors suggest that this apparent lack of connection is probably to do with statistical 'noise'. There are other factors, such as a student's likelihood of losing the cheque, or how busy they happen to be at

the period in question, which are likely to garble the results. The 'cost' of cashing the cheque on a particular day also varies in ways it is impossible to measure - if the student has to go to the bank for some other reason, for example, it may be almost cost-free to cash the cheque; but if they have to make a special trip, the cost may be quite high.

The authors therefore reach for an alternative measure of procrastination, which is also available from the longitudinal study. Participants were asked to fill in two surveys, one compulsory and one optional, and given a deadline for doing so. How long a student took to fill in the surveys is well correlated with how long they took to cash the cheque, but the correlation does not suffer from the same problems of noise.

Once they use the survey procrastination measure in their analysis, the authors find a strong connection between impatience and procrastination. An extra five days taken to fill in the first survey, for example, was correlated with a 0.62% increase in a student's discount rate when they decided whether to take a cheque now or later - so the impatient do indeed also tend to be procrastinators.

The authors also wanted to test whether lack of self-knowledge makes a difference.

One of the questions in the survey was, 'Do you tend to procrastinate?'. The authors single out the students who were wrong about this - those answered, 'no,' but took longer than average to complete the surveys and cash the cheque.

These participants had a far lower discount rate - as much as 2.9% lower - than those who, though they were likely not to get around to cashing the cheque, at least knew themselves well enough to play it safe and take the money up front. So lack of self-knowledge tends to make these impatient procrastinators make worse decisions.

Consequently, the authors decided to eschew chocolate, and stick to money.

Much recent research in psychology has involved uncovering the deep connections between apparently different character traits and types of behaviour. Here, the authors use real experiments, and economic analysis, to confirm the depressingly familiar connection between wanting everything, right now, and somehow not getting around to it.

CEPR DP6668 Procrastination and Impatience by Ernesto Reuben, Paula Sapienza and Luigi Zingales

Resurrecting science in Europe

European governments have pledged to boost spending on research and development to 3% of GDP, in a deliberate attempt to improve the competitive position of the EU in knowledge-intensive industries. But a new CEPR paper argues that this financial gift, though welcome, will not fix the parlous state of European science.

CEPR Researcher **Jacques-Francois Thisse**, and co-authors **Luc Bauwens** and **Giordano Mion** draw on a Thomson Scientific database of the 250 most highly-cited researchers for 21 different scientific disciplines during the period 1980-1999. Being cited in another scientific paper is a reasonable indication of how influential a scientist is in contributing to ongoing research and debate, so the number of these 'highly-cited researchers' (HCRs) a university, or a country, produces is a good test of its scientific success.

The database covers 41 countries and 1,329 universities and other research institutions. Even a superficial analysis of the data shows the vast gap between Europe and the United States. The US accounts for two-thirds of the coveted group of HCRs; Europe – the EU plus Norway and Switzerland – just 22.3%, with 7.58% coming from the UK alone.

The median university in the sample has just one HCR, while the top 25 institutions account for more than 30% of HCRs. Harvard alone has more HCRs than France.

Having highlighted the enormous differences between Europe and the US, the authors use an econometric analysis to understand more about its causes.

They analyse the output of HCRs, as a function of a number of inputs, encompassing many of the standard explanations for the shortcomings of European science. As a measure of each country's productivity, they use GDP per capita; while the average level of education in 1980, multiplied by the size of the population, serves as a measure of the 'human capital' available to research institutions. Spending on research and development as a proportion of GDP in 2000 indicates the financial resources a country's universities have to draw on.

The authors then test their model, using data for 65 countries in total, including many which produce no HCRs at all.

If the EU's approach of focusing mainly on research spending as a way of contributing to a scientific resurgence were correct, a model constructed using these factors ought largely to explain the divergences between countries. However, the authors find that human capital, productivity and research spending are rather bad at predicting the actual numbers of HCRs produced by each country.

They therefore include a series of other criteria, which

they believe are also important in determining the success of scientists in a particular country. One is the population's proficiency in English – given that, de facto, the global scientific community operates mainly in English, lack of language skills could make a difference.

