

# Lender of last resort operations during the financial crisis: seven practical lessons from the United Kingdom

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## Abstract

Drawing on the recommendations of the many public reviews of the UK's experience with lender of last resort (LOLR) operations during the financial crisis, this paper identifies seven practical lessons of wider interest to the central banking community and others. First, lender of last resort operations cannot tackle moral hazard single-handedly: effective alignment of incentives also requires strong microprudential liquid asset requirements and a credible bank resolution regime. Second, the lender of last resort must have a close understanding of the firms to which it might lend, the markets in which they operate and the collateral they have available. Third, ambiguity over the circumstances and terms of LOLR operations may not be as constructive as previously thought: it does not appear to have been effective in limiting moral hazard pre-crisis in the UK, and led to excessive swings in market expectations about the Bank's willingness to lend. Fourth, as a result, the UK has concluded that the LOLR regime should be richly specified, and embedded in a largely public framework. Fifth, central banks should only lend to solvent institutions – but as a practical matter, illiquidity and insolvency can be hard to distinguish in the midst of a crisis. That requires careful definition of the respective responsibilities of the central bank and the fiscal authority. Sixth, central banks should do all they can to reduce unnecessary stigma associated with their LOLR facilities, whilst recognising that some level of stigma is probably unavoidable. And, seventh, LOLR tools will need to evolve as the post-crisis structure of financial markets becomes clearer. Although some innovation will always be needed in the heat of a crisis, LOLR design can and should be more forward-looking than it was in the pre-crisis era. Key issues include the extent to which central banks should be willing to lend to non-banks, support capital markets and serve as the lenders of last resort in foreign currencies.

Keywords: Lender of last resort, central bank discount window, emergency liquidity facilities, constructive ambiguity, moral hazard

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## Introduction

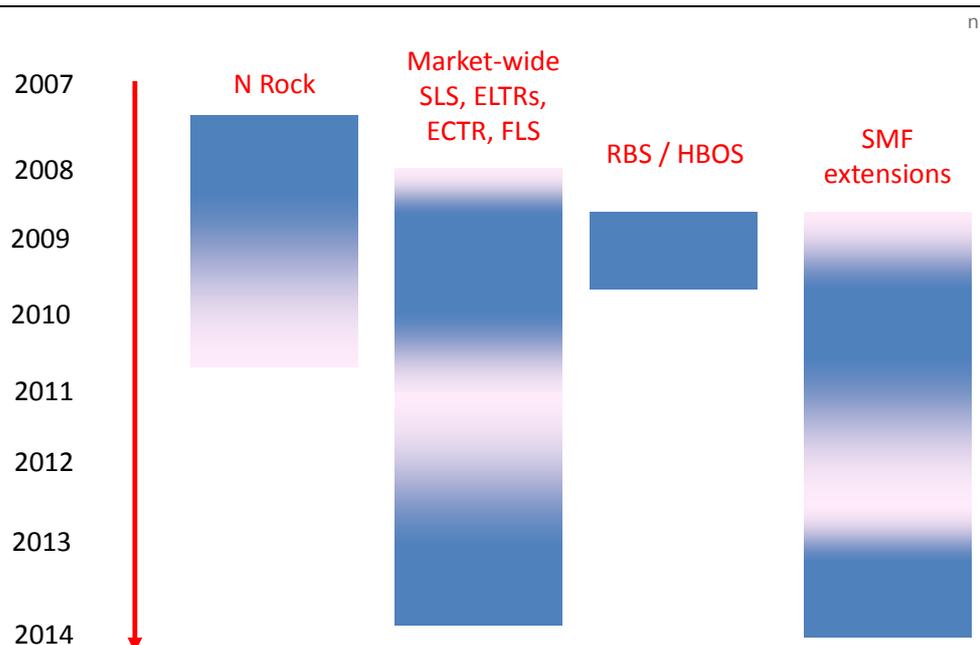
Few countries can have reviewed the exercise of lender of last resort (LOLR) operations during the financial crisis more thoroughly, or more self-critically, than the United Kingdom. The House of Commons' Treasury Committee's January 2008 report on the handling of the Northern Rock crisis, "Run on the Rock", set out a wide-ranging and enormously influential reform programme for every part of the UK official sector that still resonates today. The Bank of England consulted on (and subsequently implemented) a major overhaul of its published liquidity insurance framework in October 2008. Ian Plenderleith published a detailed review of the Bank's 2008–09 provision of Emergency Liquidity Assistance (ELA) in October 2012. Bill Winters undertook a similar review of the Bank's published (ie non-ELA) liquidity facilities, which led to another major package of reforms from the Bank, announced by Governor Mark Carney in October 2013. And work on some of the more far-reaching recommendations in those reports, relating to the appropriate principles and tools for ELA and other forms of liquidity insurance in a future financial system focused less on banks and more on multicurrency non-banks and capital markets, is well under way.<sup>2</sup>

