Reflections on the Global Financial Crisis

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by David Gruen*

It is a pleasure to be here at the Sydney Institute talking about a topic that has consumed a good proportion of my waking hours, and a few of my non-waking hours, over the past eighteen months or so.

Let me begin my remarks by paying tribute to Gerard and Anne Henderson for their many years of dedicated work, building up and nurturing this fine Institute. In the years up to 2002, when I lived in Sydney, I used to come to Sydney Institute functions when I could, and I have always been impressed by the range and quality of speakers they have attracted, and the discussions and debates they have fostered.

Turning to the topic at hand, I confess to being continually amazed, and shocked, by the still evolving global financial crisis. If this crisis hasn't changed at least some of your views about how the world works, then I reckon you haven't been paying attention – or, alternatively, your views are so tightly held as to be impervious to the arrival of new information.

The global financial crisis is a huge event and a huge topic, and with the limited time available, I will be selective in my comments.

Let me start with a sound bite, from January this year, from Alan Blinder, Princeton Economics Professor and former Deputy Chairman of the US Federal Reserve:

> "Nobody thought this might happen. Things can go wrong. But the number of things that have gone wrong, and the ferocity with which they have gone wrong I think was beyond the imagination of almost everyone."[1]

That is a sentiment with which I agree. There were economists who warned about aspects of this crisis, and I am going to touch on some of

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[1] Alan Blinder, Interview on US Public Broadcasting Service, 9 January 2009. In its early stages, after July/August 2007, there was always the possibility that the financial crisis would intensify, but the extent of the intensification after the mid September 2008 collapse of Lehman Brothers caught almost everyone by surprise.

them in my remarks today, but almost nobody thought that something as severe as this was remotely likely.

I don't intend to give a blow-by-blow account of the financial crisis, nor a detailed analysis of the reasons for the crisis. But I thought it would be helpful to provide a list of the factors or causes that I think made a material contribution to the crisis.

I have divided my list into those causes that were directly related to the US housing market – the proximate causes – and those that should be considered wider causes of the crisis.

I have been mindful to keep my lists as short as possible, but I have still ended up with thirteen items on one or other of my lists.

Let me start with five proximate causes.

> First, global imbalances implied a huge flow of funds from developing countries (particularly in Asia) to developed countries (particularly the US).
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> Second, low global real interest rates contributed to strongly rising asset prices and, eventually, to house price bubbles in the US and several other countries. Global real interest rates were low both because of the global savings-investment balance (the 'global savings glut'), and because of expansionary monetary policy, particularly in the United States.
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> Third, there was incoherent financial regulation in the US mortgage market. There were at least four relevant regulators in the prime mortgage market and, in the subprime mortgage market, many of the largest lenders were not subject to any supervision by bank or thrift regulators.[2]

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[2] The four relevant regulators in the market for prime mortgages are the Office of the Controller of the Currency, the Office of Thrift Supervision, the Federal Deposit Insurance Corporation, and the Federal Reserve Board. In the subprime market, many of the largest subprime lenders were independent mortgage companies, not subject to any supervision by bank or thrift regulators (Gramlich 2007).

Fourth, there was long-term public sponsorship of home ownership for low-income households in the US, many of which ultimately could not afford to own homes.[3]

Fifth, there were serious flaws in the 'originate to distribute' model for mortgages. This model involved mortgages being bundled up and 'securitised' and, in the case of many financial instruments based on sub-prime mortgages, given inappropriate AAA credit ratings and then spread to the winds, via global capital markets. The consequence of a loss of integrity in the relationship between original borrowers and final investors was that eventually no-one was doing due diligence on borrowers' ultimate capacity to repay their loans. In theory, risk was supposed to be spread to those most able to bear it; as events turned out, it was instead spread to those least able to understand it.[4]

Let me turn now to the wider causes, of which I have three.

