

# Rethinking the lender of last resort: workshop summary

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## Overview

Lender of last resort (LOLR) is perhaps a central bank's most controversial role. On the one hand, emergency liquidity assistance to financial institutions is a core responsibility of central banks. This is because of central banks' unique ability to create liquid assets in the form of central bank reserves, their central position within the payment system and their macroeconomic stabilisation objective. On the other hand, central bank LOLR is seen as very risky; as it potentially creates moral hazard on a massive scale, exposes the central bank to large financial risks, and blurs the boundary with fiscal policy. Moreover, liquidity assistance to individual institutions is typically deeply unpopular, creating reputation risks.

The financial crisis served as a reminder of the critical importance of the LOLR in restoring financial stability. But it also raised fundamental questions about the design of LOLR frameworks and the execution of LOLR policies. How to strike the right balance between limiting risks for central banks and ensuring that the LOLR function can be performed effectively when needed? Should central banks be ambiguous in public about the terms and conditions of liquidity support? Or is there a case for well-articulated LOLR policies, communicated *ex ante* as part of a broader financial stability framework?

This BIS workshop explored these issues, with a view to providing input into the discussions among central banks, and the public debate more generally. While there was broad agreement that liquidity support during the crisis was key in stabilising the global financial system, the discussions highlighted a number of challenges regarding LOLR policies. These included effective ways of dealing with stigma, questions regarding the design of LOLR policies in a market-based financial system, how to contain moral hazard, and issues of governance of LOLR policies, particularly against the backdrop of evolving financial stability frameworks. Finally, the question of optimal mechanisms for liquidity assistance in foreign currency remains an open one.

The workshop was organised in three sessions plus a working lunch.

The first session, chaired by Hiroshi Nakaso (Bank of Japan), reviewed the experience of major central banks with LOLR measures during the financial crisis. Bill Nelson (Federal Reserve) opened the discussion with an assessment of the Fed's actions during the crisis. Francesco Papadia (Bruegel) continued the panel with a discussion of how the European Central Bank (ECB) addressed interbank liquidity shortages and wider market dysfunction during the crisis. Andrew Hauser reviewed the Bank of England's experience during the crisis. José Sidaoui (former Bank of Mexico) provided the perspective of a major emerging market economy (EME), where the foreign exchange market served as a key transmission mechanism of liquidity stress. Hiroshi Nakaso concluded the first session with a review of Bank of

Japan experiences during the 1990s banking crises and new aspects of LOLR action that emerged during the recent financial crisis.

The second session, chaired by Claudio Borio (BIS), discussed how post-crisis changes in the financial system affected the central bank's role as LOLR. Perry Mehrling (Columbia University) led off with a discussion of new demands on LOLR associated with a market-based credit system. Lex Hoogduin (University of Amsterdam) discussed the relationship between the LOLR and self-insurance against liquidity risk. Morten Bech (BIS) presented several practical proposals for incorporating liquidity insurance through the central bank into bank liquidity regulation. Tim Lane (Bank of Canada) concluded the panel with a short summary of recent and ongoing work on collateral markets in the Committee on the Global Financial System (CGFS).

Sir Paul Tucker (Harvard University) delivered the keynote speech at the working lunch. The speech and the ensuing discussion focused on the issues of LOLR governance.

The third session, chaired by Hyun Song Shin (BIS), focused on the international dimensions of LOLR regimes. Jean-Pierre Landau (Sciences Po) opened the panel discussion with a proposal for a multilateral foreign currency liquidity arrangement that would reduce inefficient accumulation of foreign exchange reserves as a means to provide self-insurance. Giovanni Dell'Ariccia (IMF) discussed the relative merits of self-insurance through foreign exchange reserves, bilateral central bank swap arrangements, multilateral arrangements and IMF credit lines. Michael Dooley (University of California) then discussed the constraints that EME central banks faced in obtaining foreign currency insurance. Finally, Steve Cecchetti (Brandeis University) concluded the panel with a discussion of the implications of the US dollar's role as a reserve currency for the design of international liquidity support arrangements.