This paper is not intended to add to these impressive reports. Instead, it draws out from their many recommendations seven *practical* lessons of wider interest to the central banking community. Those lessons are described in more detail in later sections of this paper. The rest of this introduction provides a brief overview of the UK crisis, and the principles that governed the provision of liquidity insurance in the run-up to that crisis.

Figure 1 divides the UK's crisis response into four separate but overlapping phases. The first phase is the failure of Northern Rock in the autumn of 2007, triggered by wholesale money market stresses associated with the shakeout in the US subprime mortgage market. Northern Rock received ELA from the Bank of England. But the Bank was accused of being slow to respond; and when news of the ELA was prematurely revealed by the press, a retail run occurred, which only abated after the announcement of a blanket government deposit guarantee.

The second phase began in the autumn of 2007 and the first part of 2008, when the Bank began providing large-scale liquidity to the market as a whole against broad collateral through a number of innovative but ad hoc operations, including extended long-term repos against wide collateral and the Special Liquidity Scheme (SLS). Taken together, those schemes were ultimately much larger in size than any of the bank-specific loans the Bank made. And, though the SLS was managed down through the course of 2011, further liquidity injections were required during 2012 and beyond in response to renewed tensions in Europe and continued weakness in the UK banking sector. That came through two new operations – the Funding for Lending Scheme (FLS), and the Extended Collateral Term Repo (ECTR) facility.

<sup>2</sup> For the documents referred to in this paragraph, see: [www.publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/56/56i.pdf](http://www.publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/56/56i.pdf); [www.bankofengland.co.uk/markets/Documents/money/publications/condococt08.pdf](http://www.bankofengland.co.uk/markets/Documents/money/publications/condococt08.pdf); and [www.bankofengland.co.uk/about/Pages/courtreviews/default.aspx](http://www.bankofengland.co.uk/about/Pages/courtreviews/default.aspx).



The third phase of the UK crisis was triggered by the failure of Lehman Brothers, which led quickly to the need to provide large-scale support to two of the UK's major banks – Halifax Bank of Scotland (HBOS) and Royal Bank of Scotland (RBS). Both were provided with substantial ELA in October 2008, accompanied by a large-scale government recapitalisation package. Usage of the SLS also increased substantially around that time. And from the spring of 2009, the Bank was also conducting large-scale QE purchases and smaller-scale private sector Market Maker of Last Resort (MMLR) operations as part of its monetary policy implementation.

The fourth phase, shown on the far right of Figure 1, illustrates one of the most distinctive aspects of the UK's response – in that the Bank has chosen, for a number of reasons, to formalise much of its liquidity insurance toolkit into a *public* document called the Sterling Monetary Framework (SMF). There have been various phases in this development, as discussed later in this paper.

