

# **When do the actions by the lender of last resort work?**

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## **Introduction**

The financial and economic crisis began in 2007, and quickly took on unanticipated proportions. It is still too early to draw all the lessons. However, this crisis has provided an opportunity to experiment in vivo one of the most important pillars of economic theory: the lender of last resort (LOLR). This paper (1) examines the LOLR from a theoretical point of view, (2) tries to understand the nature of the crisis, as well as (3) how it was managed both from a European and an American LOLR perspective, (4) what difficulties management of the crisis encountered, and (5) what we have learned concerning actions by the lender of last resort in a globalized world.

## **Part I**

### **The lender of last resort, a theoretical detour**

Henry Thornton (1802) and Walter Bagehot (1873) are the two authors who developed the key elements of the classical doctrine of the lender of last resort. According to Bagehot, in a panic situation monetary authorities should lend unsparingly but at a penalty rate to illiquid but solvent banks. In addition, the rules under which assistance would be provided—lending freely at penalty rates against sound collateral—should be clearly stated beforehand in order to avoid needless uncertainty. To summarize, both authors explained the need for an LOLR and described its principles as follows (Humphrey, 1989; Freixas et al, 2000):

- Prevent the decline in the money stock from panics;
- Set policy in function of the longer range target of monetary growth;
- Provide support to the overall financial system instead of particular banks;
- State policy in advance so as to remove uncertainty that could contribute to panic;
- Make loans only to solvent banks in return for high-quality financial assets;
- Grant all illiquid banks access to credit at a high rate.

While free banking advocates believed that there is no need for an LOLR, since only sound banks will be able to emerge from a crisis unscathed and bank failures are simply a logical punishment resulting from imprudent risk taking, monetarist writers in the twentieth century have reiterated the classical notion of the LOLR. They argue that a central bank (CB) must allow insolvent banks to fail in order to prevent moral hazard. According to them, the Fed should have followed Bagehot's principles during the depression of the 1930s, conducted more open market operations in order to prevent bank failures, and shown more readiness to lend freely to illiquid but sound banks. However, other authors have questioned that last point and put forth an alternative view, advocating broadening the power of the LOLR to include aid even to insolvent banks. If the central bank is to ensure the stability of the financial system, it might be preferable not to exclude all possibilities of saving such institutions (Solow, 1982). In Goodhart's view (1985, 1987, 2008), the distinction between illiquidity and insolvency is a myth. When a central bank helps out a bank in a liquidity crunch, it does not know to exactly what extent the bank is solvent (Goodhart, 1985). Santos (2006), in turn, notes that the CB should lend at a penalty rate, but does not specify how to determine the size of this penalty.

Despite these reservations, and modifications induced by the considerable expansion of the financial system since the late nineteenth century, today Bagehot's conception of the LOLR still widely prevails. The central bank, as LOLR, helps ensure systemic stability. In general, what is meant by that is stability of both the banking sector and the financial markets, not only the stock markets, but also and specifically the payment systems. In order to carry out this mission, the CB must use preventive measures as well as measures aimed at helping to overcome a crisis when it occurs. In such a case, the CB must above all insure that liquidity is available or very quickly restored, because that is what stabilizes the financial system. Bagehot's proposal was later questioned because solvent banks with good collateral should be able to borrow from the market. However, the same uncertainty about a bank's financial condition may lead to a situation where market mechanisms fail to insure banks against liquidity shocks.

Actually, the real problem occurs in the case of interbank market failure. Under certain circumstances liquidity dries up, and the interbank market does not operate properly when solvent institutions are unable to borrow. A generalized liquidity crisis affects all banks. The literature identifies different sources of such problems in the interbank market. They are all rooted in asymmetric information. First of all, these information asymmetries make it difficult for the CB to

distinguish between illiquid and insolvent banks, thereby running the risk of providing liquidity to “undeserving” institutions. However, the challenge is identifying the problems of asymmetric information between banks on the interbank market and what is causing this market’s paralysis. Liquidity may dry up in the interbank market because banks refuse to lend to each other. This happens either because of asymmetric information concerning borrowers or when the bank worries that it in turn may experience difficulties borrowing in the interbank market to address its own possible shortage of liquidity. Such expectations become self-fulfilling in the same way as bank runs. The LOLR intervention aims to provide liquidity or at least to reassure banks that liquidity will be available when needed.