## Summary of the discussions

### Session 1: Lessons from lender of last resort actions during the crisis

The experiences of major central banks with the LOLR role since 2007 had some common characteristics. Major central banks expanded liquidity provision on an unprecedented scale and scope. As the crisis unfolded, LOLR measures evolved from traditional easing of terms at standing facilities to extraordinary actions targeting individual institutions and provision of system-wide support, including to non-bank intermediaries and markets, and liquidity provision in foreign currency. The stabilisation of the financial system since 2009 had allowed central banks to end, or considerably scale back, liquidity support. Overall, discussants characterised the support measures as effective and appropriate in dealing with the extraordinary liquidity stress during the crisis.

Yet, the comparison of experiences across major central banks also revealed significant differences. In particular, the design of existing operational frameworks was a key determinant of LOLR action taken by major central banks during the crisis.

The relatively narrow operating framework of the Federal Reserve required the innovation of new facilities to deal with evolving liquidity stress. Until the crisis, the Fed conducted monetary policy by buying and selling (outright or repo) only Treasury and agency securities with a relatively small set of large broker-dealers.

While the Fed also provided discount window loans to depository institutions against a very wide range of collateral, discount window lending was rare and depository institutions were reluctant to borrow from the Fed because of the considerable stigma associated with using the discount window. To respond to the crisis, the Fed needed to design novel means to extend credit not only to depository institutions but also, using its emergency authority, to non-bank financial institutions. Notwithstanding considerable time pressure and operational challenges, the Fed was able to design bespoke facilities as needed. However, the high-hurdle associated with providing emergency credit limited the ability to provide liquidity to the shadow banking system at an earlier stage.

The Bank of England's approach had evolved along similar lines to that of the Fed, whereby a narrower operating framework for normal times was augmented with liquidity assistance to markets as the crisis spread. The Bank's crisis emergency liquidity assistance programme also began with covert lending to individual financial institutions. However, like the Fed, the Bank of England had to invent a number of new, ad hoc operations, such as the Special Liquidity Scheme (SLS), in order to be able to provide large-scale liquidity support to entire markets.

At the other end of the spectrum was the Eurosystem's pre-crisis operating framework. The broad range of collateral and counterparties in normal operations limited the need to adjust the framework and facilitated the supply of central bank liquidity, effectively allowing the Eurosystem to become the main intermediary in interbank market at the height of the crisis. This elastic provision of liquidity to banks in response to gaps involved providing term lending: increasing the tenor of refinancing operations from three months to three years (Longer-Term Refinancing Operations, LTROs), addressing market dysfunction for a wider range of assets (Securities Market Programme, SMP) and providing FX liquidity (central bank swap lines).

There was some discussion about how to separate conceptually LOLR actions from the liquidity provision for the purposes of monetary policy operation. One view was that an elastic currency supply was a more useful concept than LOLR in the Eurosystem context as measures there reflected responses to fluctuations in liquidity demand. Indeed, the increase in the Eurosystem balance sheet between 2008 and 2011 matched exactly the amount of the crisis-induced liquidity shortage in interbank markets. Others emphasized that such elastic provision of liquidity inevitably gave rise to considerable moral hazard, which required strong conditionality in response.

For EMEs, the transmission of liquidity stress through foreign exchange markets called for a different type of LOLR response. In Mexico, the illiquidity in the foreign exchange market led to liquidity stress, exacerbated because of the hedging practices of Mexican corporates (eg options with knock-out clauses). In order to restore market functioning, the Bank of Mexico intervened in the foreign exchange market with more than a third of its foreign exchange reserves. However, confidence among market participants was only restored once the authorities arranged swap lines with the Fed and activated the Flexible Credit Line (FCL) with the IMF.

In addition, the Bank of Mexico and Mexican Treasury intervened in domestic financial markets. The operations included longer-term open market operations (OMOs), interest rate swaps, repos of government bonds and issuance of shorter-duration government paper. Specialised government agencies also provided credit to shadow banks and non-financial corporates.