By contrast, in the pre-crisis period, the Bank of England – in common with most other central banks – said relatively little about the circumstances under which it would provide LOLR assistance, cleaving closely to the principle of constructive ambiguity. The main, if not the only, guide to the Bank's approach was contained in Governor Edward George's 1993 London School of Economics speech,<sup>3</sup> the key principles of which are shown in Figure 2. For the most part, they stick closely to the main tenets of (what is commonly thought to have been set out in) Walter Bagehot's *Lombard Street*. But they also elaborate on them in a number of respects. For example, lending freely, Governor George argued, should be done where the firm involved was judged to be systemically important, and where private sector options had been exhausted. And central banks should ensure there was a clear exit

<sup>3</sup> See [www.bankofengland.co.uk/archive/Documents/historicpubs/qb/1994/qb94q16066.pdf](http://www.bankofengland.co.uk/archive/Documents/historicpubs/qb/1994/qb94q16066.pdf).

strategy to any LOLR operation, and might often initially need to conduct specific LOLR operations in secret.

Pre-crisis LOLR principles

Figure 2

<b>Bagehot 1972</b>	<b>Eddie George 1993</b>
<p>Lend freely and readily in times of panic...</p> <p>...at a very high rate of interest...</p> <p>...to 'solvent merchants'...</p> <p>...against good collateral</p>	<p>Only where there is systemic risk, and no private sector solution</p> <p>Terms as penal as feasible without precipitating collapse</p> <p>Central banks aim to provide liquidity – not (normally) solvency support</p> <p>Support should be structured so that losses fall on shareholders</p> <p>Identify a clear exit strategy</p> <p>Usually keep support secret at the time</p>

Although Governor George’s speech does not explicitly use the phrase “moral hazard”, it is permeated with the underlying principle of ensuring the central bank’s lending operations do not incentivise banks to take excessive risk. Whereas Bagehot has, to modern eyes, surprisingly little to say about this issue (as Jaime Caruana highlights in his preface to the new Spanish translation of Lombard Street),<sup>4</sup> the 1993 principles discuss at some length the importance of not lending to insolvent banks, of ensuring that shareholders bear losses and of avoiding adverse incentive effects. Those concerns also appeared regularly in the Bank’s pre-crisis commentary, including the Bank’s revised money market framework published in 2006, and Governor King’s written statement to Parliament in September 2007.<sup>5</sup>

The extent and nature of moral hazard, and how best to tackle it, were central issues in the UK’s experience of the financial crisis, and underpin many of the seven practical lessons.

## Lesson 1: LOLR cannot operate in isolation

The first lesson is that moral hazard is not a function of the availability and terms of LOLR assistance alone. When deciding how much risk to take, banks – and their investors – look to the overall set of incentives established by all aspects of public policy. The attitude of the central bank is important. But banks will also respond to: the incentives established by the supervisory regime to self-insure against liquidity risk; to the prudential and conduct priorities highlighted by the supervisory authorities; and to the ease with which banks can be credibly wound up if they fail, without requiring official support. Central banks globally have learned that unless all

<sup>4</sup> See Caruana, J (2012): preface to W Bagehot, Lombard street : una descripción del mercado de dinero, translated into Spanish by M Martín, Marcial Pons Ediciones Jurídicas Y Sociales, pp 9-18, September..

<sup>5</sup> See [www.bankofengland.co.uk/markets/Documents/money/publications/redbook0506.pdf](http://www.bankofengland.co.uk/markets/Documents/money/publications/redbook0506.pdf) and [www.bankofengland.co.uk/publications/Documents/other/treasurycommittee/other/paper070912.pdf](http://www.bankofengland.co.uk/publications/Documents/other/treasurycommittee/other/paper070912.pdf).