These possible interbank market failures provide one rationale for an LOLR. But intervention is justified only if the benefits outweigh the costs (Freixas, 1999). Rochet and Tirole (1996) present a general model while attempting to "provide a framework in which some of the issues surrounding systemic risk can start being analyzed." They focus on analyzing links between banks, mainly the interbank lending channel. In their model, if peer monitoring is to be encouraged, the authorities must commit to closing all banks that suffer losses from interbank loan exposures: if the failure of one bank causes the failure of another that had lent to it, both banks must be allowed to fail. Otherwise, there would be no incentive for peer monitoring. Because it is difficult for the central bank to commit to a closure policy that would allow knock-on effects to occur, Rochet and Tirole conclude that the practical relevance of peer monitoring is limited.

However, the cost of LOLR and capital injections is moral hazard. Schematically, there are two ways of intervening: lending to the market as a whole or lending to individual institutions.

Both of them lead to significant moral hazard.

LOLR support to the market as a whole is used to deal with generalized liquidity shortages. Such operations (which are made against high-quality collateral) reduce the general level of short-term interest rates or prevent them from rising further. Put another way, such support increases the supply of reserve money. The distinction between LOLR support to the market and a loosening in monetary policy is not easily made, leading some academics to suggest that they are the same.

Normally when a liquidity shortage arises, the central bank will supply cash for a very short term. If the problem looks likely to last longer than a day or two, the central bank will either decide to let the bank fail or, as LOLR, to provide it with emergency liquidity assistance (Goodhart, 2008) at a higher interest rate. Another possibility is injecting capital in the financial institution. This

constitutes strong support against risk. However this may feed moral hazard since it may lead those concerned to believe that the financial institution in question is insured against all kinds of risk, including credit and market risk. Furthermore, capital injections create more moral hazard by reducing the incentive for uninsured investors to monitor the institutions to which they have lent (Kaufman, 1991, and Rochet and Tirole, 1996).

One way of responding to this increase in moral hazard is ex-ante "constructive ambiguity" (Corrigan, 1990, Giannini, 1999). By not committing beforehand to a bank rescue, and remaining ambiguous about whether such an intervention will take place or not, the LOLR expects banks to act more prudently. One wonders whether that is what the authorities were seeking in the way they dealt with Lehman Brothers. Or whether they underestimated—consciously or not—the difficulties that managers encountered in getting shareholders or the private sector to provide liquidity support. Lack of transparency and clear-cut accountability make it possible for the authorities to avoid having to justify different treatments for what many perceive to be identical situations.

But even if one agrees with the necessity of an LOLR, does such an authority have to be a central bank? Given that the stability of the banking system is a matter of public interest, it is understandable the central bank would be entrusted with the task of assuring the stability of the system. But as countries realized that despite the presence of an LOLR, banks were still vulnerable to liquidity shocks, usually linked to their main funding source—deposits—they began introducing deposit insurance (DI) to protect depositors. With the growing number of bank crises in the first half of the twentieth century and the increasing perception that DI was an effective mechanism to protect banks from suffering runs on their deposits, more and more countries adopted DI schemes. Hence the creation in the United States in 1934 of the Federal Deposit Insurance Corporation (FDIC), which has recently been guaranteeing depositors the first \$100,000 of their accounts (in October 2008 this amount was increased to \$250,000 until the end of 2013). In the European Union deposit insurance also exists, but the maximum amount insured varies from one country to another.

However, DI protects banks from runs driven by depositors, but it does not shield them from other liquidity shocks. For example, a bank may face liquidity problems if its inter-bank lenders refuse to rollover their loans or if it is unable to rollover maturing commercial paper or other short-term debt claims. Hence, despite the presence of DI, there is still a role for a lender of last resort. By contrast, a lender of last resort that does not provide liquidity support to banks on demand will not fully protect depositors.

In 2008, contrary to 1929, we witnessed few runs on banks in terms of depositors' lining up to withdraw their savings (with the exception of Northern Rock and a few cases of Californian banks). Obviously the existence of DI played its role of preventing mass panic.

The real question is not what forms are to be used by the LOLR to intervene—these can vary, but how to intervene without creating moral hazard?