First, financial instruments became so complex that eventually literally no-one understood fully the nature of the instruments they were buying and selling.[5]

Second, there was a range of perverse incentives in financial markets – too much pay for short-term returns, and not enough downside for losses. Many individuals faced strong financial incentives to take risks with other people's money – risks that generated good returns most of

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[3] The long-standing US government regulations designed to encourage mortgage lending to low and moderate income families were put in place for noble reasons. They might have had a long-term beneficial effect had there been much stricter financial regulation in the US mortgage market, particularly the subprime market. In particular, the 1977 Community Reinvestment Act was designed at its inception as an antidote to 'redlining', a practice involving real estate brokers drawing red lines around districts, often disproportionately populated by racial minorities, where lenders would refuse to make loans. The US Federal Department of Housing and Urban Development also had housing goals for the two huge semi-private secondary market mortgage purchasers, Fannie Mae and Freddie Mac. These goals required Fannie and Freddie to buy certain proportions of low- and moderate-income mortgage loans (Gramlich 2007).

[4] To paraphrase Professor John Kay's memorable phrase from 'Same old folly, new spiral of risk' (August 2007). The non-recourse nature of mortgage loans in many US States compounded the problems.

[5] Andy Haldane (April 2009) analyses the problem as follows: "[C]onsider an investor conducting due diligence on a set of financial claims: RMBS, ABS CDOs and CDO². How many pages of documentation would a diligent investor need to read to understand these products? … For simpler products, this is just about feasible – for example, around 200 pages, on average, for an RMBS investor. But an investor in a CDO² would need to read in excess of 1 billion pages to understand fully the ingredients ['billion' is not a misprint]". As he puts it dryly: "With a PhD in mathematics under one arm and a Diploma in speed-reading under the other, this task would have tried the patience of even the most diligent investor. With no time to read the small-print, the instruments were instead devoured whole. Food poisoning and a lengthy loss of appetite have been the predictable consequences."

the time, but with a small probability of disaster.[6] When the disaster struck, it was a disaster for the other people whose money had been put at risk, for the financial firms that had put it at risk, and for the wider financial system.

Third, large banks and the financial system more generally, mainly in US, UK, and Europe, gradually became more highly leveraged (more loans for each dollar of bank assets).

This final cause is one of the most important, because it rendered the global financial system much more fragile than most people realised. And so it is worth spending a little time fleshing out in some detail why the financial system gradually became more highly leveraged.

This leads me to a third list, which enumerates the reasons why the financial system gradually became more highly leveraged. There are five items on this list.

First, the 1999 repeal of the US Glass-Steagall Act – which had been enacted in the teeth of the Great Depression in 1933 – allowed commercial banks to run large investment banking businesses.

Second, regulatory frameworks encouraged banks to shift loans 'off balance sheet' and encouraged growth in the 'shadow banking system', largely outside the regulatory net.

[6] As Alan Blinder (Wall Street Journal, May 2009) put it: "Take a typical trader at a bank [or] investment bank …. Darwinian selection ensures us that these folks are generally smart young people with more than the usual appetite for both money and risk-taking. Unfortunately, their compensation schemes exacerbate these natural tendencies by offering them the following sort of go-for-broke incentives when they place financial bets: Heads, you become richer than Croesus; tails, you get no bonus, receive instead about four times the national average salary, and may (or may not) have to look for a new job. These bright young people are no dummies. Faced with such skewed incentives, they place lots of big bets. If tails come up, OPM [other people's money] will absorb almost all of the losses anyway.
Whoever dreamed up this crazy compensation system? That's a good question, and the answer leads straight to the doors of the top executives of the companies. So let's consider the incentives facing the CEO and other top executives of a large bank or investment bank … . For them, it's often: Heads, you become richer than Croesus ever imagined; tails, you receive a golden parachute that still leaves you richer than Croesus. So they want to flip those big coins, too.
From the point of view of the companies' shareholders—the people who provide the OPM – this is madness. To them, the gamble looks like: Heads, we get a share of the winning; tails, we absorb almost all of the losses. The conclusion is clear: Traders and managers both want to flip more coins—and at higher stakes—than the shareholders would if they had any control, which they don't."