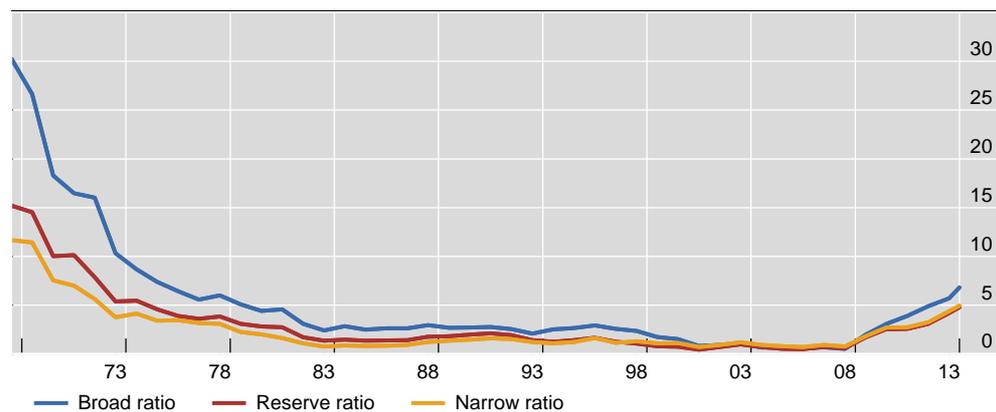
parts of the authorities' regime are pulling together, no matter how tough the lender of last resort aims to be ex ante, it may have little choice but to lend ex post. In such circumstances, LOLR principles risk being seriously time-inconsistent.

The Treasury Committee's report on Northern Rock gave poor marks to many aspects of the UK's regime, not least at the Bank of England. But it also highlighted the lack of a comprehensive framework for ensuring banks took out adequate self-insurance against liquidity shocks. Figure 3 shows just how low UK banks' holdings of liquid assets had got in the years ahead of the crisis.

### UK banks' sterling liquid asset ratio

In per cent of total assets (all currencies)

Figure 3



Source: Bank of England.

The report listed many other necessary regulatory changes – including the need for a special resolution framework for banks so that banks could fail like other companies (Northern Rock was by no means obviously systemically important), an overhaul of the approach to *microprudential* supervision, the need for a stronger focus on the build-up of *macroprudential* risks, and the need for greater clarity over the division of responsibility between the central bank, the fiscal authority and the supervisor.

What is striking about this list is that nearly everything on it eventually came to pass – a much stronger liquidity regime with a strong family resemblance to the new Basel Liquidity Coverage Ratio was introduced in 2010; a bank resolution regime was enacted in the 2009 Banking Act; and the macro- and microprudential regulatory arrangements were reconfigured and given to the Bank of England. Though, of course, none of these changes can eliminate moral hazard, they do significantly rebalance the burden of dealing with it away from LOLR alone – a development that has been both helpful and necessary.

## Lesson 2: "Know your customer"

The second lesson is that the lender of last resort needs a close understanding of the firms to whom it might lend, and the markets in which those firms operate. When crisis hits, the central bank cannot avoid being subject to a powerful public expectation that it will act rapidly and decisively – and that requires detailed and real-time knowledge. Part of that knowledge – on the risks in the banking sector,

the solvency and viability of the banks within it, and so forth – should be available from the microprudential supervisors. Institutional separation between the central bank and supervision, such as prevailed in the UK in the pre-crisis period, does not preclude the free flow of that information – but it can make it more challenging. And other information – in particular the highly granular data on the nature and quality of banks' available collateral needed to assess central bank lending capacity – is not typically collected by supervisors.

Taken together, these points have implications for the types of people and expertise that central banks need to have and retain, the personal relationships with decision-makers at banks and non-banks that they form, the data and analysis needed, and the sorts of institutional structures required. As the Treasury Committee, Plenderleith and Winters reports all make clear, the Bank of England had to innovate rapidly in the early phases of the crisis to plug some of these gaps. It invested heavily in a much-enlarged risk management function for its own balance sheet capable of assessing a wide range of counterparties and collateral at a highly granular level. The amount of collateral prepositioned at the Bank is now nearly £450 billion, three quarters of that in the form of raw loans, independently credit assessed and haircut by Bank staff. And bank supervision was brought back within the central bank. This new structure is not a panacea, and will certainly not be appropriate in every country, with different social, political and legal frameworks. The crisis reminded everyone of the importance of being humble in assessing optimal models for institutional design. But it does have a number of clear merits relative to the pre-crisis model.

