

THE SUBPRIME MORTGAGE CRISIS: LESSONS FOR REGULATORS

Hedge funds need regulating like banks to avoid financial instability, argues **Penny Neal**

The fallout from the US subprime mortgage crisis has rocked the financial markets of developed countries around the world, raising interest rates and threatening a worldwide credit crunch. From 2000 through mid-2004, low interest rates, the global savings glut, and lax monetary policy in the US led to an excess of money that was used to finance subprime mortgages. The banks were then able to remove the risky subprime loans from their balance sheets by securitising them—selling the loans to special purpose vehicles that then issued asset-backed securities (ABSs) against the mortgages. The ensuing liquidity crisis was precipitated by hedge funds failing to redeem some ABSs because of concern about the value of underlying assets after delinquencies on subprime mortgages rose markedly in mid-2007. The previous liquidity crisis that had the potential to destabilise financial markets on a global scale occurred in 1998, and was also precipitated by a hedge fund—Long Term Capital Management (LTCM).

Two of the principal reasons for regulating banks—systemic instability and market integrity—are writ large when it comes to hedge funds. We can expect to see liquidity crises coming from outside the banking system on an ongoing basis unless hedge funds are subject to regulatory scrutiny and have the degree to which they can

become leveraged constrained by the need to meet capital adequacy requirements similar to those currently imposed on banks.

Causes

The immediate causes of the subprime mortgage crisis were the extremely low interest rates available from 2001 through 2004 and the poor quality of the loans that flowed from those rates. The US Federal Reserve reduced interest rates in response to the ‘tech wreck’ of 2001, which followed the dot-com boom of the late 1990s, and again reduced interest rates to steady market jitters following the September 11 terrorist attacks. The European Central Bank also reduced interest rates around this time, to deal with a slowdown in Europe. In 2003–04, the Fed was concerned about the threat of deflation and so further reduced rates in the US. Lower interest rates meant there was a lot more money sloshing around in the economy looking for investment opportunities, and subprime mortgages appeared to be just the thing.

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What happened to all that money?

Subprime mortgages

US subprime mortgages are similar to ‘low doc’ and ‘no doc’ loans in Australia. In the US, banks and other mortgage originators sought to increase market share by expanding the loans they made to those with low (or no) incomes, chequered employment histories (or no jobs), few assets, and little or no documentation to verify any claims made by potential borrowers. Loan to valuation ratios were very high (even 100% or more), meaning many borrowers did not have to put up a deposit and so had no equity in their homes. Potential borrowers were encouraged to take on these loans by low introductory ‘teaser’ rates that were generally fixed for two years. Most subprime loans are adjustable-rate mortgages; because of the subprime nature of the loans, interest rates at the end of the ‘honeymoon’ period reset to higher interest rates than those on prime mortgages, to compensate lenders for the higher risk. As interest rates reset, many borrowers could not meet their servicing commitments, and delinquencies increased. Default rates on subprime mortgages were always going to be higher than those on more conventional loans. Subprime loans are inherently riskier given the borrowers’ low income, assets, and equity positions. How did the banks reduce the risks they had taken onto their balance sheets?

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Securitisation

Rather than keeping the mortgages as assets on their own balance sheets, the originating banks (which made or originated the loans) securitised the mortgages. They set up institutions known as special purpose vehicles (SPVs), structured investment vehicles (SIVs), or conduits, and the originating banks parcelled and sold the loans they had made to those entities. The SPVs then issued securities against the loans backed by the subprime mortgages, and financed the purchase

of the loans with the proceeds from the securities issues. These securities were residential mortgage backed securities (RMBSs), asset-backed securities (ABSs), or collateralised debt obligations (CDOs); all of these types are referred to as ABSs below.

An ABS is a right to the cash flows generated by the underlying asset. For subprime mortgages, it is the right to repayments of principal and interest on the subprime loans. Any type of ABS only has recourse to the assets backing it (in this case, subprime mortgages) as collateral—there is no recourse to the overall assets of the institution issuing the securities, as there is with more conventional securities.