Third, times were good and it was therefore very profitable to become more highly leveraged.[7]

Fourth – and this is another implication of low global real interest rates combined with investors continuing expectation of high returns – financial firms were searching for innovative ways to generate higher returns, and more leverage was a natural way to achieve this.

But surely that meant that financial firms were taking huge risks to their own solvency? This leads to the final reason for the increased leverage, and therefore the crisis: a widespread failure of risk management. Banks thought they had a better understanding of financial risk than ever before, based on sophisticated mathematical models of risk and return. The banks' new risk-return models were indeed sophisticated, but as it turned out, they were also fatally flawed.[8]

As a result, as house price bubbles collapsed in the US, UK, and several other countries, the cascading of problems from one counterparty to another, and from one financial market to another, generated a shock well outside the experience of the banks' risk models and this, combined with their high degree of leverage, bankrupted large parts of the global financial system.

We are all now living through the global recession that followed inexorably from this near-collapse in the global financial system.

Before leaving these lists, there is one item that deserves further comment – the role of expansionary US monetary policy. Some have suggested that, rather than simply being a contributing factor, expansionary US monetary policy in the early 2000s was the main cause of the crisis.

Expansionary US monetary policy undoubtedly contributed to rising US asset prices, including house prices, at the time. Indeed, that is the point of the policy – rising asset prices constitute one of the ways that expansionary monetary policy works.

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[7] 'When the music stops … things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing', Chuck Prince, former Citigroup CEO, July 2007. Prince retired later that year in the face of collapsing Citigroup profits.

[8] Haldane (February 2009) provides a compelling exposé of the fatal shortcomings of the banks' risk models.

But I have less sympathy with the argument that monetary policy should explicitly 'lean against the wind' of a suspected inflating asset price bubble, which is implicit in the criticism of US monetary policy at that time.

In my view, to lean against the wind and do more good than harm requires a level of understanding about the likely future path of a suspected asset bubble that is simply unrealistic. Without that understanding, attempting to use monetary policy to lean against the wind is as likely to be destabilising for the wider economy as it is to be stabilising.[9]

Let me now leave discussion of these lists of contributing causes of the crisis, and turn to a couple of interesting and important questions: Where were the voices warning of the possibility of such a financial disaster? And why were those voices, such as they were, largely ignored?

There were, in fact, quite a few warnings issued. Let me start with Gerald Corrigan, ex-President of the New York Fed, who said ahead of the crisis:

> "In recent years the pace of change and innovation in financial markets and institutions here and around the world has increased enormously as have the speed, volume and value of financial transactions. The period has also seen a greatly heightened degree of aggressive competition in the financial sector. All of this is taking place in the context of a legal and a regulatory framework which is increasingly outdated and ill-equipped to meet the challenges of the day. This has led to … concern that the fragility of the system has increased, in part because the degree of operational, liquidity and credit interdependency has risen sharply."

But Corrigan was speaking in January 1987, and the crisis he foretold was not the current crisis, nor the collapse of the tech bubble in 2000, but the stock market crash in October 1987. Sometimes the lessons learnt from earlier crises were only partially learnt, and then subsequently ignored when the crisis turned out to be more benign than originally feared.

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[9] See Gruen, Plumb and Stone (2005). Central banks are not, however, impotent in the face of strongly rising asset prices. They can use their considerable credibility and authority to raise community awareness – via speeches, parliamentary testimony and research papers – about the risks people are taking plunging into an overheated market. The RBA had some success with that approach during the housing price boom in the late 1990s and into the 2000s, as indicated by statements from the real estate industry at that time (Macfarlane, 2006).

More recently, a number of high-profile, credible economists and policy makers, in positions of influence and very much part of the mainstream, have issued prescient warnings about the nature of the financial risks to which the world was being exposed.[10] Let me mention just a few of them.