### Lesson 3: Ambiguity is not always constructive

The third lesson that the UK authorities drew from the crisis was that ambiguity about how the central bank would act in its LOLR capacity may not, after all, be constructive.

Ambiguity did not appear to do much to help reduce moral hazard ahead of the crisis – as Figure 3 powerfully shows, banks' minimal self-insurance betrayed a strong assumption that others would pick up the tab if liquidity risks crystallised.

Ambiguity led to significant – and ultimately damaging – uncertainty about the circumstances in which the Bank would lend, and the terms and conditions at which it would do so. Banks' expectations in this area swung from excess optimism about the prospects for central bank support in the pre-crisis period to excess pessimism later in the crisis period, even long after the Bank had demonstrated its willingness to provide truly exceptional amounts of liquidity.

And ambiguity bred uncertainty over the relative responsibilities of the UK authorities during crisis periods, something that was highlighted by the Treasury Committee.

## Lesson 4: The LOLR toolkit should be rich and publicly stated

In the light of these concerns, and a broad consensus that the Bank needed a broader and more flexible LOLR toolkit, the UK has now gone further than arguably any other central bank in formalising its liquidity insurance facilities in a public framework: the SMF.

The provisions of the SMF are described in detail elsewhere – most notably in the Bank’s “Red Book”, available on its website.<sup>6</sup> But at a high level, the toolkit contains, in addition to usual monetary policy Open Market Operation liquidity injection and draining tools, three further liquidity insurance facilities:

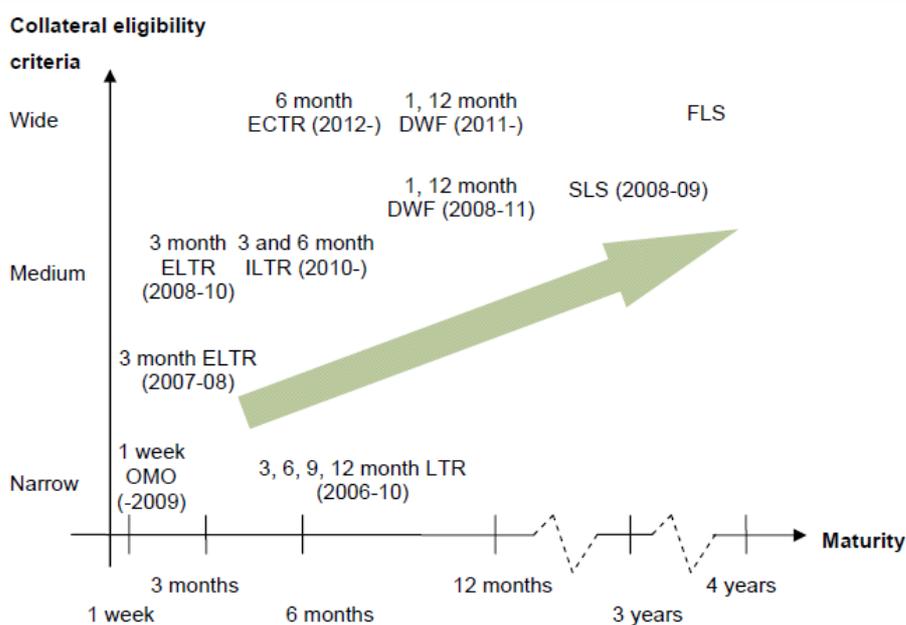
- the Indexed Long-Term Repo facility, a monthly market-wide auction of six-month money against the full range of Bank-eligible collateral, including raw loans, with the amount on offer depending on the degree of stress in financial markets;
- a bilateral on-demand Discount Window Facility for banks facing idiosyncratic shocks, providing rollable 30-day liquidity in the form of collateral swaps, with delayed disclosure arrangements; and
- a discretionary Contingent Term Repo Facility that the Bank can launch at any stage in response to a deterioration in market conditions, at a term and price of its choosing.

