
Section 3

What Can Be Done?

The subprime crisis: who pays and what needs fixing

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19 August 2007

The market participants who profited from creating the faltering debt instruments are not the ones who will pay most of the cost of the crisis; the losses will fall on the shoulders of final investors. Three things need fixing: credit ratings, evaluations of asset marketability and transparency in the retail market for financial assets.

The rollercoaster swings of the financial markets that have been sending shivers down the investors' spines since February are much more than the unavoidable correction after a five-year bull period.

The Economist wrote that this is a good time for a credit squeeze and praised the benefits of tighter conditions, following the conventional wisdom that downfalls are helpful because they lead to a more correct pricing of goods and financial assets. There is, however, a peculiar feature of the last crises (and particularly of this one) that makes this position less acceptable, at least from the point of view of who bears the losses and who pocketed the gains during the boom.

There are four characteristics of the present financial system that are worth remembering.

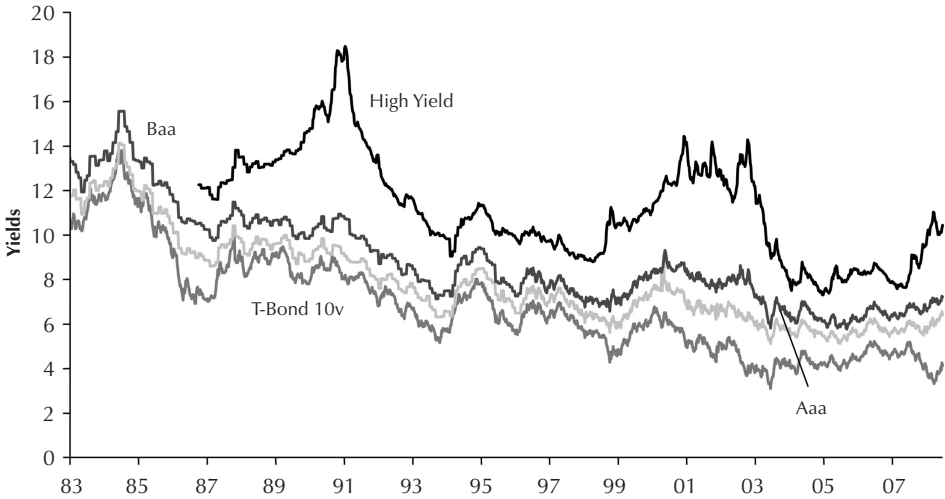
The dramatic rise of financial assets and derivatives all over the world. At the end of 2005 (IMF, Global Financial Stability Report, April 2007, total financial assets stood at an astonishing level of 3.7 times world GDP. The notional amount of total derivatives was double than the volume of total financial assets, which means 11 times global GDP. Remember that financial derivatives did not exist only 30 years ago.

The historical low level of interest rates over the last years, since the mid-1990s (as an effect of Greenspan's monetary policy and his attempt to feed the growth of the stockmarket). As a consequence of favourable monetary conditions, the price for risk required by the market also stood at very low levels. Figures 1 and 2 give clear evidence of the abnormal situation prevailing in the last years.

The growing weight of stocks and bonds as a percentage of total financial assets (therefore the decrease of loans by banks and other financial intermediaries). At the world level (and in the EU), bank loans account for 50% of total financial assets, but in the United States and Japan the ratio is much lower. In the United States, only \$1 dollar out of \$5 is borrowed from a bank.

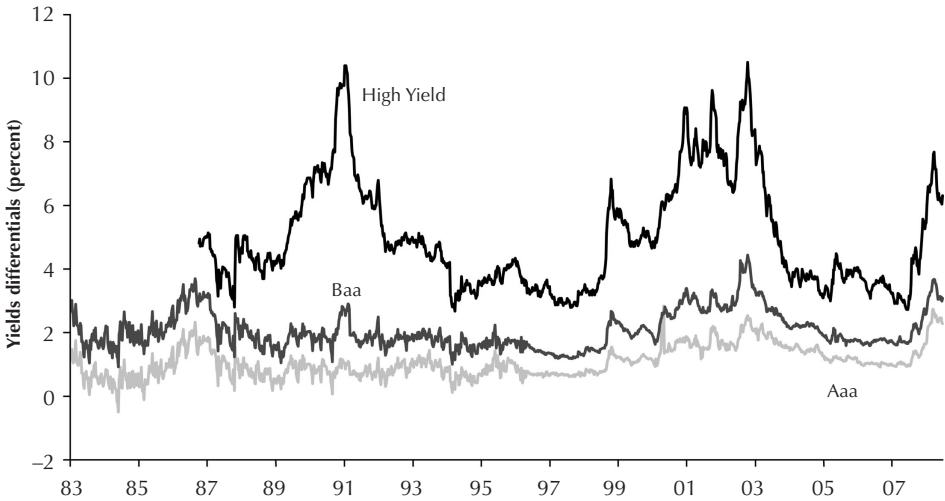
The decrease of government bonds (i.e. risk-free assets) on total debt securities. While the average ratio at the world level is 50%, in Europe it is 35% and in

Figure 1 USA: Yields on corporate and treasury bonds



Source: Thomson Reuters, Lehman Brothers, Merrill Lynch.

Figure 2 USA: Yield differentials with 10-year US treasury bonds



Source: Thomson Reuters, Lehman Brothers, Merrill Lynch.

North America 26%, with a downward trend. The last two points mean that households' portfolios are more and more made of securities bearing both market and credit risk.

These are the ingredients of the magic of financial innovation of the last decades: in a nutshell, banks created an astonishing volume of debt, packaged it into various kinds of securities, with different degrees of guarantees. These securities have been purchased by a wide range of smaller banks, pension funds, insurance companies, hedge funds, other funds and even individuals, who have been encour-

aged to invest by the generally high ratings given to these instruments. According to an important school of thought, this arm's-length financing is the most efficient way to allocate resources. Others can recall Charles Dickens, who defined credit as a system 'whereby a person who cannot pay gets another person who cannot pay to guarantee that he can pay'.

As a matter of fact, the global financial systems proved to be very resilient to real and financial shocks in the last two decades, but what mostly worries central banks is that, unlike in the old bank-based times, they simply do not know where the risk is. Witness this statement in the June 2007 Report of the Bank for International Settlements (p. 145): 'Assuming that the big banks have managed to distribute more widely the risks inherent in the loans they have made, who now holds these risks, and can they manage them adequately? The honest answer is that we do not know.' Honest, but frightening.

The only thing we know is that the losses will fall on the shoulders of final investors, and will not be shared with banks, as happened in more intermediated forms of finance. The point is that banks' profits in the last 20 years have stood at historical high levels. Returns on equity have been normally at two-digit levels (the first being preferably two) and probably will only be dented by the forthcoming market correction. In other words, the credit madness is over, a diet was overdue, but those that will have to follow a rigid diet are not those who put on weight in the past years. The allocative efficiency of the arm's-length financing deserves at least a second judgement.

The policy implications of what is under our eyes are at least threefold.

First, once again, a rating problem has emerged. Credit-risk assessments have been made on too optimistic assumptions, using data not always statistically significant and systematically ignoring tail events. When banks do not take risks on their books, but only sell them, the fragmentation of responsibilities leads to what *The Economist* has defined as 'too much money [being] lent too cheaply and too easily to too many people'. Banks should not skip risks so easily: a portion of the risk (e.g. using capital requirements) should remain on banks' balance sheets.

Second, the securities issued were much less marketable than banks pretended. Most sophisticated bonds were infrequently traded; some were tailored by investment banks for specific clients and were never traded. Mark-to-market was therefore only a subjective valuation involving complex computer models and assumptions, both directly made by the investment bank itself. The much vaunted 'price discovery' by the market, the very heart of a securitized world, was simply an illusion. Final investors are barely protected when their securities are traded in such over-the-counter (unregulated) thin markets.

Third, there is a problem of transparency in the retail market for financial assets. As financial products are becoming more and more sophisticated, a great majority of investors are not aware of the risks that they are actually taking. There are two hypocritical reactions that are emerging: to ask for more disclosure and/or for more financial literacy. The first one should lead only to an increase of sophisticated prospectuses, which can be read only by those holding a PhD in finance (possibly of a very recent vintage). The second one is even more absurd (not surprisingly immediately backed by President Bush), as it is simply impossible to fill the gap between the current level of financial education and the level of rocket-science finance involved in current financial products. The only solution is to use

regulation (and particularly the conduct of business rules) to make it more convenient for retailers to sell simple financial products. A wide body of research (particularly in the United Kingdom, sponsored by the Treasury and the FSA, the financial supervisor) proves that the present regulatory philosophy creates a strong bias towards sophistication and opacity. Time has come to change course and to create incentives for financial intermediaries to sell easier products to the final investors. Only at that point will a higher level of financial education be effective. Time has also come for finance economists to look more closely and in a more Dickensian way at what happens at the last step of the magic of credit creation.

This article comes from Vox's Consortium partner, www.LaVoce.info. You can find an Italian-language version there.

Filling the information gap

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5 November 2007

The Basel Committee on Banking Supervision and the Basel II framework were intended to mitigate or prevent crises like the subprime mess. The valuation practices and market transparency recommended by the committee fall short of what is needed.

The midsummer blues are not quite over yet: with subprime default rates still on the rise, 3-month interbank rates stay abnormally high, credit conditions remain tight, gross issues of mortgage-backed bonds and commercial paper are all but dried up, and banks lick their wounds and attempt to set up emergency vehicles to dispose of the backlog of illiquid assets left in their books. The system remains vulnerable. Still, as the worst fears for financial stability have subsided, the debate now shifts from the central banks' ex-post emergency reactions to the preventative reforms needed for the future. Unfortunately, given the nature of this crisis, there is no quick fix this time.

The textbook paradigm

In its unfolding, this crisis conforms to the textbook paradigm. In a financial system where intermediaries hold illiquid assets against liquid liabilities, there are two possible equilibria. When only those agents subject to liquidity shocks require the service from intermediaries, the latter are able to carry out maturity transformation and allow society to earn superior returns. When instead, as a result of a shock, all agents, simultaneously but independently, seek liquidity, the intermediaries' balance sheets go under stress, there is no demand for less liquid assets and disruptive liquidations may threaten financial stability: a succinct description of what has happened between July and September.

As noted by Mervyn King,¹ the 'most unusual nature' of this crisis was the disproportion between the shock ('a relatively small size of ... bad loans compared with the total assets of the banks') and its widespread systemic consequences. Echoing King, Bernanke wondered how the impact could be so large, comparing the US subprime mortgage market with 'the enormous scale of global financial

1 Speech at the Northern Ireland Chamber of Commerce and Industry, Belfast, 9 October 2007.

markets'.² True, also in the textbook model, crisis equilibria may be triggered by potentially insignificant events. But according to the textbook prescriptions, undesirable outcomes can be avoided through informed supervisory action: supervisors possessing the relevant information on potential exposures to shocks are better able to prevent a crisis, thereby reassuring all market participants that threats to financial instabilities can be contained. When, on the other hand, market participants not only do not know how serious and widespread the impact of a dislocation is, but also become aware that the supervisory authorities are no less ignorant, they rationally cut their risk positions by more than would be warranted if they possessed greater information and could rely on the presence of a better-informed coordinating agent. The surge in volatility and the drying-up of liquidity make the worst scenario self-fulfilling.

This is, in our view, what has happened this time. A generalized lack of information multiplied the effects of the initial shock.

The information gap

The information gap was wide and deep. Mortgage brokers had an incentive to provide the raw material by quantity, regardless of quality. The valuation of the structured and complicated financial instruments pooling credit risks rested on rating agencies' models, biased by observations limited to a relatively short span of very benign history. Those products were issued and (rarely) traded over the counter: marked to model, as there was no proper market assessing their liquidity. By the very nature of the CRT (Credit Risk Transfer), nobody had a clue where the credit risks had ended up.

This would have mattered less if the ultimate risk recipients had been only the usual suspects: hedge funds, pension funds, and insurance and reinsurance companies. The systemic consequences of the collapse of a few of those would be confined to the counterparty risks assumed by some intermediaries in their lending or broker-dealer activities. But it turned out that there were many banks among those more heavily exposed to the direct risk of credit products, through off-balance sheet liquidity commitments granted to vehicles investing in those illiquid assets, equity tranches in the CDOs, own portfolio investment and reputational commitment to proprietary mutual funds engaged in ABSs. The authorities in charge of stability supervision were seemingly unaware of this exposure: certainly they appeared to be caught by surprise by the consequences of the subprime insolvencies on the banking system, ignorant of where the losses were located and therefore unable to deal selectively with the problem. The consequence was widespread mutual mistrust causing the hoarding of banks' liquidity and the hike of interbank rates.

Filling the multidimensional information gap that was responsible for transforming a spate of subprime defaults into a fully-fledged crisis should be a priority of any reform effort. Unlike in earlier crises, however, there are no obvious solutions to this

2 'The Recent Financial Turmoil and its Economic and Policy Consequences', Economic Club of New York, 15 October 2007.

problem. We confine ourselves to drawing a list, in order of importance, of what we believe to be the more relevant issues.

Filling some gaps

At the origin there is a purely American problem: a crowd of unlicensed non-bank brokers, governed by wrong incentives, offering mortgage loans to all and sundry, irrespective of any assessment of the debtor's potential solvency. Though the party is over by now, the problem remains and will have to be addressed by Congress.