It is perhaps appropriate to start with developments in the US subprime mortgage market. Ed Gramlich, Governor of the US Federal Reserve Board from 1997 to 2005, was a frequent and energetic critic of the dangers inherent in the explosive growth of that largely unregulated market. Putting the words “Gramlich subprime speech” into the search engine on the US Federal Reserve Board’s website brings up over 16,000 documents, including many many speeches by Governor Gramlich in the first half of this decade, warning of the dangers of what was then going on in the US subprime market.

Turning to the wider global financial system, there were several high-profile mainstream economists and institutions warning of impending danger. Economists Robert Shiller and Nouriel Roubini, as well as the Bank for International Settlements all provided notable warnings to this effect well in advance of the crisis.

But rather than quote from each of them, let me report on another particularly memorable warning that went unheeded.

Each year, the US Federal Reserve Bank of Kansas City runs a two-day conference on a topic of contemporary macroeconomic policy interest. These annual conferences have become arguably the most prestigious macroeconomic policy conferences held anywhere in the world. This is partly because they are held in magnificent surroundings in Jackson Hole, Wyoming, but more importantly because Alan Greenspan made a habit of attending them while he was Chairman of the US Federal Reserve Board.

Conscious of Chairman Greenspan’s imminent retirement, the organisers of the 2005 Jackson Hole conference chose the topic ‘The Greenspan Era: Lessons for the Future’. One of the papers commissioned for that 2005 conference was presented by Raghu Rajan, Director of Research at the IMF, and before that Professor of Finance at the University of Chicago.

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[10] There were also warnings of impending financial disaster from beyond the mainstream of economics. These warnings were even less influential, for reasons not entirely well-founded.

The title of his paper was: 'Has Financial Development Made the World Riskier?'

There are a couple of interesting things about Professor Rajan's paper. The first is that it was remarkably prescient about the possibility that financial market developments and the incentives at play in financial markets might be increasing the fragility of the global financial system and rendering it more prone to catastrophic collapse.

Time permits only few quotes from the paper, but they give a sense that Professor Rajan was definitely onto something.

> "While the [financial] system now exploits the risk bearing capacity of the economy better by allocating risks more widely, it also takes on more risks than before. Moreover, the linkages between markets, and between markets and institutions, are now more pronounced. While this helps the system diversify across small shocks, it also exposes the system to large systemic shocks – large shifts in asset prices or changes in aggregate liquidity.
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> … [There is now an] incentive [for investment managers] to take risk that is concealed from investors … Typically, the kinds of risks that can be concealed most easily … are risks that generate severe adverse consequences with small probability but, in return, offer generous compensation the rest of the time.
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> …While it is hard to be categorical about anything as complex as the modern financial system, it is possible that [recent] developments are creating more financial-sector-induced procyclicality than in the past. They also may create a greater (albeit still small) probability of a catastrophic meltdown. Unfortunately, we won't know whether these are, in fact, serious worries until the system has been tested."

Prescient words indeed. But apart from its prescience, the other thing of interest about Professor Rajan's paper was the lukewarm reception it received from the crème de la crème of the macroeconomics policy fraternity who had assembled in Jackson Hole to comment on it.

By and large these commentators were not very sympathetic to the idea that the seeds had been sown for a potential financial system disaster just around the corner. They looked at the same financial system and saw instead the benefits of the wide diversification of risk, and the capacity of self regulation of the market to achieve an acceptable degree of financial stability.

Why were these commentators not able to see what Professor Rajan was seeing? Of course, hindsight is a wonderful thing. But I think it is fair to say that they, along with most economists, were influenced by the mainstream intellectual fashions of the time.

As Barry Eichengreen (2009) puts it:

> "It was not the failure or inability of economists to model conflicts of interest, incentives to take excessive risk and information problems that can give rise to bubbles, panics and crises. It was not that economists failed to recognize the role of social and psychological factors in decision making or that they lacked the tools needed to draw out the implications. … Rather, the problem was a partial and blinkered reading of that literature. The consumers of economic theory, not surprisingly, tended to pick and choose those elements of that rich literature that best supported their self-serving actions. Equally reprehensibly, the producers of that theory, benefiting in ways both pecuniary and psychic, showed disturbingly little tendency to object. It is in this light that we must understand how it was that the vast majority of the economics profession remained so blissfully silent and indeed unaware of the risk of financial disaster."