## **Part II**

### **How the crisis challenged the LOLRs**

Without attempting to present a balanced narration of the crisis, we need to note the events that have been particularly relevant to the role of the LOLR during it. Although the events are too recent to reach any definite assessments, some elements can be put forward and analyzed in the context of what started out as a subprime loan crisis. The credit crisis began with a decline in U.S. home prices and high default rates on “subprime” and other mortgage loans made to customers with weak credit histories or poor creditworthiness. Traditionally, banks have financed their mortgage lending through deposits they receive from their customers. Over the past decade there has been a fundamental change in the way mortgages are funded, with many banks reselling mortgages to the bond markets in order to fund additional lending. Through securitization, many “subprime” mortgage loans were transferred to mortgage backed securities (MBS). These securities were then rated by agencies such as Moody's, S&P, and so on. In addition MBS were resold to investors through collateralized debt obligations and structured investment vehicles. In this way, mortgage lenders passed the risks of subprime lending on to third-party investors such as pension funds, hedge funds, investment banks, and insurance companies.

Although the European market has no direct equivalent to the US “subprime industry,” many European banks have holdings of such securities. As borrowers became unable to make payments, there were losses and downgrades on related asset-backed securities and other structured instruments. The value of markets for asset-backed securities fell. Potential buyers of complex, structured products lacking in transparency were finding it hard to assess their value and were no longer willing to rely on issuers' reputations and rating agency assessments. Gaps in information about the composition of instruments became more significant as asset prices fell and credit quality declined. Market liquidity became totally impaired. It is interesting to note that in this new

environment banks, traditionally known for their special expertise in collecting and producing information, have become increasingly dependent on agencies for ratings. But the externalization of this function has proved to be less than satisfactory.

Faced with market turmoil and the drying up of liquidity, central banks intervened in various ways in August 2007, trying to find a remedy.<sup>1</sup> The Fed expanded its lending to eligible depository institutions. Its discount window now became available for 30-day loans, whereas previously it had been restricted to overnight loans. Both the Fed and the ECB undertook open market operations.

In September 2007, the U.S. crisis that was affecting the global financial sector became more visible and more global when a major U.K. mortgage provider, Northern Rock, turned to the country's authorities for liquidity support. Liquidity in some asset markets had dried up completely and interbank funding had become extremely problematical.

In such a situation, what options does the LOLR have?

When dealing with liquidity problems, the LOLR can proceed to inject liquidity, helping to limit the impact of asset liquidation on prices and thereby limiting the crisis. The LOLR can act:

- Through direct intervention on the asset market affected by the crisis, and by purchasing those assets whose price is falling until prices stabilize.
- Through open market operations on the monetary market in order to increase liquidity, by accepting securities as collateral, and/or

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<sup>1</sup> In March 2007, institutions like New Century Financial in the U.S. had appeared to be in severe trouble and wholesale banks became reluctant to grant banks and other mortgage lenders new loans. The bond market for mortgages became less liquid, and with the lack of market liquidity, banks found it increasingly difficult to obtain funds through the wholesale market. In August, IKB Deutsche Industriebank AG appeared to be on the verge of collapse because of its exposure to subprime loans. A week later, BNP Paribas suspended trading in three of its funds for similar reasons. These events were signs of extreme tension concerning asset-backed security and other structured instrument markets. Institutions needing to bolster their funds tried selling assets, which quickly became illiquid and difficult to price. They suffered major losses, leaving them with huge debts and toxic assets. Information asymmetries concerning these instruments and who was holding what were at the root of the crisis. The climate of distrust in which banks were unable to find financing for investment vehicles that might contain securitized assets was transformed into a general crisis of lack of trust between financial market players. Transactions came to a halt on many market segments of asset-backed credit and mortgages, making it quite difficult to make any estimate of the value of holdings. Interbank loans became scarce and liquidity hoarding became common.

- Through directly granting emergency lines of credit, specifically for troubled banks, for instance via the discount window. In this case the bank keeps its assets until prices rebound, and then reimburses the LOLR.

A further possibility is recapitalization, i.e. injecting funds in banks in exchange for equity. This raises the question of the nature of the shares obtained in this manner—are they preferential shares without the right to vote or common shares? And is the bank being acquired in its totality, or only partially?