Next, when credit risks are pooled and repackaged, comes the role of the rating agencies whose decisions affect the allocation of risks in different investors' portfolios. Apart from their conflicts of interest from their semi-monopolistic, officially sanctioned status,³ a major information problem arises from the suitability of the statistical models used to provide the ratings on which many investors rely blindly. The spate of downgradings affecting them in recent months is evidence of serious flaws. Some propose that the rating agencies should be treated as underwriters, with the attendant responsibilities; at the very least their models should be subjected to an independent inquiry and, as it were, be themselves rated.⁴

A deep and wide secondary market ensuring at least post-trade transparency is an essential provider of information; over-the-counter transactions instead remain opaque and known only to the parties concerned. The heterogeneity of structured products (each with idiosyncratic features) is an obstacle to the supply of a public good. An agreement prompted by industry associations in consultation with the supervisors to standardize the most diffuse classes of instruments, as was done for some derivative contracts, would be a step towards the creation of a market.

There is then the question of the bank-sponsored investment vehicles (SIVs) and of the treatment of the liquidity facilities provided to them by banks, which under Basel I are exempt from capital requirements (and hence from disclosure) as long as the commitment is for less than 365 days. The somewhat more stringent prescriptions of Basel II are still short of achieving adequate transparency. This, however, is only a part of a more general issue: that of designing an efficient structure of information flows in order to fill those gaps prejudice stability.

A wider problem: Basel II?

Ideally the authorities in charge of stability should be empowered to acquire all the information needed to assess the system's (and not only an individual agent's) vulnerabilities from all financial entities whose actions may have systemic effects. They would thus be better equipped to prevent the eruption of dislocations as well

3 On the role and the shortcomings of ratings agencies see J. R. Mason and J. Rossner (2007), 'Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage Backed Securities and Collateralized Debt Obligation Market Disruptions', mimeo (May).

4 Credit ratings agencies have themselves 'acknowledged the need to review the information they receive from originators and they provide to investors in structured credit products' (Financial Stability Forum, Working Group on Market and Institutional Resilience, 15 October 2007).

as to provide guidance to market participants on the risks present in the system. In the view of the Basel Committee on Banking Supervision, the implementation of the Basel II capital framework, by improving 'the robustness of valuation practices and market transparency for complex and less liquid products', 'would have gone some distance' to alleviate the present crisis. We believe that the distance would have been very short, as the Basel II framework represents only a small approximation to a satisfactory solution.

First, disclosure belongs to the third pillar of the accord (market discipline), which is recognized as by far the weakest, in terms of both prescriptions and enforcement.⁵ Second, Basel II disclosure is required in order to assess an individual bank's capital adequacy. That is not enough: a strong bank capital base, while essential to avoid the collapse of any major financial institution, was not sufficient to prevent the systemic effects of the subprime crisis. Third, any disclosure obligation imposed by the accord only concerns banks. But all the entities having liquidity mismatches between assets and liabilities may produce systemic effects, either directly with counterparties or through the structure of their balance sheets: not only traditional intermediaries, but also broker-dealers, non-thrift financial institutions borrowing wholesale in the market, any kind of vehicle with the same characteristics, as well as hedge funds.

Finally, designing an efficient structure of information flows meets institutional obstacles. In a closely connected financial world, where cross-border entities prevail, information on global stability is the more valuable the less its gathering and processing are fragmented. There are natural limits to this and cooperation between bank supervisors helps. But there are obvious steps to be taken to improve the situation. At the national level, the single regulator model, whereby banking supervision is not a responsibility of the lender of last resort, has shown important flaws, at least in Germany and the United Kingdom. More importantly, similar faults are present in the euro area, where the ECB, which, though not a lender of last resort, is responsible for providing liquidity, has no supervisory competence and must rely on the information voluntarily provided by the national central banks.

Adequate, reliable and timely information is essential to ensure financial stability. Filling the information gap, however, has so far been a slow and hesitant process. Do we need more crises to move forward at a faster pace?

⁵ It has been alleged that Basel II has a 'bias in favour of nondisclosure', strengthened by the opposition of the banks (Institutional Risk Analytics, Comments to the proposals, October 2006).

Lessons from the North Atlantic financial crisis

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19 December 2007

What caused the current North Atlantic financial crisis, how can it be fixed and how can the likelihood of future crises be reduced? This article introduces a new CEPR Policy Insight, 'Lessons from the 2007 Financial Crisis', which addresses these issues at length.

The crisis is the product of a perfect storm, bringing together a number of micro-economic and macroeconomic pathologies. Among the microeconomic systemic failures were: wanton securitization, fundamental flaws in the rating agencies' business model, the procyclical behaviour both of leverage in much of the financial system and of the Basel II capital-adequacy requirements, privately rational but socially inefficient disintermediation and competitive international deregulation. Reduced incentives for collecting and disseminating information about counterparty risk were a pervasive feature of the new financial world of securitization and off-balance sheet vehicles, what Paul Tucker, Executive Director, Markets for the Bank of England, has called vehicular finance. So was lack of transparency about who owned what and about who owed what and to whom.

The proximate local drivers of the specific way in which these problems manifested themselves were regulatory and supervisory failures in the US home loan market.

Solutions to the microeconomic pathologies will be partly market-driven, partly imposed by regulators. They include the following nice 'do's':

- Insist on simpler financial structures and products, instead of financial engineering masterpieces that cannot be priced even by their designers, let alone by buyers and sellers in the secondary markets.
- Require the retention of the equity tranche (or first-loss tranche) by the originator of loans, to mitigate the adverse impact of principal-agent chains on the incentive for information-collecting and monitoring of ultimate borrowers.
- Eliminate the quasi-regulatory role of the rating agencies in Basel II.
- Require rating agencies to sell nothing but ratings, to reduce conflict of interest.
- End the payment of individual rating agencies by the individual issuers of securities they rate.

- Subject all off-balance sheet vehicles that act like banks to the same regulatory requirements and fiscal regime as banks (a principles-based 'duck test' for banks).
- Encourage greater international cooperation between regulators.
- Create a single EU-wide regulatory regime for banks, other financial intermediaries and financial markets. Have one European regulator for all European financial institutions and markets in a given class and/or category.
- Have an international crackdown on regulators of convenience and regulatory havens (alongside a long-overdue crackdown on tax havens).

Among the macroeconomic pathologies that contributed to the crisis were, first, excessive global liquidity creation by key central banks and, second, an ex-ante global savings glut, brought about by the entry of a number of high-saving countries (notably China) into the global economy and by the global redistribution of wealth and income towards commodity exporters that also had, at least in the short run, high propensities to save.

The Fed, the ECB and the Bank of England did not exactly cover themselves with glory in addressing the global shutdown of the financial wholesale markets and the continuing crunch and illiquidity in the interbank markets. The ECB probably did best, followed by the Fed, with the Bank of England coming in a well-beaten third.

All three central banks are now injecting fair amounts of liquidity not just in the overnight interbank markets, but also at longer maturities, especially at one and three months. The Bank of England was most reluctant to tackle the very large spreads between, say, 3-month Libor and the market's expectation of the official policy rate over a 3-month horizon (as measured by the fixed leg of the Overnight Indexed Rate Swap or OIS). It believed (against the evidence and the odds) that this reflected largely market perceptions of counterparty default risk, rather than liquidity risk. The Bank also only recently widened its list of eligible collateral in 3-month repos (sale and repurchase operations) to assets beyond the high-grade sovereign-debt instruments it had insisted on before. For the December 2007 and January 2008 auctions it announced, that it also, for the first time, was willing to do repos against this wider range of collateral at market-determined rates, rather than insisting on a penalty floor for the rate, as it did in September.

The ECB immediately threw very large amounts of liquidity at the longer-maturity interbank markets and the Fed pumped in moderate amounts. Interestingly, except in the very short run, the effect on the interbank spread over the OIS rate did not respond very differently for sterling, the euro and the US dollar. Before one concludes from this that open-market operations at these longer maturities have no influence on the spreads, one has to recognize that the need for liquidity may not have been the same in the three interbank markets. For starters, many UK banks with subsidiaries in the eurozone (and some with subsidiaries in the United States) obtained liquidity through these subsidiaries. Other indicators of liquidity of the interbank market, such as the volume of private transactions, suggest that, even with comparable spreads, UK banks continue to face especially tight liquidity conditions.

In the UK, failures of the tripartite financial stability arrangement between the Treasury, the Bank of England and the FSA, weaknesses in the Bank of England's liquidity management, the regulatory failure of the FSA, an inadequate deposit insurance arrangement and deficient insolvency laws for the banking sector all contributed to the financial disarray.

Despite this, it may well be possible to contain the spillovers from the crisis beyond the financial sectors of the industrial countries and the housing sectors of the United States and a few European countries. The reason is that the credit boom that came to an end in 2007 did not give rise to major excesses in physical capital formation (fixed investment), except in the financial sectors just about everywhere and in the residential construction sectors of a few countries, including the United States, Spain, Ireland, the Baltic states and Bulgaria. The saving-investment balances and balance sheets of non-financial corporates remain healthy. The financial imbalances are mainly in the financial sector (excessive leverage, deficient liquidity, insufficient capital and the need for massive write-downs of assets, that is, specialty CDOs and other complex securitized structures) and to a lesser extent in the household sector (financial deficits, excessive mortgage debt, unsecured consumer debt and the need to take large hits on the valuation of key assets, especially residential property). While a slowdown is unavoidable – and, in the case of the United States, necessary and desirable for the restoration of external balance – a recession is not.

Lessons from Northern Rock: banking and shadow banking

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4 March 2008

The UK Treasury Committee recently released a report on the lessons from the plight of Northern Rock. In the first of a two-article series, Willem Buiter analyses the shortcomings of the report's recommendations for reducing problems in the banking and shadow banking sectors.

Two highly readable reports on the lessons learnt from the Northern Rock debacle have been published recently. The first is the Treasury Committee Report 'The Run on the Rock' published on 26 January 26. The second is 'Financial Stability and Depositor Protection: Strengthening the Framework', published jointly by HM Treasury, the FSA and the Bank of England on 30 January. The publication of the latter document launches a consultation on the proposals contained in it for domestic and international action to enhance financial stability. The Treasury report covers five areas: first, strengthening the financial system through domestic and international actions; second, reducing the likelihood of banks failing; third, reducing the impact of failing banks; fourth, deposit insurance; and fifth, strengthening the Bank of England and improving the operation of the tripartite arrangement. This article analyses the first two parts.

Strengthening the financial system

There is nothing substantive regarding unilateral or coordinated international action to strengthen the financial system, just some pious platitudes about the need to strengthen risk management by banks and to improve the functioning of securitization markets by beefing up valuation methods and the performance of credit rating agencies. This is a missed opportunity, as the current financial crisis has reminded us that when finance is global and regulation is national, accidents are much more likely to happen. Regulatory arbitrage and competitive deregulation to gain or retain footloose financial businesses within national jurisdictions have been important contributors to the excesses committed by financial institutions and to the mispricing and misallocation of risk by credit markets and other financial markets since (at least) 2003. The proliferation of opaque complex financial instruments traded by opaque off-balance sheet financial vehicles calls for global action. Coordination between multiple institutions, especially in a crisis, is

always problematic: panic moves at the speed of light and even well-intentioned, cooperatively minded parties will find it hard to engage in synchronized swimming while piranhas and sharks lurk at their tender extremities.

The United Kingdom's light-touch regulatory approach has been found wanting and exposed as little more than soft-touch regulation. No doubt it has been successful in attracting financial sector activity to London, that is, it has been an effective competitor in the socially negative-sum global deregulation game. It has made a material contribution to the regulatory race to the bottom, which has left much of the shadow banking sector outside the regulatory net altogether, and has reduced both the information available to the regulator and the power of the regulator to prescribe or proscribe behaviour in those market segments that remain regulated.¹

At the European level, the need for the creation of a single EU regulator for any given market segment, responsible for all financial institutions engaged in significant cross-border activity (including foreign subsidiaries and branches) is now paramount. At the global level, a greater sense of urgency as regards the activities of the Financial Stability Forum is key. The IMF is waved around briefly in the Treasury report, but what role it would play in the prevention of crises (enhanced multilateral surveillance, anyone?) or in their mitigation is not developed.

It is also clear that Basel II has to go back to the drawing-board. While some of the excesses of the recent past would not have been possible had Basel II been in effect (especially the ability of banks to make economic exposure disappear for reporting purposes through the creation of off-balance sheet vehicles), Pillars I and 2 of Basel II have three flaws which are, I believe, collectively fatal. One is the procyclicality of the capital requirements directive. The second is the reliance on internal models of banks to mark-to-model (i.e. mark-to-myth and mark-to-the-short-term-requirements-of-the-banks'-profit-centres) illiquid and often complex financial instruments and structures. The third is the reliance of the risk weightings on the ratings provided by discredited rating agencies.

The Report also mentions the need to improve the functioning of securitization markets, including improvements in valuation and credit-ratings agencies, but it offers very little beef in these areas. It is clear that the credit rating agencies will have to be unbundled and that the same legal entity should not be able to sell both ratings and advice on how to structure instruments to get a good rating. The conflict of interest is just too naked. Rating agencies will have to become single-product firms, selling just ratings.

The only two proposals for improving the operation of the securitization markets I have seen are not discussed in the report. The first is for the originator of the assets (home loans, say) underlying the securitization process to be required to retain the equity or first loss tranche of the securities issued against the underlying assets. This strengthens the incentives for delegated monitoring and reduces the severity of the principal-agent problem in the securitization process. The sec-

¹ The shadow banking sector consists of the many highly leveraged non-deposit-taking institutions that lend long and illiquid and borrow short in markets that are liquid during normal or orderly times but can become illiquid when markets become disorderly. They are functionally very similar to banks but are barely supervised or regulated. They hold very little capital, are not subject to any meaningful prudential requirements as regards liquidity, leverage or any other feature of their assets and liabilities. They also have very few reporting obligations and have to meet few governance standards, as many are privately or closely held. Examples are hedge funds, private equity funds, money-market funds, monolines, conduits, SIVs and other special-purpose, off-balance sheet vehicles.

and prescribes a 'gold standard' for simple and transparent securitization, as proposed recently by the UK Treasury, but – unlike the Treasury proposal – one with teeth. In a revised collateral framework, the Bank of England would only accept as collateral at the standard lending facility (discount window) or in open-market operations through repos, asset-backed securities conforming to the 'gold standard'.