In order to understand these arguments in more detail, I seek your indulgence for a brief diversion into the history of economic thought. It may all sound rather esoteric, but it will end up being rather important for the story I am telling.

The important developments date from the late 1960s and into the 1970s. At that time, leading finance economists began to realise the power of the 'efficient markets hypothesis' to explain the apparently chaotic behaviour of financial markets.[11] Around the same time, macroeconomists were becoming disillusioned with the state of their discipline in the face of the stagflation that was then gripping the developed world. Partly in reaction

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[11] Eugene Fama and others introduced the term 'efficient market' into the economics literature in 1969. See Beechey, Gruen and Vickery (2000) for a survey of the efficient market hypothesis.

to that disillusionment, theoretical macroeconomists embarked on a grand project, the aim of which was to build macroeconomics on solid microeconomic foundations.[12]

Stripped of econospeak, that means that what macroeconomists say about big policy issues – economic growth and inflation, booms and busts – should be grounded in the study of individual behaviour. Put like that, the project sounds eminently desirable. Indeed, how could anyone object? And indeed, the project has been enormously influential on mainstream macroeconomic thinking ever since.

The problem comes when we discover how individual behaviour is to be understood. The individuals who populate this theoretical world have characteristics that most of us might find a little quaint, to say the least.

These individuals are assumed to be far-sighted and rational, and to understand, in extraordinary detail, the economic world in which they live and make decisions.[13]

It is true that they are subject to continual economic shocks, which are genuinely unforseen. But in responding to these shocks, these individuals are blessed in ways that the rest of us can only envy. Not only do they craft their responses confident in their complete understanding of the economic structure in which they live and work, but they also sleep safe at night confident that this economic structure will never change.

The financial markets in which these individuals borrow, lend and invest, are efficient and well functioning. They are certainly unencumbered by any of the dysfunction we have seen in global capital markets over the past two years. No perverse incentives, no herd-like behaviour, no periods of irrational exuberance or unwarranted pessimism, no information problems that might give rise to financial market bubbles, panics or crises.

It is as if, as the Titanic was sailing into iceberg-infested waters, those with the requisite skills and training to warn of the impending danger were

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[12] See also, John Kay, ‘How economics lost sight of real world’.

[13] Sometimes, only a proportion of the individuals in these theoretically constructed worlds have these features. But that does not diminish the intellectual influence of this strand of thought.

instead hard at work, in a windowless cabin, perfecting the design of ship hulls ... for a world without icebergs.

As George Akerlof and Robert Shiller put it in an insightful little book written earlier this year:

> "So many members of the macroeconomics and finance profession have gone so far in the direction of "rational expectations" and "efficient markets" that they fail to consider the most important dynamics underlying economic crises. … the [theoretical] macroeconomics of the past thirty years has gone in the wrong direction. In their attempts to clean up macroeconomics and make it more *scientific*, the standard macroeconomists have imposed research structure and discipline by focusing on how the economy would behave if people had only economic motives and if they were also fully rational. Picture a square divided into four boxes, denoting motives that are economic or noneconomic and responses that are rational or irrational. The current model fills only the upper left-hand box; it answers the question: How does the economy behave if people only have economic motives, and if they respond to them rationally? But that leads immediately to three more questions, corresponding to the three blank boxes: How does the economy behave with noneconomic motives and rational responses? With economic motives and irrational responses? With noneconomic motives and irrational responses?
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> We believe that the answers to the most important questions regarding how the macroeconomy behaves and what we ought to do when it misbehaves lie largely (though not exclusively) within those three blank boxes."
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> [italics in the original][14]

Does any of this matter? I would argue that it has mattered. These developments in mainstream theoretical macroeconomics and finance have influenced the intellectual environment in which policymakers, regulators