For the Bank of Japan, the three main lessons from the banking crisis of the 1990s had influenced LOLR policies. First, “constructive ambiguity” can become counter-productive in periods of stress. Second, distinguishing illiquid from insolvent institutions is never easy. And third, the scope of the LOLR function is complementary to the reach of the existing safety net in the financial system.

The discussion following the panel presentation centred around three questions.

First, what did the crisis experience reveal about the **effectiveness** of different LOLR measures? Large-scale liquidity support arguably succeeded in stabilising the financial system, but there were challenges. In some cases, central banks needed to develop new arrangements to address liquidity needs outside the banking sector under considerable time pressure, leading to operational risks and communication challenges.

Moreover, the stigma associated with central bank lending worsened significantly. Stigma was a major impediment to discount window borrowing during the crisis and limited central banks’ ability to provide emergency liquidity effectively. Market-wide facilities that were used on a regular basis were seen as one way of reducing stigma. Some participants expressed concern that new disclosure requirements might add to stigma. For LOLR measures to be effective, central banks needed to maintain the ability for covert lending.

It was noted that there did not appear to be any stigma associated with borrowing from the Federal Home Loan Bank System (FHLB) in the United States even though the borrowing was reported on bank Call Reports. The absence of stigma was seen as possibly owing to the lower rates charged by FHLBs or simply because such lending was seen as normal and not associated with financial difficulties.

A more contentious aspect concerned the duration of emergency liquidity support. Some argued that liquidity support to solvent institutions extended to contain a crisis should be short-term and clearly defined: long-term liquidity support blurred the distinction with credit policy. In response, several central bankers expressed the view that liquidity support should be as short-term as possible but as long-term as needed to effectively contain liquidity stress.

Second, which **institutional and operational arrangements had worked particularly well** and why? Because the crisis required central banks to provide liquidity in new ways, it also required difficult choices about where to draw boundaries. Deciding on the systemic importance of individual institutions and markets was often challenging. Provision of emergency liquidity in many cases required that the central bank design and execute programmes jointly with the fiscal authority and develop risk-sharing arrangements.

There was broad consensus that distinguishing between insolvent and illiquid institutions was difficult in practice for at least three reasons. First, illiquidity tended to develop into insolvency crises the longer a crisis lasted; second, illiquidity and insolvency were not independent from the judgment of the authorities; and, third, solvency assessments by supervisors or analysts might be biased. Yet, these complications notwithstanding, some participants held the view that forecasting solvency in a bad state of the world was not fundamentally different from the macroeconomic forecasting that was part of central banks’ routine business.

All four central banks intervened in credit markets. Typically, such interventions aimed at alleviating constraints in the supply of collateral assets or at reducing

excessively high liquidity premiums. Liquidity support in a market-based financial system was clearly distinct from the traditional LOLR role in a bank-based financial system. Some participants argued that credit markets were driven by trust in collateral, not by trust in institutions, which made the system inherently unstable because the value of collateral was endogenous. To counter this, central banks engaged in collateral transformation, replacing private assets with their own liabilities on an unprecedented scale.

Third, how useful were the **paradigms that guided LOLR** policies prior to the crisis? Many participants expressed the view that ambiguity with respect to the provision of emergency liquidity to banks was not always constructive. Given the scale of liquidity stress, there were doubts that ambiguity had helped reduce moral hazard before the crisis. The lack of bank liquidity regulation, in turn, was seen as having contributed to moral hazard and the build-up of liquidity risk.

Moreover, ambiguity had impaired the effectiveness of LOLR actions during the crisis. Ambiguity made it harder for central banks to quantify potential risks and prepare for any responses (eg approaches to collateral, lending limits, legal duties etc). Ambiguity also kept banks from turning to the central bank for liquidity, thus exacerbating the propagation of the crisis: term interest rates continued to rise because banks did not view central bank funding as a reliable option in the early days of the crisis. And uncertainty about how central banks would respond to market stress led to swings from optimism to extreme pessimism.