One of the key drivers of the excesses of the most recent (and earlier) financial booms has been the myopic and asymmetric reward structure in many financial institutions, including banks and commercial banks. Clearly not all is well when the CEO of Citigroup, after marching his institution to the edge of the abyss, is let go with a golden handshake worth in excess of \$130 million. If that is the punishment for failure, what could be the reward for success? And this is just an extreme example of poorly structured reward systems that encourage excessive risk-taking and the pursuit of short-term profits. Where action to prevent such outrages in the future should be focused is not clear. It is fundamentally a problem of general corporate governance, not restricted to the financial sector: where were the shareholders of Citigroup? But there clearly is an urgent need for intelligent design here.

Reducing the likelihood of banks failing

There are some sensible proposals for enhancing the ability of the FSA to demand information at short notice.

Provision and disclosure of liquidity assistance

This part of the report is hamstrung by a failure to distinguish clearly between funding liquidity and market liquidity. Funding liquidity, which refers to the cost and availability of external finance (including the speed with which it can be accessed) is a property of economic agents and institutions. Market liquidity, which refers to the speed and ease with which an asset can be sold at a price close to its fair value and with low transaction costs, is a property of assets or financial instruments and of the markets in which they are traded. Funding liquidity and market liquidity are not independent; the funding liquidity of a market-maker or trader will influence the liquidity of the market he makes; the funding liquidity of a trader will depend on the market liquidity of the assets he holds or the liquidity of the markets in which he intends to borrow, secured or unsecured. There are private and public sources of both funding and market liquidity. When push comes to shove, only the public sector can provide instruments with unquestioned liquidity. Funding liquidity is provided by the authorities at the discount window (on demand against suitable collateral) and, in extreme circumstances, through lender-of-last-resort facilities. Market liquidity is provided by the authorities through open-market operations, both repos/reverse repos and outright purchases/sales, and, when markets become illiquid, by the authorities acting as market-maker of last resort, buying normally liquid but temporarily illiquid instruments at punitive prices and discounts.

Funding liquidity and market liquidity need not be provided by the same agency of the government, both in normal times and in extraordinary times. Only the central bank can realistically provide market liquidity, but the central bank need not be the active party deciding on the provision of funding liquidity, even if it is likely to be the (passive) source of such liquidity.

Covert operations: James Bond at the Central Bank

Quite a lot is made of proposals to allow the authorities (specifically the Bank of England), to provide covert liquidity assistance or other good offices. There are three sets of conditions under which covert assistance may be desirable.

First, there may be a use for secrecy surrounding assistance provided by the authorities during short-term windows of extreme vulnerability, say, just after a major fraud has been discovered. Of course, with the sophisticated control systems in place since at least Nick Leeson's destruction of Barings, a fraud that threatens a major institution is surely a thing of the past.

Second, there may be a use for secrecy surrounding the authorities' involvement in attempts to find a private-sector solution for a troubled or failing bank. Under the current UK takeover code, such covert assistance is problematic.

Third, there could be a need for secret lender of last resort assistance. Although the Bank of England's belief that covert lender-of-last-resort assistance would fall foul of the United Kingdom's transposition of the EU Market Abuse Directive, this turns out to have been a chimera. In any case, with effective deposit insurance and an effective special resolution regime (SRR) for troubled or failing banks, the need for both the second and the third kind of covert operation would vanish.

When safeguards fail

My recommended policies would likely strengthen the banking and financial sectors, reducing the risk of failure. But such a likelihood is impossible to eliminate. In my next article, I will address how the UK government could best prepare for a non-trivial bank failure.

Lessons from Northern Rock: how to handle failure

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5 March 2008

This second article on the Treasury Committee's report on lessons from Northern Rock discusses the institutional arrangements needed to cope should a bank of non-trivial size fail.

In the article above, I examined proposals for preventing financial crises in the UK Treasury Committee Report 'The Run on the Rock'. Here I look at mechanisms that might reduce the impact of failing banks, provide appropriate deposit insurance and coordinate the three institutions responsible for financial stability.

Dealing effectively with failing banks

The authorities are effectively proposing to put in place the kind of legal and regulatory arrangements currently found in the United States and a number of other countries. A special resolution regime (SRR) would be created, led by a new authority (I shall call it the special resolution regime authority or SRRRA, not to be confused with the antidepressant drug SSRIs, lest we get some very depressed bankers), who could take control of a troubled bank before it hit the normal insolvency buffers, that is, inability to service its debt. The assets of the pre-failing bank, or any of its activities and business, could be transferred to one or more healthy banks or some other third party; a 'bridge bank' could be created to allow the SRRRA to take control of all or part of a bank or of its assets and liabilities; a restructuring officer could be appointed by the SRRRA to carry out the resolution; and finally, if the judgement is reached that pre-insolvency resolution is not feasible, a special bank insolvency procedure could be invoked to facilitate the swift and efficient payment of insured depositors. Public ownership of all or part of a bank as a last resort is also part of the package. The Treasury document refers to it as temporary public ownership, but unless this means that a fixed timetable has to be provided, the word 'temporary' only indicates hope or intent and is not operational.

The government proposes that the FSA would be the SRRRA, and I agree with that. It should not be the Bank of England (because the job of the SRRRA is too political) or the Treasury (because the Treasury is too political for the job of the SRRRA). A new separate entity would be possible, but further balkanization of the

responsibility for financial stability in the UK would seem undesirable (anyone really want a quadripartite arrangement?).

The key issue is the specification of the circumstances under which the SRRA would be able to impose the SRR on a bank. What will be the threshold conditions or triggers (quantitative or qualitative) that would cause the SRRA to compel a bank to enter the SRR? If the threshold is set too low, competition is distorted. If the threshold is set too high, there may be risk of systemic instability. Of course, with adequate deposit insurance and an appropriate bank insolvency procedure, contagion effects and other systemically destabilizing manifestations of panic ought not to happen. Even the failure of a large bank should not be of greater public interest than the failure of a ball-bearings manufacturer in Coventry with equal value added.

The Treasury believes the decision on whether and when a bank should be ordered into the SRR should be based on a regulatory judgement exercised by the FSA after consultation with the Bank of England and the Treasury. Provided it is clear that the ultimate decision lies with the FSA, I would agree with this proposal.

Deposit insurance

I believe that the new deposit insurance arrangements should be located in the same institution that has the SRRA, that is, the FSA. The existing Financial Services Compensation Scheme should either be moved into the FSA or wound up. In its current form it is useless.

As regards the limits of the insured amount, the current UK figure of £35,000 (since 1 October 2007, the idiotic run-inducing 10% deductible after the first £2,000 has been abolished) appears to be in the middle of the figures for 19 countries reported in the Treasury document. Eyeballing the charts, it looks as though about 97% of all retail deposit accounts hold less than £35,000. At the same time, the top 3% of deposit accounts hold about 50% of total deposits in the UK. This means that an increase in the limit would raise the value of the deposits covered by significantly more than it would raise the number of depositors covered. I cannot see a strong case for raising the limit, and no case for raising it above £50,000. What matters is the speed with which insured deposits can be paid out should a bank get into trouble.

Strengthening the Bank of England

It is apparent that the Bank of England, since it became operationally independent for monetary policy and lost banking supervision in 1997, has done a much better job on its monetary policy mandate of price stability than it has on its financial stability mandate. There has been really only one serious test of the UK's tripartite arrangement for financial stability between the Bank, the FSA and the Treasury. It failed the test. Much of the blame lies with current and past Treasuries and with the FSA, but the Bank contributed to the problems through its mismanagement of market liquidity. The Treasury report does not address this issue at all.

It is key that the Bank of England should follow the example of the ECB and extend its list of eligible collateral at the standing lending facility and in open-

market operations to include routinely private securities, including asset-backed securities. It should also extend the maturity of its standing lending facility loans from overnight to up to one month, taking a leaf from the Fed this time. Finally, it should extend the list of eligible counterparties at the standing lending facility and in its repo operations to include not just banks and similar deposit-taking institutions. Currently, open-market operations are open to non-cash ratio deposit-paying banks, building societies and securities dealers that are active intermediaries in the sterling markets. Access to the standing facilities is restricted to participants in the Bank of England's Reserves scheme and a few others. Both open-market operations and standing facilities should be accessible to all financial institutions regulated in a manner approved of by the Bank.

While in a first-best world, the Bank would not be the active player in lender-of-last-resort operations, it will always be involved in funding liquidity matters through its standing facilities. It is therefore key that the use of the standard lending facility be de-stigmatized. This can be achieved by abolishing the unbelievably complex operational procedures for setting the official policy rate or bank rate (official policy sets the target for the overnight unsecured sterling interbank rate) and managing short-term liquidity.

The current framework has three main elements: rather plain-vanilla standing facilities and open-market operations and a mysterious and pointless reserves-averaging scheme (from the Bank's Redbook): 'UK banks and building societies that are members of the scheme undertake to hold target balances (reserves) at the Bank on average over maintenance periods running from one MPC decision date until the next. If a member's average balance is within a range around their target, the balance is remunerated at the official Bank Rate.'

The reserves-averaging scheme should go. There should be no reserve requirement at all. The Bank should stand ready to repo (against eligible collateral) or reverse repo any amount at any time at the official policy rate. That, after all, is what it means to set the official policy rate. Anything else is an attempt to set both price and quantity – and is doomed to failure.

Commercial banks would therefore be borrowing from the Bank of England all the time, as a matter of routine, and no stigma would be attached to such operations. This would also keep the overnight interbank rate closer to the official policy rate than it is under current procedures, decoupling the MPC's interest-rate decision from the liquidity policy not managed by the MPC but by the Bank's executive. The Bank still could retain its standing lending facility by accepting a wider range of assets as collateral at the standing lending facility than it accepts in repos to peg the official policy rate.

In its open-market operations, the Bank should act as market maker of last resort, by standing ready to purchase, at a properly conservative/punitive price, normally liquid assets that have become illiquid through a systemic flight to quality and liquidity caused by fear, panic and other contagion effects. As for the securities acceptable for rediscounting at the standing lending facility, there should be a positive list of securities (including private securities and indeed private ABS) that are acceptable as collateral by the Bank. This would help concentrate the minds of (the supervisors of) those maniacal financial engineers generating ever more complex and opaque financial structures, which would be unlikely to figure on the list of eligible collateral.

What becomes of the tripartite arrangement?

It is obvious that, whenever taxpayers' money is put at risk, the Treasury must be consulted and should have a veto over the operation. The Treasury document makes this clear. The Treasury is also in charge of the whole arrangement, although it appears obvious that there are certain things it cannot instruct the two other parties to do without risking damaging resignations. I doubt whether it could give the Bank instructions on its collateral policy, open-market operations and standing facilities operations. In my view it ought not to be able to do so. It is also unclear whether the Treasury expects to be in a position to instruct the SRR (that is, the FSA) to invoke or not to invoke the SRR for a particular bank. I would hope it would not be able to do so. What the role of the Treasury would be in the decision to invoke the new bank insolvency procedure remains unclear. Obviously, nationalization could only be authorized by the Treasury.

In the proposals of the Treasury, the FSA continues to be the regulator and supervisor of the banking sector (and of most other financial institutions). It remains responsible for the default risk (solvency), the funding liquidity of the institutions it supervises and other risks, including operational and reputational risk. It will lead the SRR and act as the SRR. I assume it would also be responsible for the management of the deposit insurance scheme, although the Treasury document is not clear on this. The Bank of England does get its nose into the tent for most of these activities and responsibilities, however. To my mind this further troubles the allocation of responsibility and authority.

The financial cost of the deposit insurance scheme can only be borne by the participating institutions (either through pre-funding or ex-post funding) if the banking-sector trouble causing the scheme to be called upon for a payout is a local problem affecting only a minority of the banks. When there is a systemic bank run (or bank default), only the Treasury can credibly meet the insurance claims. This should be recognized. Any serious deposit-insurance scheme represents a contingent claim on the Treasury.

The Bank of England remains responsible for market liquidity, both in normal times and, under disorderly market conditions, by acting as market-maker of last resort. It is involved in funding liquidity through the (on demand against the proper collateral) standing lending facility. The Treasury report (and even more strongly the Treasury Committee report) favours an enhanced role of the Bank of England in the lender-of-last-resort process. The Treasury report wants the Bank to spend time and resources becoming and remaining informed of the liquidity situations of individual UK banks. This clearly would also require it to be aware of the solvency-related aspects of the balance sheet and operations of individual banks. The Bank and the FSA would effectively become joint supervisors with shared responsibility for funding liquidity and solvency. I doubt whether such an arrangement would work well.

As far as I can tell, the Treasury Committee wants all banking supervision and regulation to be returned to the Bank of England, with the FSA taken completely out of the game. A new deputy governor and head of financial stability would take the lead in all financial stability matters, and could even order the FSA around.

It is clear that the Treasury Committee's proposal would put strains on the Bank of England's independence in monetary policy. The committee therefore raises the

possibility that the new deputy governor/financial stability czar might not be a member of the MPC. I still cannot see it. What would be the authority relationship between the new deputy governor/financial stability czar and his/her notional boss, the governor? If the Bank of England is to be put in charge of (the operational end of) financial stability, better not to appoint a new deputy governor but to give the job to the governor and to take the MPC out of the Bank of England. The governor of the Bank would, under this model, not necessarily be the chair of the MPC or even a member of it.