Development of this toolkit has taken place alongside a significant extension in the term and collateral eligibility of the Bank’s facilities, powerfully illustrated in a recent speech by Monetary Policy Committee member David Miles (Figure 4). Following the reforms announced by Governor Carney in October 2013, the pricing of the facilities, though still for the most part penal, has also been reduced materially.

The perceived benefits of this approach flow naturally from the drawbacks of ambiguity. Published facilities send a clear signal to the markets, government and the public of what the Bank will and will not do, channelling expectations and allowing banks to plan accordingly. Clearly, for this to be effective the commitments in the framework need to be credible. Some flexibility to innovate will always be required – one reason why the Bank decided not to hardwire every crisis-era facility into the SMF (eg the SLS, FLS and corporate bond MMLR facilities). Whether such innovation is necessary again in the future, or whether the core toolkit will suffice, only time will tell.

What is certainly true is that the facilities have allowed the Bank to take a major step forward in terms of its understanding of the risks in its counterparties’ business models and collateral – and they have helped differentiate more clearly between operations carried out at the Bank’s own risk – defined as anything contained in the Bank’s published facilities – and those requiring confirmation and possibly fiscal support from the government. Which leads to the next lesson.

<sup>6</sup> See [www.bankofengland.co.uk/markets/Pages/sterlingoperations/redbook.aspx](http://www.bankofengland.co.uk/markets/Pages/sterlingoperations/redbook.aspx).



## Lesson 5: Solvency and liquidity can be hard to distinguish

Central banks should only lend to solvent and viable firms. But, as a practical matter, illiquidity and insolvency can be hard to distinguish in the midst of a crisis, requiring the central bank and the fiscal authority to work very closely together. For example, although the initial ELA to Northern Rock came from the Bank of England, the subsequent blanket guarantee and further support were underwritten by the government. The SLS and ELA loans to RBS and HBOS were either wholly or partially indemnified by the government. And the RBS and HBOS loans were made side by side with large-scale state recapitalisation plans. Even absent these facts, the sheer scale and longevity of these loans – up to four years in the case of the FLS – is a long way from the sort of support envisaged by either Bagehot in the 1870s or Governor George in the 1990s.

The legacy of these developments is still being worked through internationally. Who should judge a counterparty's solvency and viability? How should the respective responsibilities of the central bank and the fiscal authority be defined (the UK has formalised this in a Memorandum of Understanding<sup>7</sup>)? And what implications does that have for the appropriate level of central bank capitalisation (a point highlighted in both the Winters and Plenderleith reviews)?

<sup>7</sup> See [www.bankofengland.co.uk/about/Documents/mous/moufincrisis.pdf](http://www.bankofengland.co.uk/about/Documents/mous/moufincrisis.pdf).

## Lesson 6: Stigma matters

The stigma associated with being found to be using bilateral central bank support was a significant concern in the UK during the crisis. A relatively modest usage of the Bank of England's regular overnight standing facilities in August 2007, not disclosed by the Bank but rapidly sniffed out by a zealous media, led to febrile speculation about the underlying cause. A month later, the leak of the Bank's ELA to Northern Rock led to a retail run on the bank which had to be stemmed through a blanket government deposit guarantee.

By contrast, the ELA to HBOS and RBS remained covert for over a year, before being voluntarily disclosed by the Bank. That very different reaction in large part reflected the massive amounts of liquidity the Bank had publicly injected into the system through market-wide operations including the SLS, extended repo facilities and, later, its monetary policy QE operations.

The issue of stigma, and a suggestion that it had led banks to self-insure to an excessive degree, was a core theme of the Winters review, and was the subject of substantial analysis at the Bank as it formed its response to that report. Stigma has many potential sources – some of which can be tackled through facility design, some of which are just a fact of life. What is profoundly clear, however, is that banks prefer, wherever possible, to make use of market-wide rather than bilateral facilities, allowing them to say, "We're all in this together". That is why, across the globe, so much of the heavy lifting in the crisis was done through multilateral operations, in which the total amount provided, and the terms, were often publicly disclosed. In the UK, for example, large amounts of liquidity were injected through the SLS and extended repo operations in the earlier stages of the crisis – and later, the ECTR and FLS proved highly effective in helping to bring funding costs down after the euro crisis flared up in 2011–12.