Workshop participants viewed ambiguity as more constructive when associated with LOLR assistance to non-banks. In this view, while banks would have access to liquidity from the central bank so long as they were solvent and viable, it was argued that non-banks would face constructive ambiguity; with any decision to lend to be made in consultation with other government agencies and with ex-post consequences for the borrowing firms and the regulatory regime. Still, some participants judged that principles and responsibility must be defined as clearly as possible ex ante, and that the precise parameters should be kept open while maintaining the necessary flexibility to create new facilities.

## Session 2: Post-crisis changes in the financial system and their implications for central bank liquidity policies

The discussion focused primarily on the design of liquidity insurance schemes and the implications of greater reliance on collateralised financing and market-based credit intermediation more generally.

Views differed widely on the role and optimal design of **liquidity insurance** going forward. A prominent view was that new bank liquidity regulation should strengthen self-insurance and, by implication, reduce the need for LOLR support. In addition to having explicit liquidity requirements, it was also suggested that a procedure should be put in place for replenishing liquidity buffers as part of the recovery plan. Some participants argued that liquidity regimes should be applicable to non-bank systemically important institutions. For example, participants noted that some central counterparties (CCPs) be able to hold deposits with the central bank in order to build liquidity buffer separate from the banking system.

One question concerned the potential role of an ex ante fee for central bank liquidity insurance. It was recognised that an upfront fee could alleviate stigma by introducing a business-as-usual element into the use of central bank liquidity. If

properly designed, such a fee could also help to contain moral hazard. One proposal was to base such a fee on a central bank dependence ratio (CDR), calculated as a percentage of the Liquidity Coverage Ratio (LCR). Several participants expressed concern that such a mechanism would be procyclical.

Other participants were not convinced that charging an insurance premium was a good idea to begin with. For example, banks could see the insurance premium as entitling them to LOLR support in case of liquidity problems. This could greatly constrain central banks in their LOLR role, including political pressure to extend liquidity support. More fundamentally, it was noted that systemic risk cannot be insured against. Hence, some participants held the view that banks, as providers of liquidity insurance to their liability holders, needed a credible liquidity reinsurer, which could only be the LOLR.

Workshop participants also discussed the importance of the evolving use of **collateral**. A brief review of recent work by CGFS study groups on collateral asset markets confirmed that the need for collateral assets was on the rise, but also highlighted that any overall shortage was likely to be small and temporary. Some of the increase in the demand for collateral assets was structural. The drivers included minimum haircuts on derivatives transactions as well as LCR-related high quality liquid assets (HQLA) set aside by banks. Other drivers of demand for collateral assets had been central bank operations themselves, since they affected the private availability of collateral. Eligibility policy was a key factor in this context. Since eligibility for central bank operations had been expanding, the private sector's willingness to accept certain assets as collateral had also been affected.

Increasing reliance on collateralised funding had implications for the LOLR function. In a system where the availability of collateral assets, rather than money market spreads, determined liquidity conditions, LOLR policies had to aim at changing the former in order to alleviate liquidity constraints. In other words, central bank collateral transformation was becoming an integral part of LOLR functions. This reflected a comparative advantage central banks had in taking collateral because of expertise, economies of scale, absence of counterparty risk for borrowers, and a longer time horizon. It was suggested that central banks could, in principle, ensure that collateral already accepted in the market remained liquid by standing ready to establish a floor under the prices of collateral assets. However, central banks would have to be able to appropriately manage the associated risks.

More generally, the move towards **market-based credit intermediation** raised questions about the role of interventions in credit markets as part of LOLR policies. One proposal was that central banks ex ante set an "outside spread" at which they would trade collateral assets, analogous to the penalty rate in discount window-type facilities. This would ensure continuity of the price of collateral assets. One participant noted that the ECB's OMT was conceptually similar to the outside spread option, as it offered a put option with an undisclosed price. Some workshop participants supported the idea of a market maker of last resort which traded at such pre-determined spreads.