Then there are two 'institutional' factors which have become increasingly widely used in recent research on the causes of economic growth. One is the quality of governance in each country, measuring such factors as the rule of law; and the second is whether each country was once an English colony.

English colonial rule, decades or even centuries in the past, may seem an odd determinant of success in contemporary scientific endeavour, but a series of analyses have suggested that colonial rule leaves a long legacy, at least in the institutions of the countries involved.

In this context, it is a marker for countries – including, obviously the US – that have adopted UK-style universities, with features such as selection of students on merit, and considerable independence from government interference. Across the sample as a whole, former British colonies – including Australia, the US and Canada – have on average 64% more HCRs than other countries.

Once these new factors – English proficiency, quality of governance and colonial connections – are included, the model works much better, and R&D spending, combined with human capital and GDP per capita, become good predictors of a country's effectiveness at turning out HCRs.

And these institutional factors have quite a strong influence on scientific success. If France were to improve its English proficiency by 10%, for example, the results suggest it could boost the number of HCRs it produces by 20%. And if Italy improved its score on the governance measure by 27%, it could push up its number of HCRs by more than half.

In other words, governance and institutional structures matter, as well as how much money politicians are willing to pour into research. In fact, the model suggests that if the EU raised R&D spending to 3% of GDP, as its leaders have pledged, but the efficiency of their universities remained the same, Europe's share of HCR's would increase only slightly, to 27%.

If Europe also improved English proficiency, and carried out radical reform of universities to make them as efficient as those across the Atlantic, however, the authors suggest that, based on their model, the share of HCR's produced in Europe could be boosted much more substantially to 37%, leaving the US with a 51.5% share.

Money alone is therefore not the answer to reversing

the decline of European science. As the authors put it, 'the governance and design of research institutions and universities are critical inputs in knowledge production, a fact that European researchers and public decision makers tend to dismiss far too often.'

As well as setting aside more funds for research, then, they argue that European politicians should unleash radical reforms of universities; and insist that graduate

teaching and scientific publishing is all carried out in English. Only then will what they call 'the resistible decline of European science,' be reversed.

CEPR DP6625: The Resistible Decline of European Science by Luc Bauwens, Giordano Mion and Jacques-Francois Thisse

Sui Generis EMU?

In the many debates that rage about the sustainability and success of European Monetary Union, politicians and economists frequently reach for examples from history, whether it be the painstaking progress towards monetary union in the United States, or the doomed currency arrangement within the Austro-Hungarian Empire.

CEPR Researcher **Barry Eichengreen** argues in a new paper that every single one of the historical examples cited in these arguments is misleading - because a project like EMU has never before been attempted.

One commonly-used comparator is the gold standard, for example - the system by which governments agreed fixed convertibilities between their currencies, and promised to back them with gold reserves. Eichengreen argues that comparing EMU to the gold standard misses the point that members kept their own national currencies, and management of monetary policy remained with national central banks.

In times of financial distress, a government could choose to suspend convertibility to gold and temporarily allow its currency to float, rejoining the gold standard at a later stage (sometimes with disastrous results, as with Britain after the first World War). Joining the euro area, by contrast, involves a once-and-for-all decision, with no mechanism envisaged for temporary or permanent departure. Currency fluctuations are not simply narrowed or suspended, they are abolished; so the boost to trade between member countries should be greater than that between adherents to the gold standard.

Another forerunner of EMU was the Latin monetary union of 1866 between France, Belgium, Italy and Switzerland, which established that the currency of each would be accepted as legal tender by the others. But Eichengreen argues that this was chiefly an attempt to tackle the problem of bimetalism: standardising the value of gold and silver coins in circulation, against a background of fluctuating world metal prices. In this, it failed; but since there was no common monetary authority, it can hardly be seen as analogous to EMU.

Similarly, the Scandinavian monetary union that

existed from the 1870s, and was finally dissolved in the 1920s, involved no central bank: each country retained the ability to regulate its own money-supply; and for much of the period, two of the three member-countries, Sweden and Norway, were in political union.

Many of the other examples of monetary unification, such as France-Monaco, Italy-San Marino-Vatican City, are not relevant either, because they consist of a large country that makes the policy rules, and smaller ones that piggyback on the credibility of the other member.