A different solution

Rather than putting money and individual bank-specific information together in the same institution by making the Bank of England responsible for banking supervision again, I would move in the opposite direction. The lender of last resort (which would not be the Bank of England although the lender of last resort, if it is not the Bank of England should have an open-ended uncapped credit line or overdraft facility with the Bank of England, guaranteed by the Treasury) should be the SRRA, that is, the FSA. It would make liquidity available to a troubled bank that could no longer fund itself in the interbank markets, the repo markets or at the standing lending facility. The collateral that would be accepted, the terms on which it would be accepted, and the other terms and conditions attached to lender-of-last-resort funds would be decided by the SRRA (the FSA) on a case-by-case basis.

The current tripartite arrangement is sketched in Figure 1. The Treasury Committee's proposal is in Figure 2, the Treasury's proposal in Figure 3 and my own proposal (for a minimalist central bank) in Figure 4. Finally, Figure 5 shows how, under my proposed arrangement, a potentially troubled bank would be handled.

With effective deposit insurance and a sensible insolvency regime for banks, all proposals share the feature that it could, at last, become conceivable that a non-trivially small bank in the UK might fail. That would be the best guarantor of greater future financial stability.

Figure 1

The Current Tripartite Arrangement

	Financial Stability		
	Solvency	Liquidity	
		Funding Liquidity	Market Liquidity
Regulator (FSA)	✘		
Central Bank (BoE)		✘ (Discount window & LoLR)	✘ (Regular OMOs & MMLR)
Treasury	✘	✘ (Solvency of LoLR only)	✘ (Solvency of MMLR only)

Figure 2

The Treasury Committee's Proposal

	Financial Stability		
	Solvency	Liquidity	
		Funding Liquidity	Market Liquidity
Regulator (FSA)	✘		
Central Bank (BoE)	✘	✘ (Discount window & LoLR)	
	Deputy Governor of BoE and Head of Financial Stability		✘ (Regular OMOs & MMLR)
Treasury	✘	✘ (Solvency of LoLR only)	✘ (Solvency of MMLR only)

Figure 3

The Treasury's Proposal

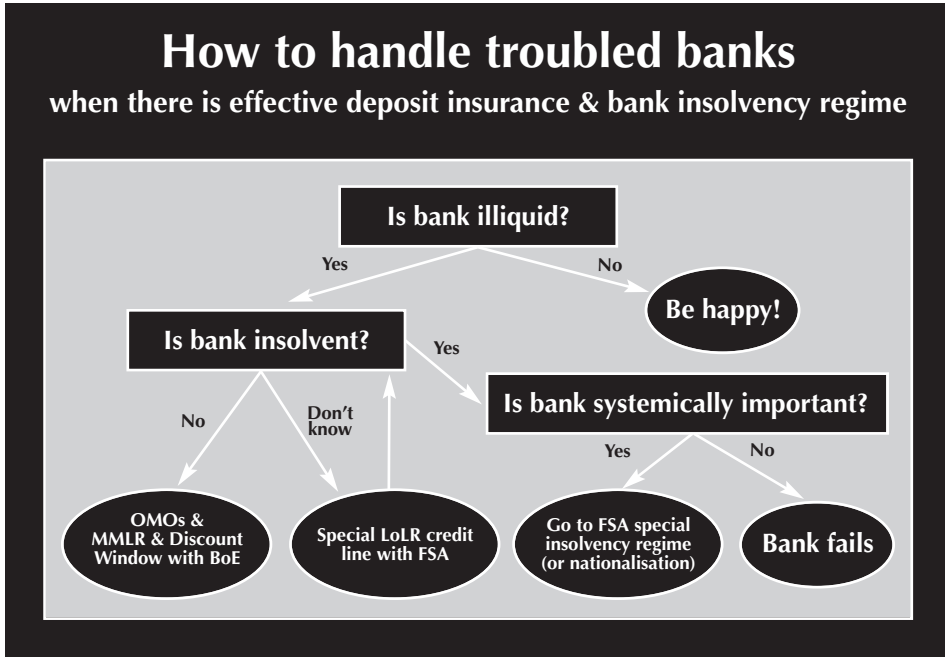
	Financial Stability		
	Solvency	Liquidity	
		Funding Liquidity	Market Liquidity
Regulator (FSA)	✘	✘	
Central Bank (BoE)	✘	✘ (Discount window & LoLR)	✘ (Regular OMOs & MMLR)
Treasury	✘	✘ (Solvency of LoLR only)	✘ (Solvency of MMLR only)

Figure 4

The Tripartite Arrangement with a minimalist central bank

	Financial Stability		
	Solvency	Liquidity	
		Funding Liquidity	Market Liquidity
Regulator (FSA)	✘	✘ (LoLR)	
Central Bank (BoE)		✘ (Discount window only)	✘ (Regular OMOs & MMLR)
Treasury	✘	✘ (Solvency of LoLR only)	✘ (Solvency of MMLR only)

Figure 5



Ratings agency reform

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22 January 2008

Recent financial market troubles highlight a number of problems with the credit-ratings agencies. This article argues that only a few of the proposed policy solutions are likely to be both feasible and helpful.

The recent financial-market turbulence has brought credit-ratings agencies under fire. Finance ministers from the United Kingdom, France, Germany and Italy met last Thursday to discuss the financial turmoil and strengthening government regulation. There are indeed problems with the agencies, but many suggested policy remedies are equally problematic.

The agencies

Ratings agencies exist to deal with principal-agent problems and asymmetric information.¹ Company managers or sovereign finance ministers may seek to mislead investors. Requiring a minimum rating can limit the risk for asset owners and guarantors if an asset manager would otherwise invest principals' funds in high-risk assets. The agencies help investors overcome their lack of information about the variables that will determine whether a borrower will service debt. The agencies are gatekeepers, like auditors, investment analysts and journalists. But they are more profitable and have higher price-to-earnings ratios and more acute conflicts of interest.

There are so few ratings agencies² partly because of network effects, in so far as investors want consistency of ratings across issuers. But the natural monopoly characteristics are enhanced by the dependence of regulators on ratings, as (for example) formalized in the 'national recognized statistical rating organizations' (NRSRO) status created in the United States in the mid-1970s and in the Basel II regulations. A wide range of investors are required not to hold securities whose ratings are below investment-grade, and ratings affect the risk weightings of banks'

1 See R. Levich, G. Majnoni and C. M. Reinhart, eds (2002), *Ratings, Rating Agencies and the Global Financial System*, New York: Kluwer Academic Press.

2 The big three (S&P, Moody's and Fitch) take an estimated 95% of the market (Variances 32, ENSAE, December 2007).

assets in calculating capital adequacy ratios. The regulators determine whether an agency holds this regulatory licence, and this is a barrier to entry.³

The problems

There are several problems associated with the agencies, in terms of both the incentives they face and the performance of their roles. There is an apparent conflict of interest most acute with structured finance instruments, in so far as an agency may first advise on how the construction of a security would affect its rating and then issue a rating that confirms its advice, earning two separate fees in the process. This problem has grown hugely: 44% of Moody's revenues in 2006 came from its structured finance activities. Moreover, there is an apparent incentive (in)compatibility issue: the issuer pays for the rating and may shop around for the best deal (a favourable rating), while the agency may be inclined to reward an issuer that chooses it over the other agencies.

The agencies' performance is also problematic. They are blamed for reacting ex-post rather than anticipating; the ratings are lagging indicators. Ratings changes may be procyclical (an effect that might be accentuated by Basel II) and may create herd effects, magnifying instability. Both were strong criticisms during and after the Asian crisis, and Fitch, for example, accepted their validity in their mea culpa of February 1998.⁴

The agencies' data and their models are suspect. In rating residential mortgage-backed securities involving subprime mortgages, for example, the agencies used data from an extended period of rapidly rising house prices, during which doubtful mortgages had been validated as householders' equity grew. And rating complex structured finance instruments on the basis of model simulations may not be helpful when markets become disorderly, tail risk materializes, actual correlation risk far exceeds the models' parameters and the models blow up. Moreover, it may be inappropriate to use the same metric to evaluate sovereign risk, corporate-bond risk and complex instruments like CDOs. In each context, the rating reflects the agency's estimate of the probability of default over a given period – nothing more. It ignores, for example, the possibility that the market for the security may become illiquid; and it ignores the likely recovery rate if the security defaults.

Most importantly, a significant literature finds that the agencies simply do not add value: the quality of information they provide is often no better than that which a good analyst could extract from publicly available data. Detailed studies cast doubt on their ability to assess credit quality better than measures based on market spreads or to predict major changes.⁵

3 See F. Partnoy (2006), 'How and Why Credit Rating Agencies are not like Other Gatekeepers', Legal Studies Research Paper No. 07–46, University of San Diego School of Law. Some argue that the agencies are now just a whipping-boy or scapegoat. Sophisticated investors, it is said, should have recognized the dangers in the new, complex financial instruments, and others should not have invested in them. But the regulatory licence exists precisely because the regulators do not accept these arguments.

4 *Financial Times*, 13 February 1998.

5 There are several such papers in Levich et al. (2002).

Market characteristics

There is a number of identifiable sources of these problems. They suggest some directions for policy and some constraints on policy. There is a clear public-good aspect of the information that the agencies provide. Hence there is a free-rider problem, and payment by the user of the information will be either suboptimal or unenforceable. (Nevertheless, until the early 1970s, it was in fact the users of the ratings who paid, by subscription.) This aspect gives an efficiency argument for market concentration, which eliminates duplication of effort in generating information that will be available to all.

The agencies do not take full responsibility for their ratings. In fact, they have successfully (so far) maintained legal immunity from malfeasance claims on the ground that they are only financial journalists publishing their opinions, which are protected free speech. That Moody's is much more profitable than the *Financial Times* or the *Wall Street Journal* may suggest, however, that they are in fact earning some rents. In addition to a return on their reputational capital, which is what they claim to sell,⁶ they are also selling the regulatory licence conferred by their roles in the regulatory regime. Doesn't this status make their 'speech' rather different from that of a securities analyst or an FT columnist? One might also infer rents attributable to the regulatory licence from the profitability of CDOs. After all, these just repackage existing securities; the apparent source of 'value' is the rating gain.

Potential policy solutions

Academics and policy-makers have considered numerous proposals, from nationalizing the agencies to abolishing official recognition of their ratings. The underlying incentive difficulties create a classic mechanism design problem, but there is so far no formal analysis that could inform policy. And there are no easy answers.

Officials often support a voluntary code of conduct, since the market participants will lobby heavily against anything stronger. But the International Organization of Securities Commissions already promulgated a code of conduct at the end of 2004. According to the French Autorité des Marchés Financiers (AMF), by early 2007 it had been implemented in a 'globally satisfactory' manner. But the AMF still expressed concerns at that time about the roles and performance of the agencies in the structured finance markets – and rightly so, because the code has no teeth. Voluntary codes cannot solve the incentive problems.

Some have argued that public goods should have public funding. But there are obvious dangers in effectively nationalizing the agencies. A feasible alternative may be reviving subscription: a levy on users (investors).⁷ Some observers suggest that standardization of ratings across agencies would be helpful. If that just means using the same notation for a given probability of default, it is trivial. Anyone can

6 It is argued that the recent fall in Moody's share price indeed reflects a downgrading of its reputation. More likely, however, it is due to the collapse of the structured finance business.

7 A newly certified NRSRO, Egan-Jones, operates with a subscription model, giving subscribers immediate access to new ratings information and releasing it publicly with a lag (John Dizard, *Financial Times*, 14 January 2008).

convert a Moody's rating into an S&P rating. If it means standardizing valuation models, it would eliminate competition, but not entirely, because the agencies might feed different data into the same model, but one would then like to know why the data differ.

Regulators could require the agencies to provide more information than just a specific rating: an assessment of the liquidity characteristics of the instrument, of the likely volatility of its market price etc. But the agencies do not seem well equipped for this: 'As a result of unprecedented price volatility, Moody's has adapted its methodology [for rating structured investment vehicles].'⁸ That does not say much for Moody's data analysis: in fact, by all measures, volatilities during August 2007 were not significantly higher than in May 2006 (for example) and were much lower than in autumn 1998. But the analytical problems here are formidable. The extensive academic literature on liquidity risk and market risk gives little guidance on how to estimate them quantitatively. And the underlying conditions change more rapidly than the fundamentals governing default risk, so the corresponding ratings would have to adjust frequently. That might confuse investors and add to market volatility.

The agencies should at least, however, provide a range for the risk of each instrument rather than a point estimate; or they should develop a distinct rating scale for structured finance products.⁹

Some propose introducing explicit legal liability for negligence or malfeasance. But this is likely to lead to the demise of the agencies, and they would get sued out of business.

Separating rating from consultancy and advisory functions seems obviously desirable, and Chinese walls will not do. But forcing the agencies to give up the highly remunerative advisory work will be extremely difficult politically. Resistance might weaken if the structured finance business disappears, as some suggest it will, but then the problem disappears too.

There should be more competition among agencies: new entrants. Of course we all believe in competition, or at least market contestability, but as noted, there are aspects of the industry that suggest natural monopoly. And with more agencies, we might see a race to the bottom as issuers seek the agency that will rate them most favourably. Some observers report that investment banks shopped around for higher ratings in securitizing subprime mortgages.

Could not the regulators substitute market valuations (spreads, say) for ratings? The agencies maintain that these are too volatile, but one could use a smoothed moving average. More important is that many securities effectively have no market: they are bought by buy-and-hold investors. And many others are fairly illiquid: the average number of trades per day for a UK corporate bond is two (three for a euro-denominated bond).¹⁰ Credit default swap prices might deal with that problem, but that will not help in the primary market, which is where the impact of the ratings has been so pronounced in the recent period.