However, even if liquidity is injected through the market, there is no guaranty that banks needing it will actually have access to it. For instance, some potential lenders or participants may not make the liquidity available for strategic reasons (Rochet and Vives, 2004). Situations like the recent crisis may appear where banks looking for liquidity find themselves unable to access interbank lending because of the dysfunction or paralysis of interbank relations. Was the main issue during the crisis a lack of liquidity in the banking system or, in fact, a crisis in confidence due to fears over potentially damaging fallout from credit lines banks had extended? One of the first reactions of bank management after looking at the credit lines it had set up for other banks was to reduce or cancel them as soon as possible. Thus even banks that enjoyed a liquidity surplus were not willing to provide liquidity on the interbank market. They no longer had confidence in the solvency of other players—mistrust is a contagious virus that causes confidence everywhere to vanish—and interbank lending largely dried up (Remsperger, 2007).

### **Part III**

#### **How the LOLRs reacted**

The purpose of this section is not to describe the unfolding of the crisis and all the measures that were taken, but to focus on some of the actions taken to manage it by various LOLRs.

All told, from the Fed, to the ECB, to the BOE, central banks all took a number of varied initiatives, seeking an effective response to the economic effects of the turmoil. They:

- Lowered interest rates,
- Provided additional longer-term funding for banks, including through concerted international action in December 2007 and March 2008,
- Expanded the types of collateral against which they were prepared to lend,

- Extended the range of institutions to which they were prepared to lend,<sup>2</sup> and
- Injected capital into financial institutions.

The ECB's crisis management was based on the following evaluations:

- First, there was an immediate risk of a systemic crisis if the loss of confidence resulted in a lasting credit crunch on the interbank money market;

- Second, banks usually hold securities that normally can be liquidated at short notice and at little cost. But due to the turbulence these assets were no longer enjoying that degree of liquidity.

In the European Union the Maastricht Treaty, besides introducing the euro, created the ECB to head this system and entrusted this institution with the responsibility for formulating monetary policy. It also transferred the responsibility for promoting smooth functioning of the payment system to the ECB. However, neither the Maastricht Treaty nor the ECB statutes give the central bank an explicit mandate to directly provide emergency liquidity support to individual financial institutions. This remains the responsibility of national CBs. They have retained the responsibility of the LOLR function in their jurisdictions.

The Bank of England is the U.K.'s central bank. Its roles and functions have evolved and changed over its three hundred year history. Its responsibilities for monetary stability were defined in the 1998 Bank of England Act. However, there was no reference in the Act to financial stability. The lack of a statutory goal in this area contrasts with monetary policy, where the objective and accountability arrangements have been clearly defined by law. But the Bank's role in maintaining financial stability had been loosely defined, allowing ambiguity over the scope of its role in this area. Responsibility for financial stability in the United Kingdom was shared between the tripartite authorities—HM Treasury (HMT), the Financial Services Authority (FSA), and the Bank of England. Their roles were defined in a Memorandum of Understanding. But the tripartite arrangement did not function correctly or efficiently during the run on Northern Rock (September 2007).<sup>3</sup>

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<sup>2</sup> For example, faced with the rise in funding pressures leading up to the crisis at Bear Stearns in March 2008, the Federal Reserve Bank of New York widened its liquidity provisions to include U.S. non-bank primary dealers.

<sup>3</sup> The Office for National Statistics reclassified Northern Rock as a government-owned company in February 2008 due to the levels of support given by the government for its business and the degree of government control. Northern Rock's debt was included in government accounts, increasing its debt burden by around £100 billion. In mid-February 2008 the government

One of the lessons drawn from the crisis by the British Government on reforms that had to be undertaken was the need for legislation that would formalize the Bank of England's role in providing financial stability. The Banking Act of 2009 assigned the Bank the goal of contributing to the protection and enhancement of the stability of the U.K. financial system.

On April 21, 2008, the Bank of England announced a new scheme to enable banks and building societies to swap illiquid assets for U.K. Treasury bills. The scheme was designed to improve the liquidity position of the banking system and raise confidence in financial markets, while also ensuring that the risk of losses on the loans banks had made remained with them.

More importantly, the British government was the first to offer financial institutions longer-term lending facilities. It offered to guaranty new loans granted by Barclays, the Royal Bank of Scotland, and other banks. French, Belgian, and Luxembourg authorities later followed that path for Dexia.