However, many participants were more critical. Standing liquidity facilities targeting credit markets involved the risk of turning into a long-term credit policy. Interventions should, in principle, occur on both sides of the market selectively, and only to address temporary market malfunctioning. Hence, any market intervention for liquidity purposes could only be catalytic in nature.

The session ended with some reflections on the validity of **Bagehot's principles**. There was a sense that his dictum to lend freely at a penalty rate and against good collateral provided limited guidance for LOLR policies in case of a systemic liquidity shock. In case of such a shock, distinguishing insolvency and illiquidity was particularly hard both; correspondingly, it was difficult to tell credit risk from liquidity risk when valuing collateral assets; and charging above-market rates for liquidity support would be likely to exacerbate financial strains. However, the broad spirit of Bagehot's principles that central banks should do what is necessary to stem a crisis while protecting themselves against losses to the extent possible still provided a useful basis for modern LOLR frameworks.

### Working lunch: keynote address and discussion

The keynote address and subsequent discussion focused on **governance and accountability** aspects of LOLR frameworks. A key message was that a failure of central banks to establish legitimacy in the sphere of LOLR governance could put central bank independence at risk. The political debate about the appropriateness of LOLR measures in a number of economies underlined the importance of this issue.

A properly defined LOLR mandate would underpin legitimacy with a clear statement of purpose, principles of delegation and monitoring by the legislature. Such a mandate could form the basis of a regime of constrained discretion, where constraints would be widely agreed and public, and where the exercise of discretion could be observed by legislators and be reviewed later.

Within such a framework, LOLR policies would be designed to address moral hazard, adverse selection and time consistency, and spell out the relationship with fiscal authorities. Judgments on solvency should be based as much as possible on a probabilistic solvency forecast. Transparent stress tests and a resolution regime would constitute the technical components of a policy of lending only to solvent institutions. Central banks should publicly communicate collateral policies in advance in order to deal with time consistency problems. While *de jure* banks should have access to central bank liquidity as long as they were solvent and viable, non-banks should face constructive ambiguity, with decisions to lend made in consultation with other parts of the government and with ex post consequences for the borrowing firms and the regulatory regime. In principle, however, the decision on whether a central bank would intervene to restore market functioning would need to be made ex ante.

While central bankers could get far in framing a defensible and workable LOLR regime, the involvement of elected politicians would be required to agree on a fiscal carve-out, a governance framework, accountability mechanisms and the trade-off between conflicting public policy objectives.

The discussion yielded several specific suggestions on the possible design of LOLR governance. First, LOLR decisions should be made by, or at least involve, supervisors: a decision to lend would be a positive signal that the recipient was fundamentally sound only if the central bank were known to have access to private supervisory information. Second, the LOLR decision should be made by a formally constituted committee of the central bank, applying the "one person, one vote" principle. Third, policymakers should increase transparency about LOLR actions through ex ante public hearings and through independent external or internal audit checks for decisions on allocation and publication of losses.

The shift to a more market-based financial system has made the issue of proper governance surrounding emergency liquidity provision even more acute. Any liquidity support to markets carries the risk of supporting insolvent counterparties indirectly, for instance by propping up prices of collateral assets. A perception that such support might involve lending to fundamentally insolvent institutions would expose the central bank to considerable criticism. Liquidity support to markets also carries a higher risk of eventually ending up engaging in credit policy. In order to draw a hard line between the two policies, liquidity support to markets should thus aim to be catalytic, and focused on addressing collective action problems in markets that are judged critical to financial stability or when the transmission of monetary policy is severely impeded. In such cases, central banks could, in principle, provide inventory risk reinsurance to the dealer community by taking some outright risk, but stay in the market no longer than necessary.