8 Moody's 'Update', 5 September 2007.

9 R. Ferguson, P. Hartmann, F. Panetta and R. Portes (2007), *International Financial Stability*, CEPR and ICMB.

10 B. Biais et al., 2006, *European Corporate Bond Markets: Transparency, Liquidity, Efficiency*, CEPR.

Some suggest eliminating the regulatory licence by abolishing recognition, that is, removing the NRSRO designation and merely requiring agencies to register with the regulators. This would confer no official status on the ratings. It would also vastly increase the burden on the regulators, but with increased budgets, they could hire people from the agencies (Moody's has just announced layoffs). This proposal would also suppress the role of the ratings in Basel II. After all the effort put into Basel II, however, the regulators as well as the agencies have strong vested interests in it.

Conclusion

Perhaps recent experience will give enough support to the critics to override the political and lobbying obstacles to some of the more promising proposals. Without policy changes, the structural problems will surely persist.

How to avoid further credit and liquidity confidence crises

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19 October 2007

Uneven supervision gave an edge to risk-takers in some countries on the up side, but the pain is being felt all around Europe on the down side. To avoid future crises, all mortgage originators should be regulated, banks should have to retain their equity or first loss risk, the ratings agencies should be more transparent and independent, and Europe's coordination failure among national supervisors should be fixed.

The US banking authorities and the EU finance ministries, central banks and supervisory authorities are trying to design a roadmap to strengthen financial stability and crisis prevention after experiencing the effects of the present confidence crisis. In principle, the best way to try to avoid another credit confidence crisis is just to learn from what went wrong in the present one, to make the necessary changes and to develop new policies. By now, it seems clear that some market, regulatory and supervisory failures have taken place in the last few years of low interest rates and leveraging euphoria that need to be addressed.

Subprime mortgage lending is not new. It has existed for a long time in consumer finance both in the United States and Europe, although subprime mortgage finance is much more important in the United States. The key to successful subprime lending is to develop a very good credit scoring based on data concerning the historical behaviour of borrowers, both collectively and individually. These are then applied to interest rates for every type of borrower and marked high enough to more than compensate for their expected levels of non-performing loan losses.

The main problems with subprime mortgage lending in the United States have been the following. First, half of their originators are agents and brokers, which are not part of a banking group and thus fall outside federal banking regulation. Moreover, these agents and brokers get paid by commissions based on the number of mortgage loans that they are able to sell to households, so that their incentives have nothing to do with the default risk involved in the loan, but, on the contrary, the higher the risk of the borrower, the larger the commission.

Second, the other half of the originators are banks, which sometime ago tended to hold the mortgage for some years in their books, so as to have an incentive to be careful about its non-performing risks. But today, both brokers and banks which originate these loans sell them very quickly either directly or through another financial intermediary, which then securitizes and sells them to investors, thus losing their traditional incentive to monitor their risk. The way these mort-

gages are securitized is based on pooling thousands of mortgages and other loans in an off-balance sheet vehicle which issues marketable CDOs or CLOs (Collateralised Loan Obligations) representing shares in the pool.

Third, unlike in most countries in Europe, in the US legal system subprime mortgage loans carry a much higher risk for the lender because there is no legally binding property register; the loan does not give the lender the right to repossess the property, regardless of who owns the house, and the repossessing system varies from one state to another.

Fourth, there are always risk-hungry investors who are ready to invest in higher risk-higher-yield financial products like the CDOs, but the problem this time is that these products are so complex that either they were not able to understand fully what they were buying or did not want to invest enough on disentangling their supporting models before purchasing them. The fact is that even the more sophisticated risk-hungry investors (as the hedge funds) did not really know well enough how to value these assets and eventually they had to trust the rating given by the independent ratings agency involved in the securitization.

Fifth, although securitization is a great innovation which makes it possible for banks to extend affordable mortgages to many more households (mainly the low-income ones) and to small and medium-sized firms, such complex financially structured products are extremely difficult to value and also to rate. In the old times, a triple or double 'A' rating was usually given to security issued by a highly stable and solvent country or company which was quoted daily in an organized market. Today, one of these CDOs can achieve a triple or double A rating, when they are composed of blocks of different ratings, from 'senior' (double or triple A) and 'mezzanine' (triple B) to 'equity' (triple B-, triple C or less).

It looks like alchemy but sophisticated mathematical models were supporting these ratings based on the fact that, given the large number of loans pooled, their probability of default was much less correlated than in the case of one single or several loans, since, in principle, it is more unlikely that all default at the same time. Moreover, these structured products do not trade and are not quoted in organized markets. They are mostly customized to suit different investors, so that they are only sold over the counter. As such, their price transparency and market liquidity tend to be extremely low.

Sixth, the rating agencies have been classifying these products and their different tranches with their own models without any apparent problem. However, since last June, they have started to downgrade them quickly, given the accelerating rate of non-performing subprime loans and the progressive falling of average house prices in the United States. This general and fast downgrading has had a detonating negative effect on the investor's confidence in the real value of these products. This, in turn, has triggered the present situation of general uncertainty and lack of liquidity for these and other related products collateralized with mortgages and even of other medium- and long-term loans.

Credit-ratings agencies: charges and countercharges

The ratings agencies have come under attack for their role in all this. They have a conflict of interest (they are paid by the issuer of these products and not by the

buyer) and their ratings do not seem to have got it right, at least according today's market. Even if nowadays there are still few transactions, the ABX.HE indexes (January = 100) show that, on average, some triple-A rated asset-backed mortgage-structured securities are being sold with a loss of 6 percentage points, that double A show a loss of 20 percentage points, that single A sell at a loss of 50 percentage points, that triple B show a loss of 65 percentage points and that triple B trade at a loss of 70 percentage points.

The ratings agencies have counterattacked by showing that, at the demand of the sellers, their ratings were made only on the default risks of these securities, which have been downgraded accordingly to the new information appearing in the marketplace, but not on their market and/or liquidity risks, which are even more complex (and expensive) ratings. They argue that it is the present lack of liquidity that makes those securities lose value, and not so much their probability of default which was rightly captured by their ratings.

The curious geographical transmission of the crisis

Another problem is how is it possible that a relatively minor and expected issue (with present losses of about \$200 billion) arising in the subprime mortgage market in the United States has been able to contaminate so many US and European banks and markets. The answer is that it is because of the large proliferation of conduits and SIVs created by them off-balance sheet, in order to avoiding regulatory capital consumption, to invest in long-term assets, financing them by issuing commercial paper backed by these assets.

Their basic aim was to borrow short and invest long (as banks always do) in a way that was more profitable since it allowed them to lend without consuming their regulatory capital, that is, without having the investment on balance sheet and therefore counting in their loans-to-capital requirements. The volume of conduits created is large (around \$600 billion in the US banks and around \$500 billion in European banks). These banking conduits did invest in CDOs and CLOs issued by US and other European banks which had subprime loans among other better-rated corporate and mortgage securities.

Nevertheless, the main problem with banks in the United States and Europe is not only that their conduits invested in subprime and other low-quality credit-structured products, (when their assets were meant to be of higher grades) but that, when their asset-backed commercial-paper market financing dried up, the borrow-short-lend-long wheel stopped. The conduits have to pay off their short-borrowing positions, but have problems selling off their long-lending positions.

This left the banks with two options: take them into their balance sheets, provoking a credit crunch, or get enough temporary liquidity from a central bank to refinance them – to keep the wheel turning, as it were. The credit crunch in the case of the euro-area banks would not be very large, but it would be substantial. The average ratio of regulatory capital to total loans is 8% in euro-area banks. The total volume of conduits needed to be taken into their balance sheets would absorb only 0.7 percentage points of that ratio, that is, on average, they would have to reduce total lending by 8.75% to absorb them. But for some banks with lower capital levels the impact would be fairly large.

Avoiding future crises

Regulators, supervisors and central banks should try to solve these perverse incentives and problems with conflict of interest that have led to the crisis. Here are some of the measures they should take, besides continue to inject liquidity until some confidence is regained.

First, the US banking authorities should regulate all US agents and brokers which are originating these mortgage loans in order to avoid their perverse incentives when dealing with their potential borrowers and to try to standardize their property registration and collateral execution systems across states.

Second, all banking supervisors should oblige all banks, which originate and sell loans and mortgages, to retain their equity or first loss risk block, as it happens today in some European countries, in order to make them share part of the risk when they sell them to intermediaries or final investors and, therefore, to be much more careful when monitoring their credit risks and when choosing the mortgages to be pooled for sale.

Third, the banks and financial institutions, which structure and securitize these loans, should be extremely transparent about their package processes, their supporting models and their associated risks. Moreover, they should try to increase the standardization of these products up to making them suitable to be traded in an organized and transparent market.

Fourth, the ratings agencies should try to regain credibility by showing that they are truly independent and that their rating process is fully transparent and reliable, mainly for these complex structured products.

Fifth, in the case of conduit proliferation there has been a major supervisory coordination failure, at least in Europe, given that some central banks (as in Spain) have not allowed their supervised banks to create these conduits while other supervisors have done so at large. It is clear that these conduits have been created mainly by sophisticated wholesale banks and not so much by more traditional retail banks, but it is even clearer that in those countries where the banking supervision is not done by the central bank, but by another government agency or institution, the problem created by conduits has been much larger in size and risk involved. The main examples are Germany, the United Kingdom and the United States (with the Netherlands the main exception to this rule). The case in point is probably the United Kingdom, where the tripartite division of responsibility between the Treasury, the Bank of England and the FSA has complicated to the extreme an, in principle rather easy, sale of Northern Rock to another bank, which eventually has ended in an expensive bank run and a bailout.

This issue is extremely important for two reasons. First, some supervisors in the euro area, without coordinating with their other euro-area colleagues or even with their central banks, have allowed their supervised banks to develop a competitive advantage over other competing euro-area banks, in the same single market, by allowing them to create large and highly profitable (but risky) conduits. Second, now, when such decisions have proved to be wrong and the conduits are on the verge of producing a credit crunch unless they are refinanced by the ECB system, all the rest of the banks without conduits in the euro area are also suffering the consequences of that decision. Something needs to be done about these supervising structures to avoid this lack of coordination in the future.

The inappropriateness of financial regulation

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1 May 2008

Financial regulation never works the way it should. Here one of the world's most experienced analysts of the global financial system presents some remarkably clear thinking on why we should not just do more of the same. An alternative model for policy action is proposed.

I have had the misfortune or fortune of being up close and personal with seven major financial crises in my banking career, from the US savings and loans crisis of the late 1980s to today's credit crunch. In each crisis I have observed a cycle in the response to the crisis. In the middle of a crisis, when circumstances look dire and chunks of the financial system are falling off, proposals get radical. I recall in December 1992, with the United Kingdom and Italy having already been ejected from the European Exchange Rate Mechanism and Spain and Portugal looking vulnerable, some European policy-makers flirted with capital controls. But a few months after each crisis is over, these radical plans are tidied away and we are left with three things. And they are always the same three things: better disclosure, prudential controls and risk management.

These measures are the regulatory version of apple pie and ice cream. Who would say no? The thing is that we have been investing heavily in these areas for the past 20 years and do not have much to show for it in terms of financial stability. Over the past 11 years we have had the Asian financial crisis, LTCM, the 'dotcom bezzle' and now the credit crunch. While more disclosure, controls and risk management are generally good things and necessary fraud-reducing measures, there are few crises I have known from the inside that would not have happened if only there had been more disclosure. People knew that subprime was a poor risk – it is called subprime, after all.

Regulatory shortcomings

The problem is more fundamental, and, unless we address these fundamental issues, we will be condemned to repeat the cycle of boom and bust. Lying close to the heart of the problem in all these recent crises, from today's credit crunch to the savings and loans debacle and beyond, is the inappropriateness of financial regulation.

My own view of banking regulation would be considered quaint next to today's practice. I consider the primary objective of intervening in the banking market to be mitigating the substantial systemic consequences of market failure in banking. It is therefore puzzling to me that market prices are now placed at the heart of modern financial regulation, whether in the form of mark-to-market accounting or the market price of risk in risk models. It is not clear to me how we can rely on market prices to protect us from a failure of market prices. I have discussed this before many times, so I will focus on the secondary objective, which is to avoid the discouragement of good banking.

A good bank is one that lends to a borrower that other banks would not lend to because of its superior knowledge of the borrower or one that would not lend to a borrower to which everyone lends because of its superior knowledge of the borrower. Modern regulators believe this is too quaint, and, to be fair, many banks were not any good at it. But instead of removing banking licences from these banks, regulators decided to do away with relationship banking altogether and promoted a switch away from bank finance to market finance where loans are securitized, given public ratings, sold to many investors including other banks and assessed using approved risk tools that are sensitive to publicly available prices. Now, bankers lend to borrowers that everyone else is lending to, the outcome of a process where the public price of risk is compared with its historic average and a control is applied based on public ratings.

Market finance

This switch to market finance improved search liquidity in quiet times. Credit risk that was previously bundled with market and liquidity risk was separated, priced and traded. This has improved the transparency and tradability, but it comes at the expense of systemic liquidity in noisy times.

Almost every economic model will tell you that if all the players have the same tastes (reducing capital adequacy requirements) and have the same information (public ratings, approved risk models using market prices), the system will sooner or later send the herd off the cliff edge (Persaud, 2000). And no degree of greater sophistication in the modelling of the price of risk will get round this fact. In this world, where falling prices generate more sell orders from price-sensitive risk models, markets will not be self-stabilizing but destabilizing and the only way to short-circuit the systemic collapse is for a non-market actor, like some agent of the taxpayer, to come in and buy up assets to put a floor under their prices. (I wrote about this liquidity tradeoff with some colleagues: Laganá et al., 2006.)

Now this is a legitimate model: the marketization of finance and the resulting improvement in search liquidity in quiet times, coupled with direct state intervention in the crisis. It is the model we have today. But I venture that it is a highly dangerous model. It is expropriation of gains by bankers and socialization of costs by taxpayers. Paying for a decade of bank bonuses can be very expensive for the taxpayer and the opportunities for moral hazard are enormous.