In order to make the asset-backed securities more attractive to investors, the SPVs divided the subprime loans into different classes or *tranches*, to which the ratings agencies attached differing credit ratings according to their assessment of the credit risks associated with the securities. The senior class was rated AAA. Investors with a low appetite for risk, such as managers of pension and superannuation funds, tend to purchase AAA securities. Because securities rated AAA are (supposedly) low-risk, they also tend to be low-return securities. The most junior class, or *equity tranche*, of an ABS issue was the *first-loss* class, which meant that whoever held the equity tranche was most exposed to credit risk. Suppose the equity tranche comprises 10% of a particular securities issue. This means that if losses on the assets backing the securities issue are 5%, those holding the equity tranche will bear all of the losses, which will halve their capital investment. If the losses are 10%, the equity tranche will be wiped out. However, if the losses on the ABS are 10%, all of those holding more senior tranches will be completely protected because the 10% loss will be absorbed by the first loss tranche. (This differs from more conventional securities, where a 10% loss would mean that all bondholders lose 10% of their capital investment.) If the losses on the ABS are 20%, then the next most junior tranche or tranches would also start experiencing losses. As long as default rates on the assets behind the ABS were low, the junior tranche earned the highest returns, in exchange for bearing the greatest risk. In many cases, the originating banks retained the equity tranche while selling off the rest of their subprime loan portfolio. Many investors thought

they could offset the risks of retaining or investing in the lower tranches of an ABS issue by purchasing insurance against default of the assets backing the securities in the form of credit default swaps.

Credit default swaps

One way to seemingly overcome the credit risk associated with holding the equity tranche (or indeed any other tranche) of an ABS issue is to purchase a credit default swap (CDS). A credit default swap is basically insurance against any of a number of specified credit events set out in the swap agreement (for example, bankruptcy, default, failure to meet cash commitments, and so on). In return for a premium, the buyer of a CDS receives an agreement from the seller that they will be paid the face value of the ABS, in cash, in the event of the specified credit event (a cash settlement), or that the seller will purchase the ABS for its full face value (physical settlement).¹ Furthermore, the investor purchasing the CDS need not own the underlying asset, which opens the use of CDS for speculative activity. A hedge fund might speculate on a marked increase in defaults by subprime home borrowers leading to default on particular ABSs. The hedge fund purchases a CDS against those defaults without having purchased the ABSs themselves, and makes a killing when defaults occur as anticipated.

Much of the CDS market is operated by specialist bond insurers known as *monoline insurers*. The recent IMF *Global Financial Stability Report* noted that the ten largest market makers accounted for close to 90% of the current outstanding notional value of CDSs, thus concentrating counterparty risk, which ‘could further compound the risk of multiple failures [among banks], for instance, if an individual protection seller is unable to fulfill its payments obligations.’² In February, the *Australian Financial Review* reported that bond insurers provided guarantees for \$127 billion of CDOs linked to subprime mortgages.³ It also reported that banks around the world have written down billions of dollars given their exposure to bond insurers. Merrill Lynch wrote down \$US3.1 billion, Citigroup wrote down almost \$US1 billion, and ANZ wrote down \$US200 million, mostly because of exposure to ACA Capital Holdings, a US monoline insurer

that had its ratings cut to CCC (junk status).⁴ Ratings downgrades make it more difficult for the insurers to raise the liquidity they need to pay out CDS, and also put downward pressure on the ratings of all investors—including banks and other institutional investors—that hold securities insured by them, as these investors again become exposed to the credit risk on the underlying assets in the ABS tranche or to the credit risk of the insurer, whichever has the higher credit rating.⁵

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The crisis

As the US Federal Reserve became concerned about rising consumer price inflation, it raised interest rates seventeen times through mid-2004 to mid-2006, making it more difficult for households to service their subprime mortgages. In 2006, a key index based on subprime home loans showed investors predicted a large fall in house prices. The warning signs were in place: there was going to be a big increase in defaults on subprime mortgages as interest rates for borrowers reset to much higher rates. In June 2007, two Bear Stearns hedge funds investing in CDOs backed by subprime mortgages unsuccessfully tried to sell bonds to raise cash for redemptions. Bear Stearns bailed one fund out and let the other fund fail. Home foreclosures rose rapidly in July 2007 to be up 93% on a year earlier.

The actual ‘crisis’ itself—as opposed to the events leading up to it—appears to have been precipitated by the French bank BNP Paribas, which on 9 August 2007 barred investors from redeeming cash in \$US2.2 billion worth of hedge funds under its purview on the basis that it was unable to calculate the value of the three funds due to the turmoil in the subprime market. The market became unwilling to roll over other debt instruments backed by subprime mortgages. Short-term interest rates rose sharply as market participants sought alternative sources of funding.