### Session 3: Is there a need to rethink the international lender of last resort?

The last session focused on different mechanisms for international LOLR functions, namely, precautionary foreign exchange reserve holdings, IMF credit lines, central bank swap lines, and other bilateral and multilateral support arrangements.

Emergency liquidity provision in foreign currency was one key response to liquidity pressures in global markets. In particular, the extension of US dollar central bank swap lines across a wide range of time zones in the aftermath of the Lehman Brothers bankruptcy had arguably been a potent and appropriate remedy for the acute, global dollar shortage of international banks. In some jurisdictions, the announcement of swap arrangements with the Federal Reserve alone was apparently sufficient to bolster market confidence.

By the same token, the crisis experience had confirmed that central bank liquidity support in foreign currencies was fundamentally different from domestic LOLR. Ultimately, market perceptions of a country's solvency limit the ability of the central bank and of the government to provide liquidity insurance in foreign currency. This was especially an issue for EMEs with increasingly internationally integrated financial systems.

There was broad agreement that self-insurance through the accumulation of foreign exchange reserves was sub-optimal. It was costly, could complicate monetary and exchange rate policies in reserve countries and created excess demand for safe assets in the issuing country. The double-digit annual growth rate of EME foreign exchange reserves was also thought to be unsustainable. At the same time, private institutions were under-accumulating foreign currency liquidity; the thresholds for a minimum amount of foreign exchange reserves appeared to be moving with each new EME liquidity crisis, necessitating even larger chests of reserves; and the "second wave of global liquidity" was adding to concerns about capital flow reversals and to calls for strengthened arrangements for liquidity provision in foreign currency.

One participant proposed a multilateral liquidity support agreement with strict requirements for entry (prudential and other) and unconditional access once countries were admitted. Since a permanent arrangement of this type could lead to moral hazard, the arrangement should only be activated in times of crisis. The trigger should be global market conditions, rather than country-specific circumstances. Other participants questioned whether such an approach could

work. Weak conditionality and insufficient protection against moral hazard could lead to the build-up of significant risks.

Another participant suggested a reserve pooling arrangement. Countries with excess foreign exchange reserves would pool reserves and use them as collateral for foreign currency loans. The governance could be similar to that of the Chiang Mai Initiative Multilateralisation (CMIM). Existing multilateral arrangements such as the CMIM still required an IMF credit line for participants to draw funds beyond a certain threshold.

The IMF's Flexible Credit Line had been another source of foreign currency liquidity. While the participants acknowledged that FCLs worked when put in place, the uptake appears to have been limited due to stigma. Furthermore, a country still needed to accumulate comfortable foreign exchange reserves position to qualify for an IMF FCL. Overall, the strict conditionality of FCLs was seen as an obstacle to their use as foreign currency liquidity backstop. Some participants also noted that foreign currency liquidity support should be completely separate from balance of payments support.

Central bank swap lines worked well during the crisis. Some merits of the swap lines included the fact that credit risk to individual financial institutions was borne by the swap partner against eligible collateral. This put the responsibility of managing risks arising from foreign currency liquidity insurance with the central banks where the activity was taking place.

One participant suggested that the reserve currency-issuing central bank should be responsible for ensuring that banks outside its jurisdiction had the necessary access to its currency. Several participants cited the privilege of issuing US dollars as reserve currency, which allowed the United States to run a perpetual current account deficit while also enjoying a funding advantage in global financial markets. This would argue in favour of US monetary authorities assuming responsibility for liquidity insurance in dollars, subject to the necessary protections.

In practice, there appeared to be no obvious alternative other than to continue to rely on a combination of several mechanisms, perhaps as a part of a more formalised multilateral arrangement. Thus, the stock of foreign exchange reserves could be augmented with IMF lines of credit. Swap arrangements with the reserve currency-issuing central banks, in turn, could help enhance the credibility of such arrangements. For example, the Mexican authorities' use of foreign exchange reserves to stabilise the peso market in the aftermath of the Lehman collapse gained the necessary credibility only after both the swap lines with the Fed and an IMF credit line had been secured.