An alternative approach

The alternative model rests on three pillars. The first recognizes that the biggest source of market and systemic failure is the economic cycle and so regulation cannot be blind and deaf to the cycle, it must put it close to the centre. Charles Goodhart and I have proposed contra-cyclical charges, capital charges that rise as the market price of risk falls, as measured by financial market prices, and a good starting point for implementation of such charges is the Spanish system of dynamic provisioning (Goodhart and Persaud, 2008).

The second pillar focuses regulation on systemically important distinctions, such as maturity mismatches and leverage, and not on outdated distinctions between banks and non-banks. Institutions without leverage or mismatch should be lightly regulated – if at all – and in particular would not be required to adhere to short-term rules such as mark-to-market accounting or market-price risk sensitivity that contribute to market dislocation. Bankers will argue against this, saying that it creates an unlevel playing field, but financial markets are based on diversity, not homogeneity. Incentivizing long-term investors to behave long-term will mean that there will be more buyers when banks are forced to sell.

The third pillar is requiring banks to pay an insurance premium to taxpayers against the risk that the taxpayers will be required to bail them out. If such a market could be created, it would not only incentivize good banking and push the focus of regulation away from process to outcomes, but it would also provide an incentive for banks to be less systemic. Today, banks have an incentive to be more systemic, as a bailout is then guaranteed. The right response to Citibank's routine failure to anticipate its credit risks is not for it to keep on getting bigger so that it can remain too big to fail, but for it to wither away under rising insurance premiums paid to taxpayers.

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There is more to central banking than inflation targeting

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14 November 2007

Inflation targeting proponents view central banks' responsibilities as minimalist. But the subprime crisis shows that central banks cannot avoid taking responsibilities that include the prevention of bubbles and the supervision of all institutions that are in the business of creating credit and liquidity.

The credit crisis that hit the world economy in August teaches us many lessons about the workings of integrated financial markets. It also teaches us a lesson about the responsibilities of central banks.¹

Until the eruption of the credit crisis, the consensus view was that central banks should target inflation, and that is pretty much all they should do.² In this view, central banks should not target (or try to influence) asset prices, either – as was stressed by Greenspan – because bubbles cannot be recognized ex-ante, or – if they can – the macroeconomic consequences of bubbles and crashes are limited as long as central banks keep inflation on track. Inflation targeting, we were told, is the new best-practice central banking that makes it unnecessary for central bankers to try to influence asset prices.³

The credit crisis has unveiled the fallacy of this hands-off view. If the banking system were insulated from the asset markets, the view that monetary policies should not be influenced by what happens in asset markets would make sense. In that case, asset bubbles and crashes would only affect the non-banking sector, and a central bank is not in the business of insuring private portfolios.

The problem that we have seen in the recent crisis is that the banking sectors were not insulated at all from movements in the asset markets. Banks were heavily implicated both in the development of the bubble in the housing markets and

1 This is an expanded version of a *Financial Times* column published on 2 November 2007.

2 An influential paper making the case that central banks should not try to influence asset prices is B. Bernanke and M. Gertler (2001), *Should Central Banks Respond to Movements in Asset Prices?*, *American Economic Review* (May), pp. 253–7. Although this has become the consensus view, there are prominent dissenting views also. An example is S. Cecchetti, H. Genberg, J. Lipsky and S. Wadhvani (2000), *Asset Prices and Central Bank Policy*, Geneva Report on the World Economy 2, CEPR and ICMB [[check details]]. Among the major central banks it is remarkable that the ECB has defended the view that central banks should lean against the wind when asset bubbles arise (see *Monthly Bulletin*, April 2005).

3 Proponents of this view have argued that flexible inflation targeting that takes a sufficiently long-term perspective is sufficient to deal with asset bubbles, i.e. flexible inflation targeting can be tailored in such a way that the longer-run consequences of asset prices are taken into account when setting interest rates (see Charles Bean, 2003, *Asset Prices and Monetary Policy*, Federal Reserve Bank of Australia, November).

in its subsequent crash. And since the banking system was heavily implicated, the central banks were also heavily involved by the very fact that they provide insurance to the banks in the form of the lender of last resort. Some may wish that central banks would abstain from supplying this insurance. Economic theory, however, tells us that central banks should intervene to provide liquidity if the liquidity crisis risks disrupting the payments system, thereby hurting many innocent bystanders. In addition, reality ensures that central banks are forced to provide liquidity when a crisis erupts, as they are the only institutions capable of doing so.

Thus, when asset prices experience a bubble, it should be a matter of concern for the central bank because the bubble will be followed by a crash, and that is when the balance sheet of the central bank will inevitably be affected. It is not reasonable for a central bank to argue that asset bubbles and crashes should not be a source of concern and therefore that it should not try to intervene when a bubble arises, when it knows that the bubble will have large implications for its future balance sheet and its profits and losses.

There is a second reason why the hands-off approach has been shown to be wanting. During the last few years, a significant part of liquidity and credit creation has occurred outside the banking system. Hedge funds and special conduits have been borrowing short and lending long, and as a result, have created credit and liquidity on a massive scale, thereby circumventing the supervisory and regulatory framework. As long as this liquidity creation was not affecting banks, it was not a source of concern for the central bank. However, banks were heavily implicated. Thus, the central bank was implicitly extending its liquidity insurance to institutions outside the regulatory framework. It is unreasonable for a central bank to insure activities of agents over which it has no oversight, very much as it would be unreasonable for an insurance company selling fire insurance not to check whether the insured persons take sufficient precautions against the outbreak of fire.

Policy implications

So what can be done about this? There are two possible solutions. The first one is for the central bank to recognize that asset bubbles are a source of concern and that it should act upon their emergence. The argument that a bubble can never be recognized *ex-ante* is a very weak one. One had to be blind not to see the bubble in the US housing market or the internet bubble. And this is the case for most asset bubbles in history. When asset prices increase at a rate of 20% or more per year, and when credit aggregates increase by similar percentages in a sustained way during several years, one can be pretty sure that a bubble is on the move, and that a crash is imminent.

It has been argued that even if central banks can detect bubbles, they are pretty much powerless to stop them. This argument is not very convincing. It is not inherently more difficult to stop asset bubbles than it is to stop inflation. And central banks have been very successful at stopping inflation.

This is not an argument to target asset prices. Few economists today would make that argument. What is possible, however, is a leaning against the wind approach, whereby the emergence of a bubble leads the central bank to tighten

policy more than it would do otherwise. This was in fact proposed by the ECB in its Monthly Bulletin of April 2005.

Second, central banks should be involved in the supervision and regulation of all institutions that create credit and liquidity. The UK approach of dissociating monetary policy from banking supervision has not worked. Central banks are the only insurers against liquidity risks. Therefore they are the ones who should control those who create credit and liquidity. Failure to do so will continue to induce agents to create excessive amounts of liquidity, endangering the financial system.

The fashionable inflation-targeting view is a minimalist view of the responsibilities of a central bank. The central bank cannot avoid taking more responsibilities beyond inflation targeting. These responsibilities include the prevention of bubbles and the supervision of all institutions that are in the business of creating credit and liquidity.

Can monetary policy really be used to stabilize asset prices?

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12 March 2008

Many observers have argued that central banks should use monetary policy to prevent the rise of asset price bubbles. Recent research shows that monetary policy is too costly and too slow to serve such a role.

The subprime crisis and falling property prices in the United States and elsewhere have put central banks back in the firing line.¹ Many commentators are noting that asset price booms, in particular those affecting residential property prices, have triggered many previous episodes of financial instability (Ahearne et al., 2005; Goodhart and Hofmann, 2007). Thus, the argument goes, the most recent developments provide additional evidence that central banks should react proactively to asset prices movements, and do so over and beyond what these imply for aggregate demand and inflation (Borio and Lowe, 2002; Cecchetti et al., 2000).

Of course, conducting monetary policy in this way is not easy. In addition to the fact that the central bank must form a view of whether a particular asset price increase is dangerous or not, it requires monetary policy to have predictable effects on asset prices. Furthermore, the size of interest-rate movements required to prevent a bubble from developing must not be so large as to cause output and inflation to fall substantially below the central bank's objectives for them (Bean, 2004; Bernanke, 2002; Kohn, 2006). Finally, the effects of monetary policy on different asset prices must occur at about the same speed, since otherwise policy-makers will have to choose between which precise asset prices they wish to stabilize.

While these issues are all eminently empirical, somewhat surprisingly they do not appear to have a prominent role in policy discussions of this issue. In a forthcoming CEPR discussion paper, we seek to address them by studying the responses of real residential property prices and real equity prices, the price level and the level of real GDP to monetary policy shocks, using a panel of 17 OECD countries – Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States – over the period 1986–2006. In our paper we disregard differences across countries and focus instead on the average responses of the economies to an unexpected tightening of monetary policy.²

1 The views expressed are our own and are not necessarily shared by the Swiss National Bank.

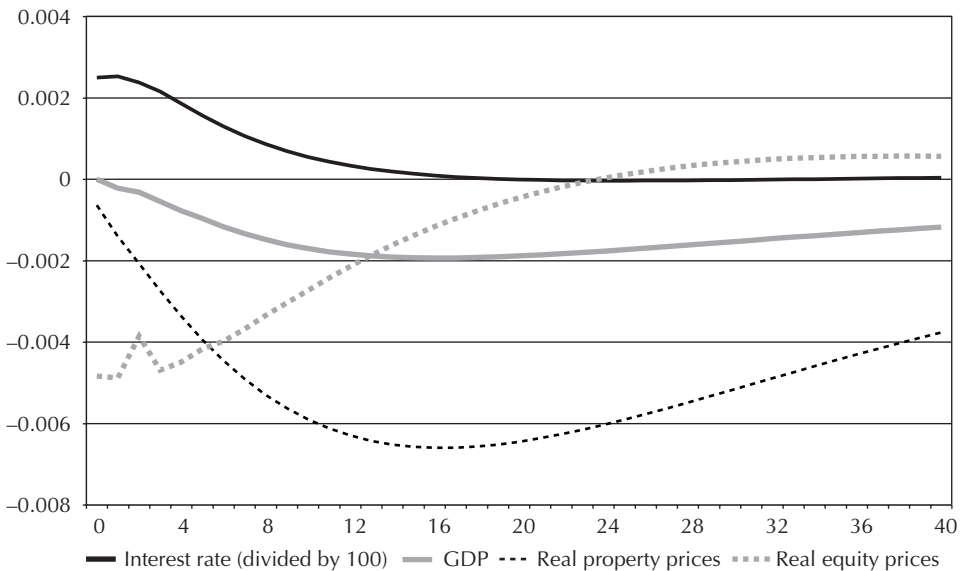
2 Technically, we discuss the results from estimates of a panel VAR. The working paper contains information about the choice of data and the estimation approach.

Responses to monetary policy

Of course, it is important to be clear about what we mean by such a monetary policy shock. There is much agreement that in setting interest rates, central banks react to current inflation and the current state of the business cycle. By contrast, and barring exceptional circumstances, monetary policy responds to asset prices only over time if they are seen to diverge from the levels with which the central bank feels comfortable. We therefore view contemporaneous co-movements between interest rates and the price level, and interest rates and real GDP, as reflecting reactions by the central bank to these variables, and contemporaneous co-movements in interest rates and asset prices, as reflecting market reactions to monetary policy news.

Figure 1 analyses the effects of a 100 basis points' increase in interest rates. Note that after about eight quarters interest rates have declined but remain about 35 basis points above their initial level. After 12 quarters, they have fallen further to a level some 10 basis points above the starting point. Overall, the increase in interest rates will dissipate in about three years.

Figure 1 Responses to a monetary policy shock



Turning to real property prices, we note that these start to fall in response to the tightening of monetary policy. After 16 quarters, they reach a bottom of about 2.6% below the initial level and then start to return gradually to their starting level. Overall, property prices react quite slowly to monetary policy actions.

Next we consider the responses of real GDP.³ The figure shows that it also reaches a trough after 16 quarters, when it is some 0.8% below its initial level.⁴ Thus, the responses of real GDP are almost exactly one-third of those of real property prices.⁵ This is an important finding. To see why, suppose that monetary policy-

makers come to believe that a real property price bubble of 15% has developed, and decide to tighten monetary policy in order to bring down asset prices. In doing so, the average central bank in the 17 countries we study should also expect to depress the level of real GDP by 5%, a truly massive amount.

Finally, we consider the responses of real equity prices. Interestingly, these fall by about 2% – or almost as much as real property prices – but do so immediately. After 16 quarters, when real property prices reach their trough, real equity prices are less than 0.5% below their initial level. The finding that property and equity prices react at very different speeds is important since it implies that central banks cannot stabilize both. This is yet another reason why we believe that the idea of using interest-rate policy to forestall asset prices bubbles is not practicable.

Conclusions

Whatever merits such a stabilization policy has in theory, our research suggests that in practice monetary policy is too blunt an instrument to be used to target asset prices. The effects on real property prices are too small, given the responses of real GDP, and they are too slow, given the responses of real equity prices. In particular, there is a risk that setting monetary policy in response to asset price movements will lead to large output losses that exceed by a wide margin those that would arise from a possible bubble burst.

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4 The responses of output are somewhat more persistent than those typically found in the literature but comparable to those obtained when estimating individual country VARs on the same data set. The higher persistence is likely due to the fact that panel estimates are less susceptible to idiosyncratic noise in the data.

5 We emphasize that the finding that real GDP responds one-third as much as real property prices does not depend on the exact assumptions we made about monetary policy when constructing the graph.

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A missed opportunity for the Fed

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18 August 2007

The Fed's move on 17 August 2007 was a missed opportunity. It should have effectively created a market by expanding the set of eligible collateral, charging an appropriate 'haircut' or penalty interest rate, and expanding the set of eligible borrowers at the discount window to include any financial entity that was willing to accept appropriate prudential supervision and regulation.