[14] Or, as Paul Krugman put it in answer to a question after his first Lionel Robbins lecture on 8 June, 2009: "In macroeconomics ... [over recent years, US] graduate schools were divided between those that devoted most of their time to teaching models in which this sort of thing [the global financial crisis] could not happen and Departments that devoted all of their time to teaching models in which this sort of thing could not happen."

and analysts operate and form their views. For many, the central ideas from these mainstream disciplines have set the benchmark from which to judge real world developments in markets. And they have influenced the burden of proof: What makes you think that you know better than the market what is the appropriate price for shares/property/risk?

They have added intellectual weight to the argument that, by and large (though clearly not in all cases), individuals and firms in financial markets understood their economic environment, knew what they were doing, and could be left largely, if not wholly, to their own devices. Lightly regulated financial markets, dominated by well-resourced institutional investors with their own best interests at heart should be thought of as largely self-correcting, or so the mainstream view suggested.

As it was put by one of the commentators on Professor Rajan's 2005 Jackson Hole paper that I discussed earlier:

> "[In financial markets] the actions of private parties to protect themselves – what Chairman Greenspan has called private regulation – are generally quite effective. Government regulation risks undermining private regulation and financial stability by distorting incentives through moral hazard and by promising a more effective role in promoting financial stability than it can deliver."[15]

But as the crisis has demonstrated, relying on financial market firms to self-regulate turns out to be the economic equivalent of letting children decide their own diets.[16]

Macroeconomics as a discipline was born out of the Great Depression. As we have seen, it has undergone a radical transformation over the past few decades. But the global financial crisis should be a wake-up call to the discipline. A new transformation is needed – one more firmly grounded in the real-world behaviour of markets.

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[15] Donald L. Kohn, p. 372, 'The Greenspan Era: Lessons for the Future', 2005.

[16] To use Barry Eichengreen's (2009) memorable phrase.

Let me conclude with some remarks about Australia.

Interestingly and importantly, Australian policymakers and financial regulators seem to have been relatively immune from the intellectual fads I have been discussing. Certainly, I cannot recall any time over the past several years when an Australian policymaker has extolled the virtues of leaving the financial system largely to regulate itself.[17]

And the Australian financial system has clearly avoided the excesses seen elsewhere – for a series of reasons.

Australia has a more coherent regulatory structure with a single institution, APRA, as the prudential regulator for the financial services industry. Furthermore, the ‘four pillars’ policy has contributed to financial stability by eliminating the possibility of takeovers between the major banks, thereby reducing their incentives to become more highly leveraged.

The structure and recent experiences of Australia’s financial system have also contributed to its stability. Australian banks have focused on their highly profitable domestic lending businesses, which require them to raise significant offshore funding rather than casting around for foreign financial assets in which to invest. They have therefore avoided buying significant quantities of what are now toxic assets. And finally, past adverse experiences, including banking system losses exceeding 5 per cent of one year’s GDP in the early 1990s, and the 2001 collapse of HIH Insurance, have had salutary effects on the attitudes of both the regulator and private firms to risk taking within the Australian financial system.[18]

Australia has also been well served by the substantial and rapid easing of monetary and fiscal policy in the aftermath of Lehman’s collapse last September, as it became clear just how severe the global financial crisis was becoming.

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[17] In case I am being interpreted as pouring scorn on the benefits of more deregulated markets generally – as opposed to financial markets in particular – let me dissuade you from that view. The broad range of pro-market and other economic reforms undertaken in Australia over the past few decades – including the float of the currency; the dismantling of the protective wall of tariffs and quantitative import restrictions; making labour markets more flexible; tax reform; competition policy; the development of credible medium-term frameworks for monetary and fiscal policy – appear to have been beneficial for both the longer-term productive capacity of the economy, and for its flexibility in responding to shocks.

[18] See also Ellis (2009) and Macfarlane (2009).

All of these things are counting in Australia’s favour, and will continue to do so.