Perhaps the most instructive examples for the purposes of understanding EMU are the cases where full monetary union has eventually been established - in Germany, Italy and the US, for example. But crucially, these countries had political union, unlike in the European case where, as Eichengreen puts it, 'there exists a central bank whose domain is wider than that of the national political institutions whose consent is required for its creation and continued existence.' It is this element of the project, he says, which is simply unprecedented.

Even after the US Civil War, for example, there was still little financial integration at the federal level. Jacksonian political suspicions of centralising, US-wide institutions meant that financial markets remained regional; there was little interbank lending, and it was difficult for banks to diversify away from their local area. That meant interest rates varied widely - frequently by a full percentage point between one part of the US and another.

In Europe, by contrast, financial integration has long been seen as an end in itself; and the foundations of a single financial market were laid more than a decade before monetary union.

Some of the ambiguities that dogged the progress of US financial and monetary union are also absent in the European case. One of the major failings of the US system in the waves of banking crises after the Great Crash was the squabbling between the regional reserve banks about who was responsible for freeing up the money markets. The ECB's prompt action in last summer's crisis, while the bailout of German bank IKB

was arranged by the Bundesbank, at local level, suggests, Eichengreen argues, that responsibilities are more clearly defined than they were in the US.

Finally, Eichengreen examines the case of the collapse of the currency union that prevailed throughout the Austro-Hungarian Empire in the wake of World War One. This example is often seen as evidence that exiting monetary union need not be economically devastating. Austria, Czechoslovakia and the other nations that emerged from the empire all managed to establish their own currencies.

But Eichengreen stresses that the costs of this process were actually very large: countries imposed draconian exchange controls to prevent mass capital flight, and suspended international trade and even cross-border travel to limit the funds leaving the country. Such an approach would hardly be politically acceptable today - and Eichengreen suggests that the Argentine government's bungled attempt to suspend parity with the dollar, in 2001, which resulted in bank runs, street riots, and the overthrow of a series of presidents, is more indicative of the problems of leaving a currency union.

Although there are lessons to be learned from many of these previous attempts at monetary union - some more successful and long-lasting than others - Eichengreen argues that EMU's peculiar conjunction of monetary union and financial integration, combined with a lack of political union, is uncharted territory, and it is a mistake to draw pat conclusions from these other experiences.

While it may be *sui generis*, however, the euro-area is not an island; and a separate CEPR paper suggests that the unique nature of the experiment should not preclude the ECB from taking more account of financial developments in the rest of the world when it sets interest rate policy.

Because of the considerable size of the euro area, the ECB's models treat it effectively as a closed economy, focusing on the forces within Europe, and ignoring the

impact of shocks from outside. CEPR Researchers **Carlo Favero** and **Francesco Giavazzi** argue that this is a mistake.

Favero and Giavazzi use a Vector Auto Regression model to analyse what forces affect long-term euro-area bond yields - considered the best measure of the market's assessment of the inflation outlook. They find that almost all the movements in long yields can be predicted solely by US economic events. Domestic, Europe-based shocks seem to have almost no impact; and this is just as true after the beginning of EMU.

Policy-makers themselves also seem more responsive to US-based shocks than to domestic events, the authors suggest; but this is not reflected in ECB modelling.

They also investigate the relative importance of financial market shocks, such as shifts in asset prices and monetary policy shocks, caused by unexpected shifts in interest rate policy. The financial market events appear to have a much stronger impact, and the authors urge the ECB to take more account of these, too, in its modelling.

This pair of papers suggests that caution is due when analysing the euro-area, and the policies of the ECB. It is tempting for economists to reach for apparently similar historical experiences to explain why monetary union is destined for success or doomed to failure, depending on what example they choose. But Eichengreen's examination of potential precedents suggests that they all have critical shortcomings, and EMU is best seen as *sui generis*. However, Favero and Giavazzi's research suggests that it can be a mistake for euro policy-makers to be too solipsistic, and fail to appreciate the importance of events thousands of miles away for policy at home.

CEPR DP6442 'Sui Generis EMU' by Barry Eichengreen; and CEPR DP6654 'Should the Euro-Area Be Run as a Closed Economy?' by Carlo Favero and Francesco Giavazzi.

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