Central banks injected massive amounts of liquidity in an effort to stave off a credit crisis as financial institutions became increasingly unwilling to lend to each other, having little idea of the exposure those trying to borrow had to subprime mortgages, and thus little idea of their ultimate creditworthiness.

Lessons

There are lessons to be learned from the recent crisis. First, the role of credit ratings agencies needs to be reassessed. Second, and most importantly, hedge funds and other institutions that borrow short and lend long should be brought under the purview of banking regulators.

The role of credit rating agencies

Ratings agencies act as agents for, and are paid by, the conduits seeking to issue securities, raising concerns about conflicts of interest. *The Australian Financial Review* reported that the chairman of the US Securities and Exchange Commission, Christopher Cox, told Congress:

Critics have faulted the ratings agencies for initially assigning ratings to those [mortgage-backed] securities that were too high, for failing to adjust those ratings as the performance of the underlying assets deteriorated, and for not maintaining appropriate independence from the issuers and underwriters of those securities.⁶

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A further issue for both ratings agencies and investing institutions is that they rely heavily on quantitative models to determine default probabilities on the securities being issued or purchased. These models use past prices as their data, and are based on the premise that the financial structure of the economy remains unchanged even as those developing and using the models flood the system with riskier instruments born of financial

innovation.⁷ Default probabilities generated by these models assess credit risk; they do not take into account the risks posed by liquidity problems and systemic crises, both of which have been central to the 1998 and 2007 crises. The risks in these two crises derived from hedge funds, which suggests that such highly leveraged institutions should be brought under regulatory supervision.

Regulation of non-bank financial institutions

Economists argue that regulations should only be imposed on firms in the case of market failure or for consumer protection. Banks are more highly regulated than other firms for good reason. Due to the nature of their business, banks are much more highly leveraged than other firms, as they rely heavily on debt to finance asset accumulation. More highly leveraged firms are at greater risk of insolvency. This alone is not sufficient reason to regulate banks more heavily than other firms, but the failure of one bank is also more likely to lead to the failure of other banks through so-called contagion effects, and so to lead to systemic instability.

Hedge funds are very lightly regulated. The idea is that investors (banks, other managed funds, other financial institutions, and very high net worth individuals) are financially savvy, with the means to monitor the funds whose securities they are purchasing.

In contrast, banks in most Western countries are subject to similar regulations that their central banks have thrashed out under the auspices of the Bank for International Settlements' Basel Committee on Banking Supervision. The most important Basel regulation is the capital adequacy requirement (CAR), which requires that banks hold an amount of capital equal to 8% or more of their risk-weighted assets. The *purpose* of the CAR is to ensure that shareholders absorb any initial losses that banks might make, rather than depositors and other creditors.⁸ The *effect* of the capital adequacy requirement is to constrain the degree to which banks can become leveraged (indebted). A CAR of 8% means that the banks can take on debt to a maximum of 12.5 times their capital. Hedge funds, and most other firms, for that matter, do not have any such constraint imposed on them, which means they can become very highly leveraged. The recent IMF *Global*

Financial Stability Report notes the increasing dependence of overall market liquidity on hedge funds and on their ability to leverage themselves. A number of commentators believe that LTCM was leveraged more than 100 times in 1998. Because highly leveraged firms owe so much more money, they face much higher funding liquidity risk—the risk that they will be unable to obtain the money required to make payments as they fall due. In 1998, Alan Greenspan had to very quickly get the chief executives of all the major international banks together in New York to arrange a rescue package for LTCM. The hedge fund was not under the supervision of the US Fed, but its imminent failure threatened to dry up liquidity for both the banking system and international capital markets.

Some authors and commentators suggest that hedge funds should not have capital adequacy requirements imposed on them, because most hedge funds are not highly leveraged. This argument totally misses the point. The examples of LTCM in 1998 and the BNP Paribas and Bear Stearns funds in 2007 and 2008 demonstrate that a crisis only takes *one* or *several* highly leveraged funds to suffer funding liquidity problems (difficulties in raising money). This then creates liquidity problems across the market as enforced asset sales lead to downward pressure on prices, loss of confidence, and contagion effects where liquidity problems in one institution quickly spread to others. Hedge funds that have leveraged themselves through margin loans face margin calls and increasing margin requirements at the very time they are finding it more difficult to raise money through asset sales or by borrowing. Losses by hedge funds quickly turn into bank losses. Without the intervention of central banks, these episodes would have led to systemic instability on a global scale.