But it seems very unwise to propose that we do away with bilateral facilities altogether – because doing so runs the risk of being unable to prevent a genuinely idiosyncratic shock becoming a systemic one without having to launch a market-wide facility, a process which could all too easily precipitate the very risk that central banks are seeking to avoid. That is why the Bank of England has worked so hard to try to reduce (though not eliminate) perceptions of stigma in its Discount Window Facility.

If bilateral lending is to remain effective, however, it is imperative that central banks retain the ability to keep such loans covert for a period when it is necessary to do so in order to maintain financial stability. This is a contentious and often misunderstood issue, particularly in the light of the experience during the crisis. The days in which central banks took a perverse pride in avoiding public scrutiny, if they ever existed, are long gone. Across everything they do, central banks now recognise and embrace the need for public accountability in their actions – not just as a quid pro quo for the exercise of their powers, but as an essential part of ensuring their effectiveness. In many cases, ELA *can* be delivered overtly: the effectiveness of any ELA associated with a bank in recovery following bail-in, for example, is likely to be enhanced rather than hindered by making it public. But there may be rare situations in which premature disclosure of support risks precipitating the very instability that lending is seeking to avoid. And in those cases there is a public interest in ensuring the central bank has the means to lend covertly. That power should be tightly circumscribed: central banks should be open about the criteria used to judge when lending will remain covert, and – importantly – when it will be subsequently

disclosed. There should be clear procedures for disclosure and liaison with the fiscal authority and with Parliament. And there should be clear ex post accountability once the lending has been disclosed. The UK has put in place substantially strengthened arrangements under each of these headings in recent years. But the authorities are likely to continue to have to make difficult judgments about the trade-off between the potential ex post benefits to financial stability from keeping some types of bilateral loan covert for a period and the clear ex ante benefits of market transparency, which has been such an important component of the post-crisis regulatory response.

## Lesson 7: LOLR toolkits must continue to evolve

The scale and pace of innovation in LOLR toolkits across many countries during the crisis was truly extraordinary. To some extent, such within-crisis innovation is inevitable. But it does also raise the question of whether more can be done to predict future challenges caused by changes in the structure of financial markets and to hardwire them into current regimes, reducing the need for costly and potentially ineffective innovation at the heart of future crises. This theme of more continuous improvement was a key message from the Winters review in the UK.

Three themes stand out.

The first is central banks' capacity to provide liquidity assistance in foreign currencies. This is an important and politically sensitive issue, particularly for an international finance centre like the UK, and there are few easy answers. International swap lines are a substantial help – and the recent announcement by a number of central banks that crisis-era swap lines were being made permanent was a very welcome development. But the potential failure of a genuinely multicurrency bank or non-bank remains one of the most troubling scenarios facing LOLR practitioners.

The second issue is the potentially increasing need for central banks to be ready to lend to non-banks as the post-crisis regulatory response causes more intermediation to move away from banks. Lending to non-banks was not a major issue for the Bank of England during the most recent crisis, in contrast to the experience in the United States. But it could easily be so in the future, and recommendations that the Bank should prepare for that possibility were prominent in both the Plenderleith and Winters reviews. The Bank is working actively on those issues now – but an important issue, echoing the first lesson in this paper, is the need to ensure that access to central bank balance sheets and regulation go suitably hand in hand.

The third issue is the potential need to contemplate providing direct support to capital markets. This was also not something that the Bank of England did on any great scale during the crisis. But the Bank did successfully operate more modestly sized schemes to reduce liquidity premia in corporate bond and commercial paper markets. And the scope for the Bank's newly expanded monthly long-term repo operations to provide a backstop for collateral markets was a key theme of the Bank's October 2013 reforms to the SMF. The costs and benefits of outright purchase schemes, in particular, require further analysis – but on the face of it, many of Lord George's principles of not supporting non-viable markets and ensuring an

adequate exit strategy remain just as relevant in this area as they do to lending operations.