From the beginning of the crisis, the Federal Reserve was more aggressive than any other central bank in cutting its rates. Altogether it intervened ten times, bringing its benchmark federal funds rate down from 5.25% to near 0. Initially, the ECB resisted taking the same course, then finally gave in, reducing rates to 1.25% as of November 2009. The Bank of England reduced its rate to 0.5% during that same period, its lowest level since the bank's founding in 1694. In May 2009, additional measures were taken in the euro area to enhance credit support, notably the introduction of longer-term refinancing operations (LTRO) with a 12-month maturity.

The Fed's approach to rescuing troubled institutions has evolved considerably over the course of the crisis. With hindsight it can be argued that the forms assumed by the bailouts of institutions whose failure would have endangered the financial system were completely unforeseeable. In the case of Bear Stearns, the Fed refused to intervene directly. Instead it encouraged JP Morgan to absorb Bear Stearns and agreed to loan the bank \$29 billion in order to do so, subsidizing the bailout. Fed Chairman Ben Bernanke justified this decision on the grounds that a Bear Stearns bankruptcy might have led to a "chaotic unwinding" of financial transactions throughout the economy. After the collapse of Bear Stearns in March 2008, the Fed said it would open up short-term emergency loans to investment banks from a lending window called the

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introduced legislation to nationalize the firm. Yet Northern Rock was not a major bank from the LOLR perspective (it was neither systemically important nor too big to fail), nor an international bank (it had no significant cross-border operations).

Primary Dealer Credit Facility. Other forms of Fed lending had previously been available only to retail banks. The Fed also said it would accept a broader array of collateral from firms for the facility, including equities. Another facility, in which firms can swap risky securities for safe Treasury bonds, was also expanded.

After the rescue of Bear Stearns came Fannie Mae and Freddie Mac. On Sept. 7, 2008, U.S. regulators announced a bailout of Fannie Mae and Freddie Mac, including a takeover of the firms by the Federal Housing Finance Agency regulator, and a Treasury Department purchase of the firms' senior preferred stock. Two days later, on Sept. 9, Lehman was on the brink of failure. Mr. Paulson's strategy was to pressure other Wall Street firms to help rescue Lehman. Potential acquirers expected government assistance, but Paulson's message was "no government money there." Some thought the government couldn't let Lehman fail. But it did on Sept. 15. The very next day, the government agreed to provide an \$85 billion loan that would put it in control of AIG, a firm it wasn't even regulating.

Subsequently there were other shifts in strategy. Initially, bailout operations were decided spontaneously. When they proved to be inadequate, the idea of creating a fund into which "toxic" assets could be dumped began to surface. The idea was to rid the banks of these toxic products. With that purpose in mind, the \$700 billion TARP (Troubled Assets Relief Program) plan was adopted in October 2008. We then witnessed a major shift in the way in which it was managed, with part of the program being used to infuse troubled banks with new capital, following the example of what had been decided in the United Kingdom.<sup>4</sup>

In December 2008, the Federal Reserve System introduced the Term Asset-backed Securities Loan Facilities (TALF) with the aim of extending loans to investors in order to help

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<sup>4</sup> It was within this context that the first of three bailouts of Citigroup over a six month period took place. On Oct. 14, 2008, the Treasury injected \$125 billion into eight banks. Citi, along with JP Morgan, got the biggest chunk—\$25 billion each. Five weeks later the Treasury had to allot the ailing bank another \$20 billion, in exchange for 8% of equity in preferred shares, which carried no voting rights, but were associated with an 8% dividend. Restrictions were also placed on executive compensation and Citi agreed to comply with an FDIC program designed to help homeowners with troubled mortgages. A few months later, the Treasury again sought to boost Citi by exchanging up to \$25 billion in preferred shares for common shares, thereby bolstering its tangible common equity (TCE). In order to keep government control of Citi equity below 50%, it also cajoled large private investors, including the Singapore GIC sovereign wealth fund and Prince Alwaleed bin Talal of Saudi Arabia to do likewise. This move slashed dividends for all these investors, since common Citi shares were carrying a meager one penny per quarter dividend.

them buy eligible ABSs. More recently the Public-Private Investment Program (PPIP) was designed to help banks sell troubled assets. Under this program, the U.S. government provides investors guaranteed loans enabling them to make leveraged purchases of troubled assets.