Another argument sometimes made against the regulation of hedge funds is that it would just shift hedge-fund activity offshore. Certainly, bank regulation has led to the development of offshore banking centres in more lightly regulated jurisdictions, but the majority of banking still takes place onshore. Likewise, I would expect to see some shift of hedge-fund activity offshore should hedge funds be similarly regulated, but my guess is that many investors would value the increased

safety associated with investments made through institutions they know to be well-capitalised.

In addition to making the offshore argument, John Danielsson, Ashley Taylor, and Jean-Pierre Zigrand argue it would be difficult to impose activity restrictions and disclosure requirements on hedge funds, because as they specialise in the most advanced uses of proprietary technology, it would be difficult for regulators to issue effective regulatory guidelines based on the actual models in use.⁹ Nonetheless, regulators allow banks to use their own proprietary models for risk assessment purposes under the capital adequacy regulations, subject to the regulators approving the models. To just give up and say it would be too hard to assess whether hedge funds were meeting

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regulatory guidelines is like giving free rein to the very institutions that have caused most of the financial instability in recent times, when the purpose of much financial regulation is to prevent that instability. The onus should be on the hedge funds to demonstrate to prudential regulators that their models are appropriate for risk assessment, and the regulators should not approve the use of the models unless they are satisfied.

A further reason for regulation is to ensure market integrity, which in financial markets principally means that no single participant should be able to move market prices. However, short selling has recently become an issue because it appears that hedge funds have had the power to reduce share prices by borrowing shares, selling them (thus increasing the supply), buying them back at lower prices, returning the shares, and profiting from the difference between the sale price and the lower repurchase price. Sometimes, this has been done in conjunction with negative rumours being perpetuated in the market about the firm whose shares are being sold. Recent examples include HBOS Bank in England, and ABC Learning Centres and Allco Finance in

Australia. Not only has short selling put these firms at risk of failure, it has also reduced the value of their shares and thus of the investments held by those institutions that lent the shares in the first place (which in many cases are pension and superannuation funds). As Joseph Yam notes, hedge funds are not the only class of institutions that can take large short positions. But unlike banks, they are not subject to licensing, regulatory, or reporting requirements, or to clear guidelines on position-taking. And they have

*the leverage power to borrow large resources and the motive, intention and ability to move prices through collusion and/or other manipulative practices. Only these hedge funds have knowledge of the size of their very large positions and the timing of the build-up of such positions.*¹⁰

At a minimum, hedge funds should be subject to disclosure and reporting requirements on large trades and positions. This would probably require international cooperation between prudential regulators similar to the cooperative approach to developing and refining the Basel banking regulations.

Conclusion: Applying the 'duck test'¹¹

There are several commonalities between the subprime mortgage crisis and the previous crisis that threatened systemic instability on a global scale in 1998. Hedge funds and derivatives have been at the centre of the 1998 LTCM crisis and the 2007 subprime mortgage crisis. The immediate causes of both crises were that hedge funds were unable to redeem some of the securities they had issued, which quickly led to global liquidity crises. In both cases, the complexity of derivative instruments issued or held by the hedge funds exacerbated the crises, by making it more difficult to calculate their real value.

The principal reason for regulating banks is to prevent systemic instability. Rather than banks, hedge funds have been at the centre of the two most recent cases of systemic instability, and in both cases central banks have had to step in and pump liquidity into the markets to avert a credit crisis. Spreads remain high in the current environment as institutions remain skittish about

lending to each other, wondering where problems will next emerge. Central banks have had to fix the problems wrought by institutions not under their supervision or that of the prudential regulators, and this suggests hedge funds and other institutions that are highly leveraged, and that are from time to time illiquid, should be regulated similarly to banks. They should be subject to capital adequacy requirements that constrain the degree to which they can leverage themselves.

Willem Buiter spells out the fundamental 'duck test' to determine whether capital adequacy requirements are needed:¹²

(a) Does the institution lend long and borrow short? (b) Does it lend in illiquid form and borrow in markets that are liquid in normal times although they may turn illiquid during periods of market turbulence? Do banks have substantial exposure to the institution? If so, it should either be consolidated for reporting purposes with the bank or treated as a bank in its own right.