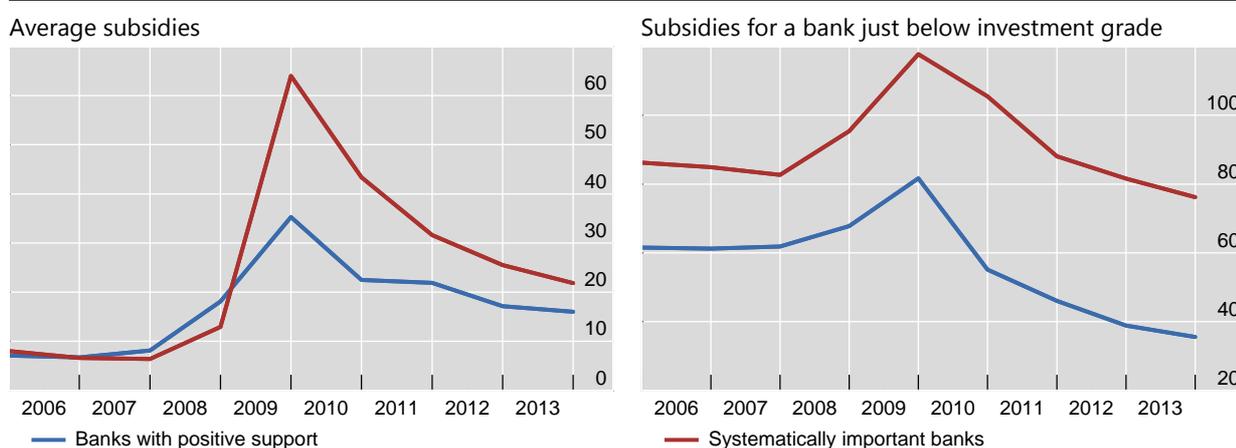
## Conclusion

The most important question facing central banks and regulators is whether the post-crisis response, taken together, leaves the financial system more, or less, safe. At one level, the reforms to regulation and resolution have surely reduced many of the most egregious risks that crystallised in the pre-crisis period. But both the significant broadening and deepening in central banks' LOLR arsenals, and the demonstration effect that they were willing to use them in massive size, may to some extent have worked in the other direction.

### Subsidies derived from credit ratings for UK banks<sup>1</sup>

In basis points

Figure 5



<sup>1</sup> The estimate of threatening uplift is based on all of the sample using rating information only. Systematically important banks are defined as G-SIBs plus the largest banks by asset size.

Source: IMF GFSR report, April 2014.

Where does the balance lie? It is hard to get a clear read on how perceptions of the availability of central bank support compare with those pre-crisis. Figure 5, taken from the IMF's April 2014 *Global Financial Stability Report* (GFSR) and based on quantifications of the ratings uplift given for perceptions of support, suggests that the implied subsidy for UK banks has fallen back sharply since the crisis – but remains elevated compared with pre-crisis. That seems like bad news. But these measures are subject to many uncertainties. Most profoundly, it is unclear how meaningful the readings for the pre-crisis period are – many rating agencies did not include explicit support uplift at that time, and the broad mispricing of risk we now know to have then been prevalent suggests that this line may be significantly below its true level in 2005–06, leaving today's reading looking less worrying.

That potentially good news is given further support by Figure 6, taken from the same GFSR, which re-estimates the relationship under the scenario in which banks' ratings fall just below investment grade – and so give a crude estimate of the level of support a bank already in distress might be expected to receive. That line is more

clearly below its pre-crisis level – and gives perhaps some slight comfort that the collective efforts of the past few years have begun to have some effect. Central banks cannot, however, afford to be complacent: it is essential that the lessons of the recent crisis set out here, together with many others, be hardwired into our operating procedures before those memories fade.