## **Part IV**

### **What problems were encountered?**

For bailout plans to succeed, banks need to stop hiding their problems out of fear of losing credibility. Such fear can cause banks to turn down aid they need in an economy where distrust is everywhere. One way for central banks to provide liquidity is through open market operations of varying maturities. After August 2007 they undertook both regular and exceptional operations. But banks were reluctant to use emergency liquidity facilities (ELA) or the discount window because it signaled weakness. ELA may be a very short-term solution for a solvent bank, however immediate disclosure could, by leading to a loss of consumer confidence, exacerbate any liquidity problems. This led the British Authorities to suggest “that there may be special circumstances where, if possible, a period of non-disclosure of ELA is desirable. Otherwise, the provision of ELA may have an immediate adverse impact on consumer confidence, resulting in insufficient time for liquidity assistance to serve its intended purpose of helping the bank resolve its difficulties.” In February 2009, the UK adopted the Banking Act of 2009, which allows the Bank of England and the Financial Services Authority to intervene at an early stage if a bank has problems. The central bank, acting as LOLR, will thus be able to loan emergency funds without publicly identifying the recipient of the aid, avoiding the spiraling distrust that followed public intervention in Northern Rock. The question, however, must be asked as to whether this additional lack of transparency is a positive step at a time when restoring trust in the banking system is so crucial.

We can only emphasize the lack of coherence in the way in which governments intervened during the crisis—incoherence in which institutions should be saved or not, and incoherence in the actions taken, with successive changes in strategy.

The U.S. government's various moves, from saving mortgage giants Fannie Mae and Freddie Mac and insurance giant AIG to letting Lehman Brothers fail, sent confusing messages and contributed to what in essence was a high-level run on Wall Street banks, with funding drying up

overnight. The Lehman failure liquidated interbank lending and also every ounce of confidence. The market vanished.

Short-term lending markets were frozen. Fed officials acted as if they believed the problems required more than what a central bank was designed to do—provide emergency loans to healthy institutions in tumultuous times. The Fed wasn't set up to rescue failing institutions; that was for the Treasury and Congress to handle. Fed officials argued that the central bank's emergency powers didn't allow it to buy assets. And its own balance sheet had already been stretched by the other rescues. Treasury officials, on the other hand, maintained that the Fed had broad legal authority and could possibly take on distressed assets from banks directly, without Congressional approval.

Then the Paulson plan for troubled assets was adopted. The Troubled Asset Relief Program (TARP) created by the \$700 billion bailout bill gave the Treasury Department authority to acquire bad assets from banks and other financial institutions. TARP was also to be used by Treasury to put new equity into banks.

The Paulson plan did not work: no one understood exactly how it was supposed to function. Buying assets was one way of trying to resolve the problem. The idea was that the Treasury department would act as a “buyer of last resort” of toxic assets that the private sector was no longer able to evaluate. But the real problem was to figure out at what price. If the price were too low, many banks would fail; but if the price were too high, moral hazard would be at stake.

Indeed, the TARP didn't address some of the reasons why lending had stalled. Many economists believed that the heart of the government's initial plan to pay \$700 billion for toxic assets was off the mark. Purchasing mortgage securities from banks wouldn't do anything to kick-start lending and get credit flowing again. Rather, banks would use the proceeds they got from the Treasury to pay off debtors, and those debtors would use the proceeds to buy safe assets.

Instead, many academic economists thought from the beginning of the crisis that Treasury might need to invest directly in banks, an approach that had been taken by Sweden, Japan, and others in previous financial crises. The government's plan to buy equity in financial institutions was finally announced in November 2008.

However, so much lending had moved away from the banking sector toward hedge funds and other lightly regulated market participants that recapitalization might not soothe markets.

## **Part V**

### **What have we learned so far?**

The idea of what LOLR intervention should consist of and in what circumstances it should take place evolved considerably after Thornton and Bagehot. Naturally, in order to properly appreciate the scope of these evolutions, they should be placed in their legal, economic, and institutional contexts. They reflect shifts in economic, financial, and institutional structures, but also the spectacular increase of risk in a globalized and financialized world. What actions the LOLR should undertake, its missions, and its interventions should be judged in this new framework. Indeed, during the recent crisis, a radically changed concept of the LOLR was put into practice by the central banks, with the Fed leading the charge. Three areas of analysis demonstrate the gap between how the LOLR is intervening today and the classical notion of the LOLR:

#### **1. Concerning the actual doctrine of the LOLR:**

As we noted above, classic LOLR doctrine calls for helping out banks that may be illiquid, but not insolvent. Later, it was argued that the distinction between “illiquid” and “insolvent” would be difficult to draw rapidly in a highly turbulent period, but that CBs should encourage banks to discipline themselves by entertaining a certain ambiguity as to whom they would bail out and under what circumstances. And in the final analysis, the Fed did allow Lehman Brothers to fail. However, what may have been in part intended as a confirmation of the fact that the LOLR would not always save major banks, quickly turned into a demonstration of an opposite nature. Sept. 15, 2008, represented the height of systemic risk. The Fed’s decision with regard to Lehman was widely criticized, and it quickly became clear that CBs were not going to allow another major financial player to collapse. For at least a considerable amount of time, “constructive ambiguity” will no longer contain much ambiguity, at least where the majors are involved.

Also contrary to classic doctrine, LOLR actions in the crisis have concerned not only banks, including those that are insolvent, but also non-bank financial institutions not monitored by the LOLR. The safety net has been considerably extended and moral hazard increased. This is all the more serious because the structures that have been established by and around the banks are complex and lack transparency. When making loans, the LOLR is supposed to accept only high-quality securities as collateral. However, following the near failure and emergency sale of Bear

Stearns in March 2008, the Fed authorized investment banks, which do not solicit the public to deposit its savings with them, to obtain new financing from it in the same way as retail banks. It relaxed the rules governing usage of this facility to allow the investment banks, which it does not monitor, to also put up as collateral securities whose soundness is questionable. Steps such as these taken around the world by central banks—as LOLRs—did of course reduce the risk of banks running short of liquidity and threatening the stability of the entire system, but they also resulted in a deterioration of central banks' balance sheets. The June 14, 2008, issue of *The Economist* characterized the ECB as the “litterbin of last resort.” This has penalized the central bank (by increasing credit risk in CB's portfolio) and the taxpayers, not the banks themselves.

## **2. Concerning the conditions under which the LOLR intervenes:**

The distinction between banks and other providers of financial services has narrowed considerably in recent years. This has led to adding to the ‘too-big-to-fail’ concept the ‘too interconnected to be allowed to fail’ and ‘too complex to be allowed to fail’ concepts at a time when markets are in turmoil. In today's increasingly complex globalized markets, investors are so interconnected and risk interdependence is so great that as soon as doubts arise concerning one financial institution they quickly spread to the institutions that are holding its debt, creating systemic risk. Risks also spread quickly from one market sector to another, as well as across borders. With global financial markets having become so interconnected, one government's move to recapitalize banks isn't enough, and a broad, coordinated effort is required. For example, when certain European governments took decisions during the crisis, this inevitably had an impact on other European countries. When the Irish government decided to guaranty all deposits of Irish banks, that led the British to decide to recapitalize their whole banking system. Financial markets are closely linked and many banks operate in more than one European country.

The recent crisis has also made clear that although central banks today have the responsibility of ensuring financial stability and averting systemic risk, in reality they do not have the means or the requisite direct authority to do that. Thus much risk originates in over-the-counter markets used by investment banks, and central banks have no authority to monitor these markets or hedge funds.

### **3. Concerning how to move forward**

Historically, the notion of prior “ambiguity” in order to avoid excessive risk-taking and moral hazard replaced the “classical” public statement of central bank policy in advance in order to remove any uncertainty. Today policies seem to have evolved towards an after-the-fact “ambiguity,” with the idea of making emergency loans while concealing the identity of the bailed-out bank in order to avoid spiraling mistrust (the case of Northern Rock). Such a shift would reverse the previous approach and qualitatively increase moral hazard by virtually guaranteeing aid prior to the collapse and maintaining an after-the-fact ambiguity on the identity of those bailed out.

It is also likely that the coexistence of several institutions with similar roles obfuscates their respective responsibilities and hampers the effectiveness of LOLR interventions. In several countries during the crisis, the United States, the United Kingdom, and others, various authorities actively intervened without it being possible to untangle their precise roles. This lack of clarity dilutes the responsibility of each authority.

Before the beginning of the crisis in the U.S., three agencies—the Federal Reserve, the Treasury Department, and the Federal Deposit Insurance Corporation— were in charge of banks. And the SEC was responsible for investment banks. The SEC announced at the end of September 2009 its intention of no longer regulating investment banks, but how responsibilities between the three remaining authorities are to be shared out remains unclear. In the U.K., the tripartite arrangement failed in the case of Northern Rock. It seems that between the three authorities involved there was a lack of effective and timely communication. The lack of a clear leadership structure, together with the uncertainties surrounding resolution procedures (questions of EU law, timing, and so on), and an ill-designed deposit insurance system also contributed to the debacle.