One of the advantages for banks of being regulated is that they do have recourse to the central bank as lender of last resort, albeit at penalty rates, when faced with a liquidity crisis. In both recent crises—LTCM and the subprime mortgage crisis—central banks have organised banks to assist hedge funds with liquidity issues because of the potential ramifications for the banking system. However, the capital requirements imposed on banks by regulatory decree mean that banks cannot become anywhere nearly as highly leveraged as hedge funds, and so are far less likely to have liquidity problems in the first place. The size of highly leveraged hedge funds' activities in relation to the market may be many times that of any bank, and so hedge funds are subject to a much higher degree of liquidity risk. In turn, they pose a much greater risk for market liquidity. Hedge funds also tend to undertake a large amount of speculative activity with a view to generating much higher returns than investors could obtain elsewhere. Consequently, the potential systemic stability problems wrought by hedge funds are much larger than those posed by banks. The principal reason for regulating banks—systemic instability—is writ large when it

comes to hedge funds and other highly leveraged institutions. It is time that financial institutions that meet Buiters's 'duck test' are regulated similarly to banks. Otherwise, we can expect to see liquidity crises emanating from outside the banking system on an ongoing basis.

Endnotes

- 1 Credit events cause the market value of ABSs to fall below their face value.
- 2 IMF (International Monetary Fund), *Global Financial Stability Report: Containing Systemic Risks and Restoring Financial Soundness* (Washington: IMF, 2008), 17, and footnote 32.
- 3 Brendon Swift, 'Banks Scramble to Cover Their Assets,' *Australian Financial Review* (18 February 2008), 52.
- 4 Eric Johnston and Andrew Cornell, 'ANZ Exposure Sends Shivers through the Banks,' *Australian Financial Review* (18 February 2008), 1, 53.
- 5 IMF, *Global Financial Stability Report*, 78.
- 6 Reported in Anthony Hughes, 'Fallout Will Reshape the Industry,' *Australian Financial Review* (18 February 2008), 52.
- 7 L. Wrandall Wray, *Lessons From the Subprime Meltdown*, Levy Economics Institute Working Paper 522 (Annandale-on-Hudson, NY: Levy Economics Institute, 2007).
- 8 The Australian Prudential Regulatory Authority now refers to the capital adequacy requirement as the Prudential Capital Requirement or PCR.
- 9 Jon Danielsson, Ashley Taylor, and Jean-Pierre Zigrand, 'Highwaymen or Heroes: Should Hedge Funds Be Regulated? A Survey,' *Journal of Financial Stability* 1, 522–543.
- 10 Joseph C. K. Yam (1999), 'Capital Flows, Hedge Funds and Market Failure: A Hong Kong Perspective' in *Capital Flows and the Financial System: Proceedings of a Conference Held at the H.C. Coombs Centre for Financial Studies, Kirribilli on 9–10 August 1999*, ed. David Gruen and Luke Gower (Canberra: Reserve Bank of Australia, 1999), 164–177.
- 11 'If it looks like a duck and quacks like a duck then it is a duck.'
- 12 Willem H. Buiters, *Lessons from the 2007 Financial Crisis*, Centre for Economic Policy Research (CEPR) Policy Insight 18 (London: CEPR, 2007), www.cepr.org/pubs/PolicyInsights/CEPR_Policy_Insight_018.asp, 6.

Remember the CIS when updating your Will

When I established the CIS, it was with the intention of doing whatever I could to help create a freer society. Whilst many achievements have been made, there is still so much more that needs to be done.

It is my hope that a strong organisation dedicated to strengthening the moral legitimacy of a free market economy and a free society will be my legacy.

I hope you will consider making this your legacy too.

Your contribution will make a difference to the lives of future generations.

Greg Lindsay, Founder and Executive Director, CIS

Your Will is probably one of the most important documents you will ever sign. It is a powerful tool for change and your opportunity to make a meaningful, tangible, and lasting gift that will show your appreciation for the work of the CIS. You may decide to contribute a:

- **General Bequest**
- **Specific Purpose Bequest**
- **Endowment Fund Bequest**

However you decide to support the Centre, you can be assured that your contribution will be a lasting legacy, helping to assist the CIS to pursue its mission: securing freedom, defending core values, and creating the type of society we all want for our children and grandchildren.

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