In response to the credit and liquidity crunch that has recently spooked global financial markets the Federal Reserve reduced, on Friday 17 August 2007, its primary discount rate from 6.25% to 5.75%. The discount rate is the rate that the Fed charges eligible financial institutions for borrowing from the Fed against what the Fed deems to be eligible collateral. It is normally 100 bps above the target federal funds rate, which is the Fed's primary monetary policy instrument and which is currently 5.25%. We believe that this cut in the discount rate was an inappropriate response to the financial turmoil.

The market failure that prompted this response was not that financial institutions are unable to pay 6.25% at the discount window and survive (given that they have eligible collateral). The problem is that banks and other financial institutions are holding a lot of assets which are suddenly illiquid and cannot be sold at any price. That is, there is no longer a market that matches willing buyers and sellers at a price reflecting economic fundamentals. Lowering the discount rate does not solve this problem; it just provides a 50 bps subsidy to any institution able and willing to borrow at the discount window.

What the Fed should have done

Instead of lowering the price at which financial institutions can borrow, provided they have suitable collateral, the Fed should have effectively created a market by expanding the set of eligible collateral and charging an appropriate 'haircut' or penalty. Specifically, it should have included financial instruments for which there is no readily available market price to act as a benchmark for the valuation of the instrument for purposes of collateral.

There is no apparent legal impediment to doing this.¹ Allowable collateral includes a wide range of government and private securities, including mortgages and mortgage-backed securities. Indeed, the Federal Reserve Act of 1913 allows the Federal Reserve to lend, in a crisis, to just about any institution, organization or individual, and against just about any collateral the Fed deems fit. Specifically, if the board of governors of the Federal Reserve system determines that there are ‘unusual and exigent circumstances’ and at least five out of seven governors vote to authorize lending under Section 13(3) of the Federal Reserve Act, the Federal Reserve can discount for individuals, partnerships and corporations (IPCs) ‘notes, drafts and bills of exchange ... indorsed or otherwise secured to the satisfaction of the Federal Reserve bank’. The combination of the restriction of ‘unusual and exigent circumstances’ and the further restriction that the Federal Reserve can discount only to IPCs ‘unable to secure adequate credit accommodations from other banking institutions’, fits the description of a credit crunch/liquidity crisis like a glove.

How to avoid planting the seeds of the next crisis

It is of course essential that moral hazard be minimized. This bailout of the illiquid by the Fed should be sufficiently costly that those paying the price will still remember it during the next credit boom, and act more prudently. Second, where no market price is available, the Fed should base its valuation on conservative assumptions about the creditworthiness of the counterparty and the collateral offered by the counterparty. The counterparty should not expect to get 90 cents on the dollar for securities that it could not find a willing private taker for at any price. Third, the highest ‘liquidity haircut’ in the Fed’s arsenal should be applied to this conservative valuation.

The Fed should also enlarge the set of eligible counterparties at the discount windows. This should not just be banks and other depository institutions, but any financial entity that is willing to accept appropriate prudential supervision and regulation. The nature of the supervision and regulation required will differ depending on the nature of the institution. Hedge funds or private-equity funds need different prudential regulation from depository institutions, investment banks and pension funds. At the very minimum, however, transparency grounded in comprehensive reporting obligations should be required of any institution eligible to use the discount window.

The wisdom of leaving the monetary policy rate untouched

At least the Fed did not cut the monetary policy rate (the federal funds target which remains at 5.25%). A cut in the federal funds target is warranted only if the

1 See our 13 August 2007 Vox column for details. Also see David H. Small and James A. Clouse (2004), ‘The Scope of Monetary Policy Actions Authorized under the Federal Reserve Act’, Board of Governors of the Federal Reserve System Research Paper Series - FEDS Papers 20004-40 (July), at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=622342.

2 One definition of moral hazard is at <http://www.thefreedictionary.com/moral+hazard>.

Fed were to believe that the recent financial market kerfuffles are likely to have a material negative effect on real activity in the United States or on the rate of inflation. There is no evidence as yet to support such a view. If and when it happens, the Fed should act promptly. But addressing the problem of illiquid financial markets using the blunt instrument of monetary policy, a cut in the monetary policy rate, would be clear confirmation that the Fed is concerned about financial markets over and above what these markets imply for the real economy. Such regulatory capture would effectively redirect the 'Greenspan put' from the equity markets in general to the profits and viability of a small number of financial institutions. It would not be a proper use of public money.

The central bank as the market-maker of last resort: from lender of last resort to market-maker of last resort

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13 August 2007

Last week's actions by the ECB, the Fed and the Bank of Japan were not particularly helpful. It was a classic example of trying to manage a credit crisis or liquidity squeeze using the tools suited to monetary policy-making in orderly markets. Monetary policy is easy; preventing or overcoming a financial crisis is hard; managing the exit from a credit squeeze without laying the foundations for the next credit and liquidity explosion is harder still. Central bankers should earn their keep by acting as market-makers of last resort.

When banks were the main providers of credit, the financial stability mandate of central banks could be summarized as their lender-of-last-resort function: in times of crisis, lend freely, at a penalty rate and against collateral that would be good in normal times but may be impaired in times of crisis. The counterparties of the central bank in these lender-of-last-resort operations were commercial banks (shorthand for deposit-taking institutions whose main liabilities were deposits withdrawable on demand and subject to a sequential service (first come, first served) constraint. Their main assets were illiquid loans. This financial structure invited bank runs when confidence in the banks was undermined, for whatever reason. In the days when banks were the dominant intermediaries, a credit crunch or liquidity squeeze manifested itself in the inability of banks to borrow; a lender of last resort that targeted banks was the right vehicle for dealing with liquidity crises and credit squeezes in that set-up.

These days are gone in the globally integrated modern financial systems characterizing all advanced industrial countries and an increasing number of emerging markets.

Today, external finance to non-financial corporations and to financial institutions is increasingly provided not through banks but through the issuance of tradable financial instruments directly to the financial markets or indirectly to the financial markets through banks and other financial institutions whose assets are, thanks to securitization and similar techniques, liquid in normal times. Now that financial markets (and non-bank financial institutions) have increasingly taken over the function of providing credit and all forms of finance to deficit spending units, a credit crunch or liquidity crunch manifests itself in a different way from the world described by Walter Bagehot's lender of last resort (see Walter Bagehot (1873), *Lombard Street: A Description of the Money Market*).

Today, a credit crunch or liquidity squeeze manifests itself as disorderly financial markets. Because of pervasive Knightian uncertainty (risk that is perceived as immeasurable and not possible to calculate or quantify), fear and in the limit, panic, little or no trade occurs in certain classes of financial instruments (say sub-prime mortgage-backed CDOs) because there is no market-maker with both the knowledge to price these financial instruments and the deep pockets to credibly post buying and selling prices. The precise way in which such micro-market failure (the failure to match willing buyers and sellers at prices acceptable to both) occurs differs for exchange-traded instruments and over-the-counter financial instruments (instruments for which bilateral bargaining over a deal is the normal exchange mechanism), but the solution is the same: the central bank has to become the market-maker of last resort. The market-maker of last resort function can be fulfilled in two ways: first, outright purchases and sales of a wide range of private-sector securities; second, acceptance of a wide range of private-sector securities as collateral in repos, and in collateralized loans and advances at the discount window.

Outright purchases and sales of illiquid private-sector securities

The first and most direct way to discharge the market-maker of last resort function is through open-market operations in a much wider range of financial instruments, especially private-sector securities, than central banks normally are willing to trade in. Open-market operations here means outright sales and purchases of financial instruments (i.e. not collateralized loans or advances).

As regards making markets in private-sector securities during times of crisis, central banks appear to have moved in the opposite direction to what the logic of financial system development would suggest. Since 1933, 'the Federal Reserve has gradually narrowed the scope of securities that it purchases (or with which it conducts repurchase agreements in the open market' (David H. Small and James A. Clouse (2004), 'The Scope of Monetary Policy Actions Authorized under the Federal Reserve Act', Board of Governors of the Federal Reserve System Research Paper Series - FEDS Papers 20004-40, July; this is also the source from which the information on the Fed's eligible counterparties and eligible securities is taken; see also the Federal Reserve Act itself). There have been no purchases of state or local government debt since 1933 and of bankers' acceptances since 1977. Repos using bankers' acceptances were discontinued in 1984. Outright purchases of US agency debt ceased in 1981. Effectively, outright purchases and sales in the open market have in recent decades been restricted to gold and foreign exchange, and securities issued or guaranteed by the US federal government and certain US government agencies.

For outright sales and purchases in the open market to be effective instruments with which to address a credit crunch, the Federal Reserve should be able to buy and sell outright a range of private-sector credit instruments. The private instruments explicitly authorized for outright purchase and sale by the Federal Reserve Act are bankers' acceptances and bills of exchange that meet certain real bills criteria, derived from a now defunct, at best irrelevant, and in most of its versions internally inconsistent theory of credit and money. However, while the Federal

Reserve Act contains no language authorizing the Federal Reserve to purchase corporate bonds, bank loans, mortgages, credit-card receivables or equities, it also does not forbid it. After all, the Federal Reserve Act also does not authorize the sale or purchase of options, yet the Fed of New York sold options on overnight repo transactions with exercise dates around the 1999 year-end, to forestall any Y2K problems.

The history of the ECB, which did not start operations until 1 January 1999, is short. Its legislative mandate and operating practices are less encumbered by history than those of the Fed.

The ECB accepts, in principle, a very wide range of both marketable and non-marketable assets both for outright purchase and as collateral in repos or collateralized loans (see European Central Bank (2006), *The Implementation of Monetary Policy in the Euro Area*, September 2006; General Documentation on Eurosystem Monetary Policy Instruments and Procedures). The list of eligible instruments for outright open-market operations (and the criteria for establishing that list) is effectively the same as that for instruments eligible as collateral in repos and discount-window operations.

Among the marketable instruments it accepts are, for instance, many asset-backed securities (ABS) and mortgage-backed securities (MBS). As counterparties, it accepts central banks, public-sector entities, private-sector entities, and international and supranational institutions. The issuer must be established in the European Economic Area (EEA) or in one of the non-EEA G10 countries (including the United States, Canada, Japan and Switzerland).

There are some strange restrictions. For instance, in the case of ABS, the 'cash flow-generating assets backing the asset-backed securities must 'not consist, in whole or in part, actually or potentially, of credit-linked notes or similar claims resulting from the transfer of credit risk by means of credit derivatives.' (ECB, 2006). Why credit risk, or derivatives based on credit risk, would be treated differently from market risk, and derivatives based on market risk, is a deep mystery. Functionally, risk is risk; as long as it can be priced, it is fungible.

There is also the rather wimpish restriction that the debt instrument must be denominated in euro, which means that it cannot be helpful to BNP Paribas in establishing a market for the (presumably dollar-denominated) CDOs backed by pools of US subprime mortgages. Why would the ECB wish to avoid collateral denominated in currencies other than the euro? Exchange rate risk can be hedged. Whether it ought to be hedged, or to what extent, should depend not on the currency composition of the balance sheet of the ECB, but on the contribution of the currency risk of the entire financial system of the eurozone to the optimal risk-return combination of that financial system, of which currency risk and return are but one component. Clearly, the ECB should accept collateral denominated in currencies other than the euro if it takes its systemic stability role seriously.

The minimum credit rating it requires for eligible securities is A (that is, nothing below A-). This could be quite restrictive in a liquidity crunch/credit crisis. But if the three leading ratings agencies could convince themselves (and the markets) that the higher tranches of CDOs secured against a pool of subprime home mortgages could be rated AAA, there might be no lower bound to the creditworthiness of instruments rated A. Even so it would seem desirable to permit central banks, under exceptional and extreme circumstances, to accept as collateral for redis-

counting, loans, advances or repos, financial instruments with any credit rating or unrated (junk) securities, provided they are appropriately priced and have appropriate haircuts applied to them.

Fortunately, the list of eligible counterparties and eligible instruments for the ECB and the European system of central banks (ESCB) is not fixed by law. It is decided by the ECB's governing council and can be changed at the drop of the collective hat. We would argue that the hat has dropped and that, in extremis, the ECB should consider the broadest possible set of counterparties and the most unrestricted possible set of eligible financial instruments.

The practical implementation of the market-maker of last resort function can be done in many different ways. In the simplest case, the central bank could announce that for the next N trading hours or days, it would buy at least X amount of a given type of credit-impaired, illiquid security with a risk-free price P , at a price $P_1 < P$ and/or sell at most Y amount of that security at a price $P_2 > P_1$. The discount relative to the risk-free price and bid-ask spread $P_2 - P_1$ would reflect the central bank's assessment of the risk fundamentals and of the penalty required to avoid moral hazard. Note that both the selling price and the buying price set by the central bank would be set without the benefit of a contemporaneous market price for the security.

Acceptance of illiquid private securities as collateral for repos and at the discount window

The second way for the central bank to act as a market-maker of last resort is to accept illiquid private securities as collateral for repos and at the discount window. This, indirectly, requires the central bank to establish a valuation of these securities. By engaging in both repos and reverse repos for the same illiquid private financial instruments, the central bank could establish the same implicit buying and selling prices P_1 and P_2 as it can through outright purchases and sales of these instruments. In the case of repos, which would, in the simplest case, be at the policy rate of interest set by the central bank, the penalty component of the contract would be determined both by the relationship of P_1 and P_2 to the risk-free price, and by the 'haircuts' (additional liquidity discounts) applied to these valuations by the central bank.

For the ECB, this should be but a small step, because it already accepts non-marketable assets as collateral in repos and collateralized loans, specifically credit claims and non-marketable retail mortgage-backed debt instruments. Extending the scope of assets eligible as collateral to assets that are marketable under normal conditions but have become non-marketable owing to the disorderly markets characteristic of extreme credit crunches and liquidity crises should be simple.