But celebration would be premature. The fall in Australia’s terms of trade that is just now hitting the economy on the back of re-negotiated contract prices for iron ore and coal will strip about 3 per cent from national income over the coming year. That is about the same magnitude (though of the opposite sign) as the boost to national output from the government’s discretionary fiscal stimulus measures over that time.

It is encouraging to see the gathering signs that the global financial crisis is abating. Australia should continue to do better than the rest of the advanced world. But the global recession, and its Australian counterpart, still has some way to run.

References

Akerlof, G A and Shiller, R J (2009), *Animal Spirits, How human psychology drives the economy, and why it matter for global capitalism*, Princeton University Press.

Beechey, M, Gruen, D and Vickery, J (2000), 'The efficient market hypothesis: a survey', Research Discussion Paper 2000-01, Reserve Bank of Australia. *Available at http://www.rba.gov.au/rdp/RDP2000-01.pdf*

Blinder, A S (2009), Economists Explain Why Hints of the Economic Crisis Eluded Them | Online NewsHour | January 9, 2009 | PBS.

Blinder, A S (2009), 'Crazy Compensation and the Crisis', *The Wall Street Journal*, 28 May 2009, pp A15. *Available at http://online.wsj.com/article/SB124346974150760597.html*

Corrigan, E G (1987), 'Financial Market Structure: A Longer View', Federal Reserve Bank of New York.

Eichengreen, B (2009), 'The Last Temptation of Risk', *The National Interest*, 30 April 2009. *Available at http://www.nationalinterest.org/PrinterFriendly.aspx?id=21274*

Ellis, L (2009), 'The Global Financial Crisis: Causes, Consequences and Countermeasures', Reserve Bank of Australia. A*vailable at http://www.rba.gov.au/Speeches/2009/sp_so_150409.html*

Gramlich, E M (2007), *Subprime Mortgages, America's Latest Boom and Bust*, The Urban Institute Press.

Gruen, D, Plumb, M and Stone, A (2005), 'How Should Monetary Policy Respond to Asset-Price Bubbles?', *International Journal of Central Banking*. *Available at http://www.ijcb.org/journal/ijcb05q4a1.pdf*

Haldane, A G (2009), 'Why Banks Failed The Stress Test', Bank of England, February 2009.

Haldane, A G (2009), 'Rethinking the Financial Network', Bank of England, April 2009.

Kay, J (2007), 'Same old folly, new spiral of risk', Financial Times, 14 August 2007. *Available at http://johnkay.com/finance/510*

Kay, J (2009), 'How economics lost sight of real world', Financial Times, 22 April 2009. *Available at http://www.ft.com/cms/s/0/35301d06-2eaa-11de-b7d3-00144feabdc0.html*

Kohn, D L (2005), 'Commentary: Has Financial Development Made the World Riskier', *The Greenspan Era: Lessons for the Future*, pp 372, Federal Reserve Bank of Kansas City, *Available at http://www.kc.frb.org/publicat/sympos/2005/sym05prg.htm*

Krugman, Paul (2009), The Return of Depression Economics Part 1: The Sum of All Fears, 8 June 2009. *Available at* http://www.lse.ac.uk/collections/LSEPublicLecturesAndEvents/

Macfarlane, I (2006), *The Search for Stability, Boyer Lectures 2006*.

Macfarlane, I (2009), 'The crisis: causes, consequences and lessons for the future. The Australian perspective', ASIC Summer School 2009 Report, pp 41-46.

Prince, C (2007), Quoted in 'Citigroup chief stays bullish on buy-outs', Financial Times, 9 July 2007. *Available at http://www.ft.com/cms/s/0/80e2987a-2e50-11dc-821c-0000779fd2ac.html*

Rajan, Raghuram G (2005), 'Has Financial Development Made the World Riskier', *The Greenspan Era: Lessons for the Future*, Federal Reserve Bank of Kansas City, *Available at http://www.kc.frb.org/publicat/sympos/2005/sym05prg.htm*