As for the euro zone, who is the LOLR? The ECB or the national CBs? If it is the ECB, then its status needs to be modified, because it currently has no explicit mandate to supervise banking or other financial institutions. Its only mandate is to determine monetary policy and keep inflation in check. If it is the national CBs, then a contradiction exists between their national character and the fact that the same monetary policy applies across the entire euro zone and is outside their jurisdiction. Should the LOLR be national or pan-European, and how to deal with the fact that eleven member states of the European Union are not members of the euro zone?

Far from combating moral hazard, the way in which central banks intervened as LOLRs can only have encouraged it. Even Ben Bernanke, the President of the Federal Reserve, clearly expressed this concern during the Fed's Annual Economic Symposium in Jackson Hole, Wyoming, in August 2008, "What would be perceived as an implicit expansion of the safety net could exacerbate the problem of 'too big to fail,' possibly resulting in excessive risk-taking and yet greater systemic risk in the future."

Acharya, Gromb and Yorulmazer (2008) determine that "if the central bank stands as a LOLR, it will have incentives to improve its abilities to make loans, e.g., to assess and monitor borrowing banks; and it may be optimal to assign other tasks (e.g., supervision) to the central bank if they increase its expertise in monitoring loans." Greater information and supervision of banks by the central bank can make its intervention more effective and efficient. Attaching conditions to bailout and rescue plans and demanding trade-offs can mitigate the risk of moral hazard and limit the costs of excessive risk-taking created by LOLR intervention.

Since one of the problems is the lack of ability to distinguish solvent banks from illiquid ones during a crisis situation, the focus should be more on preventing such a situation from arising. Banks should have to respect a leverage ratio prohibiting them from using leverage that would expose them to anything more than a moderate level of risk. The leverage ratio should therefore also take into account off-balance-sheet activities that help banks tremendously increase their leverage, while allowing them to get around capital adequacy requirements.

Since the widely criticized decision to let Lehman collapse, it has become clear that the authorities will not permit another "too big to fail" financial institution suffer the same fate, thus providing those banks with a substantial de facto insurance policy. In return, shouldn't these banks be charged a fee for such backing?

Should the Government have the power to take (temporary?) ownership of a failing bank, in order to facilitate a more orderly resolution? Under what circumstances would it be appropriate for this power to be exercised? Should legislation allow government to take (temporary?) ownership of all or part of a bank as a last resort? How about other institutions?

What is likely to be the ultimate outcome of the AIG saga, the insurance company that was rescued in mid-September 2008, when it faced bankruptcy? At the time, the Fed loaned it up to \$85

billion. In the following six months, the government agreed no less than three times to substantially increase its aid, totalling \$173.3 billion at the beginning of March 2009. The March 1, 2009, bailout terms slashed the 10% annual dividend payment the company had originally agreed to pay the government for its \$40 billion in preferred AIG stock. The government said it would seek to sell its 79.9% stake in AIG to private investors when market conditions permit. After having nationalized the record-breaking losses, will the next step be to privatize the profits?

All these factors today make the cost of LOLR intervention exorbitant and ineffective in preventing a new crisis. The necessity of an LOLR flows from the unique role banks play in modern economies and the considerable effect bank failures or measures taken to prevent failures can have. The bailout programs put into place in the recent crisis testify just how expensive it is for central banks to keep liquidity flowing and to the social cost of massive, unprecedented intervention. To avoid increasing moral hazard and taking hostage the LOLR (because a firm is “too big to fail” or “too interconnected to fail”), which is forced to intervene in order to prevent the system from imploding, the LOLR should at the very least impose conditionalities on the aid given. Such conditionalities should mainly concern how the new funds are used. Because of the special nature of banks and the social costs of bailing them out, bank regulation and monitoring should be under public control and not left to the markets. In order to reconcile all these imperatives and reduce costs, the best solution is to nationalize banking systems. Such a decision should be taken rapidly so as to avoid a lack of confidence spreading as one after another individual banks appear likely to figure on the list of those being nationalized. This step could make it possible to avoid today’s remedies for the crisis from creating the conditions for a new crisis, even more devastating, in the next ten to fifteen years.

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