It is clear the Federal Reserve Act permits the Fed, under unusual and exigent circumstances, to lend or repo against any collateral, including dead dogs and illiquid CDOs backed by subprime mortgages.

The lender-of-last-resort function and the discount window

While the market-maker of last resort function is a defining function of the modern central bank, the traditional lender-of-last-resort function can also be relevant

in the resolution of a crisis. Repos are collateralized open market operations; we define the lender-of-last-resort function as bilateral transactions between the central bank and a private counterparty at the discount window. With the diminished importance in the financial system of banks and similar deposit-taking institutions, it is important that the central bank be able to exercise this function also vis-a-vis a wider range of counterparties, and against a richer array of collateral than that traditionally offered by commercial banks.

Eligible counterparties and eligible securities in a crisis

Fortunately, the Federal Reserve Act (1913) allows the Federal Reserve to lend, in a crisis, to just about any institution, organization or individual, and against any collateral the Fed deems fit. Specifically, if the board of governors of the Federal Reserve System determines that there are ‘unusual and exigent circumstances’ and at least five (out of seven) governors vote to authorize lending under Section 13(3) of the Federal Reserve Act, the Federal Reserve can discount for individuals, partnerships and corporations (IPCs) ‘notes, drafts and bills of exchange indorsed or otherwise secured to the satisfaction of the Federal Reserve bank ...’. The combination of the restriction of ‘unusual and exigent circumstances’ and the further restriction that the Federal Reserve can discount only to IPCs ‘unable to secure adequate credit accommodations from other banking institutions’, fits the description of a credit crunch/liquidity crisis like a glove.

It is, of course, key that such (re)discounting be at a penalty rate and against collateral deemed adequate by the central bank. The Fed’s discount window has three different facilities and associated rates. The benchmark primary credit rate currently stands at 6.25%, 1.00% above the federal funds target rate. The secondary and seasonal credit rates exceed the primary rate. The ECB’s marginal lending facility currently charges a 5.00% rate, also 1.00% above the ECB policy rate, the main refinancing operations minimum bid rate, which stands at 4.00%. Financial instruments eligible for collateral in discount operations (or repos) are valued at their market prices and a ‘haircut’ is applied to them.

The combination of the 100 bps extra cost of the discount window over the policy rate and the haircut would be a sufficient incentive not to abuse the discount window if there were a meaningful market price at which the securities offered as collateral could be valued. Of course, in a crisis, such market prices cannot be found. This is where the job of the central bank becomes difficult, politically contentious and of vital importance. In its discount-window operations during crisis times, that is, when acting as lender of last resort to some institution or IPC, the central bank will also often have to act as market-maker of last resort because it will have to value financial instruments for which no meaningful market price is available.

How have central banks managed liquidity crises and credit crunches?

When acting as market-maker of last resort, as when acting as lender of last resort, the central bank inevitably plays a central role in assessing and pricing credit risk;

through this, the central bank will have a profound influence on the allocation of credit in the economy (see Small and Clouse, 2004). While the central bank should not be in this business during ordinary times, when markets are orderly and price formation and price discovery proceed without the direct intervention of the central bank, it cannot avoid being in this business when markets are disorderly and fail to match buyers and sellers of securities.

Central banks have not been doing the job of market-maker of last resort effectively, indeed they have barely been doing it at all. Following the stockmarket collapse of 1987, the Russian default of 1998 and the tech bubble crash of 2001, all that the key monetary authorities have done is lower the short risk-free interest rate and provide vast amounts of liquidity against high-grade collateral only, and nothing against illiquid collateral. The result has been that the resolution of each of these financial crises created massive amounts of high-grade excess liquidity that was not withdrawn when market order was restored and provided the fuel that would produce the next credit boom and bust. By focusing instead on illiquid collateral, it should have been possible to achieve the same effect with a much smaller injection of liquidity.

The incipient financial crunch of mid-2007 has not, thus far, been met with interest-rate cuts by any of the key central banks: the Fed, the ECB, the Bank of Japan and the Bank of England. That is just as well, because there is, as yet, nothing excessive about the level of the (default-) risk-free short nominal interest-rate levels in the United States, the eurozone, Japan or the United Kingdom. A credit crunch is the time for central banks to start worrying about the next credit boom. Lowering the risk-free rate is not the solution to any credit crunch/liquidity crisis problem. It only encourages further borrowing and leverage by those already excessively prone to such acts.

The problems we are seeing today are the result of four or five years of excessively low risk-free interest rates at all maturities in the United States, Euroland and Japan, and ludicrously low credit risk spreads across the board (not just in the subprime mortgage markets).

These two asset market anomalies resulted in many highly leveraged open positions that were predicated on the persistence of low risk-free rates and low spreads. Regulatory and supervisory failures compounded the magnitude of the debt and credit-risk bubble that had been created. The supervisory and regulatory failures in the US mortgage markets (and not just at the subprime end of the spectrum) are so manifest that those on whose watch they occurred ought to be called to account.

When the great normalization finally came (starting with rising risk-free real and nominal long-term rates and rising risk-free nominal short-term rates, and picking up steam with the normalization of credit-risk spreads, starting from the US subprime residential mortgage markets and derivatives based on them), a growing number of these highly leveraged open positions went belly up. At the junk end of the market, realized default rates began to be recorded that exceeded those that had been priced into the primary and derivative securities issued in past years in these markets.

Some funds heavily invested in these mispriced subprime mortgage-based securities went bankrupt. That is as it should be. Others, as in the case of three BNP Paribas funds exposed to the US subprime mortgage market, suspended the abili-

ty of investors to withdraw their investments from the funds, because the funds' managers and their BNP Paribas owners argued they had no way to value the funds' assets, which had become illiquid in the turbulent asset market conditions of the past week.

It is possible, indeed quite likely, that more funds that made highly leveraged bets whose success depended on the continuation of low risk-free rates and low credit spreads will go bankrupt – and not only funds exposed to the US subprime mortgage market; the problem of financial hubris was much more widespread than that. Financial institutions heavily exposed to such funds and insufficiently diversified in other ways may also go bankrupt. Among the ranks of the potential victims could be investment banks and deposit-taking institutions. That again is as it should be, and does not call for intervention. It certainly does not call for lower central-bank policy rates. Charles Darwin must have his pound of flesh also in the financial markets, lest the central banks create a credit-risk put that would put Greenspan's equity puts in the shade.

What is not as it should -be is that fear and panic cause financial markets to dry up, making it impossible for firms that need to raise cash to do so either by selling assets that would have realizable value in orderly markets, or by borrowing using these assets as collateral. Even if the assets are impaired, there should still be a market to sell them at a discount appropriate to the central bank's assessment of its risk of default and of the orderly market price of risk. Collateralized borrowing against such impaired assets should likewise be possible at the same default-risk-appropriate discount (as assessed by the central bank). If the markets for selling impaired assets or for borrowing using impaired assets as collateral seize up and cease to function, the central bank must step in to perform its market-maker of last resort function.

During the past week, the ECB, the Fed and the Bank of Japan have injected well over \$200 billion worth of liquidity into the markets to stop the relevant private benchmarks from rising above their policy-rate targets (in the United States, the federal funds rate was threatening to rise sharply above 5.25%; in Euroland, the overnight interbank rate was threatening to rise above 4.00% and in Japan the overnight rate likewise was threatening somewhat less convincingly to rise above 0.50%). We consider this action not to have been particularly helpful: even where the open-market purchases were collateralized against mortgage bonds, the central banks chose high-grade mortgage bonds for which there still was a private market and price rather than illiquid mortgage bonds for which the market had stalled and no market price was available. This was a classic example of central banks trying to manage a credit crisis or liquidity squeeze using the same tools and routines they use to make monetary policy in orderly markets.

A credit crunch and liquidity squeeze is instead the time for central banks to get their hands dirty and take socially necessary risks which are not part and parcel of the art of central banking during normal times when markets are orderly. Making monetary policy under conditions of orderly markets is really not that hard. Any group of people with IQs in three digits (individually) and familiar with (almost) any intermediate macroeconomics textbook could do the job. Dealing with a liquidity crisis and credit crunch is hard. Inevitably, it exposes the central bank to significant financial and reputational risk. The central banks will be asked to take credit risk (of unknown) magnitude on to their balance sheets and they will have

to make explicit judgements about the creditworthiness of various counterparties. But without taking these risks the central banks will be financially and reputationally safe, but poor servants of the public interest.

So: monetary policy is easy; preventing or overcoming a financial crisis is hard; managing the exit from a credit squeeze without laying firm foundations for the next credit and liquidity explosion is harder still. Our central bankers should earn their keep by acting as market-makers of last resort. Covering the central bank's posterior is less important than preventing avoidable financial instability.

Avoiding disorderly deleveraging

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8 May 2008

The global financial system may be caught in a downward spiral as market and funding illiquidity reinforce each other. The author of CEPR Policy Insight 22 presents a radical proposal that would break the feedback loop by not valuing illiquid assets at market prices under crisis conditions.

Prolonged financial distress, which has now lasted for almost a year, is debilitating the financial system and risking a fully-fledged crisis. Central bank interventions have thus far prevented worst-case outcomes, but they have alleviated symptoms rather than the underlying causes. Financial intermediaries are still in the process of shrinking their balance sheets, thus activating a channel of transmission of financial distress to the real economy.

The recent turmoil is a product of deep flaws in banks' new business model and recent financial innovations. Many proposed reforms may reduce the risk of these events repeating, but most cannot undo the effects of the present crisis and ensure a smooth transition. The immediate problem is a spiral of forced deleveraging and illiquidity, as the link between market and funding illiquidity strains balance sheets. Proposed remedies are either insufficient or unsatisfactory, which means that more radical interventions may be required. In CEPR Policy Insight 22, I propose a bold alternative.

Structural problems and medium-term solutions

The current turmoil can be attributed to a business model in which banks would pool and securitize credits that they originated to distribute them and transfer their risks to a myriad of investors. Though the new model promised benefits in credit allocation, new risk-return investment opportunities and financial stability, it is now known to have suffered from a catalogue of problems. These range from excessive credit due to permissive monetary policies to flaws in ratings agencies' risk models, from perverse incentives guiding the agencies and bank managers to regulatory failures. While mending those fault lines is an important task that will require international cooperation, it will at best take care of the future, not the present.

Forced deleveraging and the liquidity spiral

The immediate problem is the disorderly reaction to the unprecedented growth of the financial system's leverage and its exposure to risk. As demand for asset-backed securities has disappeared, prices have collapsed without finding a floor. Banks are reporting losses that strain their capital positions. The loss of market liquidity affecting all classes of debt securities directly or indirectly owned by intermediaries has translated into a sharp decline of funding liquidity, the more so because short-term debt issued on wholesale markets has become a major component of banks' funding. The forced adjustment of banks' balance sheets could, in the worst case, result in a credit crunch with painful consequences for the real economy.

Can we break the link between the illiquidity of banks' securitized assets, which prevents their orderly liquidation, and the shortage of funding liquidity, which is the driving force of the negative feedback originating from the process of deleveraging?

For funding liquidity, emergency liquidity support from central banks has helped lower the temperature in the worst moments, but it is not a long-term solution. Setting a collateral value of illiquid securities does not provide a market for them and hence does not set a floor to their market prices; the collateralized securities remain on the intermediaries' books, affecting the quality of their balance sheets. Capital increases are also insufficient to break the spiral, as injections of capital may prove inadequate only a few weeks after their announcement.

For market liquidity, suggested remedies are equally inadequate. Mandated full disclosure of losses might reduce uncertainty, but unless market liquidity is instantly restored, full disclosure of the situation at time t offers no guarantee that it will be the same at time $t + 1$. Similarly, retreating from marking financial products to market or model during this time of crisis would face a number of difficulties.

More radical solutions

The feedback between market and funding liquidity problems demands more radical pre-emptive solutions. As long as 'there is no immediate prospect that markets in mortgage-backed securities will operate normally', 'the situation will improve only if the overhang of illiquid assets on the banks' balance sheets is dealt with' (Bank of England, 2008). In creating its special liquidity scheme, the Bank of England has moved to serve as the market-maker of last resort.

The scheme allows banks and building societies to swap some of their illiquid assets, including debt securities rated no less than triple A, for specially issued Treasury bills for up to three years. Eligible securities will be valued at market prices, if available, or, if not, at a price calculated by the Bank, with 'haircuts' for private debt securities. Changes in market prices or in valuations will require re-margining. The credit risk will remain with the banks, so that there will be a loss for the lender only if the borrower defaults and the value of the collateral falls below that of the bills originally acquired in the operation.

Is the initiative bold enough? The scheme does not set a floor for assets' market prices and uses market prices to value collateral, despite the fact that during a

negative bubble they do not reflect fundamentals. Downward instability may, moreover, occur if 'haircut' discounted collateral values trigger a convergence process for market prices requiring repeated re-margining.

In CEPR Policy Insight 22, I recommend the creation of a publicly sponsored entity that could issue guaranteed bonds to banks in exchange for illiquid assets, drawing on the US Treasury Secretary Nicholas Brady's solution to the Latin American sovereign debt crisis in 1989. This new entity, preferably multilateral, would value assets based on discounted cashflows and default probabilities rather than crisis-condition market prices.

As a firm floor is set to valuation and illiquid assets otherwise running to waste are replaced by eminently liquid Brady-style bonds, funding difficulties and, at the same time, the market liquidity problems besetting the banks' balance sheets would be removed. Shielding the banks' assets from the vagaries of disorderly markets is a necessary condition to dispel the uncertainty that prevents a proper working of credit markets.

Reference

Bank of England (2008), 'Special Liquidity Scheme', Information, Market Notice, 21 April.