Terms and conditions for central bank liquidity support

Thorvald Grung Moe
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Should central banks provide Lender of Last Resort loans at a penalty rate?

Introduction

On December 23, 2011 Bloomberg News released the details of the Federal Reserve’s emergency programs during the 2007 to 2009 financial crisis. The release of this information has led to a discussion about the terms and conditions of the Fed’s liquidity support, and specifically if the loans were given at subsidized rates.1 Bloomberg estimated that the Fed support generated a total income of $13 billion, of which around $5 billion went directly to the six biggest U.S. banks. The Fed, on the other hand, in a letter to Congress argue that it was incorrect to assert that banks reaped big income by taking advantage of the Fed’s below-market-rates:2

Most of the Federal Reserve’s lending facilities were priced at a penalty over normal market rates so that borrowers had economic incentives to exit the facilities as market conditions normalized, and the rates that the Federal Reserve charged on its lending programs did not provide a subsidy to borrowers.

The current debate about the terms and conditions of central bank liquidity support in a crisis is not new. In fact, it goes all the way back to the beginning of central banking in the 19th century when the same issue was hotly debated in the United Kingdom. In his classic book *Lombard Street* from 1873, Walter Bagehot provided the guidelines for central bank lender of last resort support that is still widely quoted whenever there is a new banking crisis. His advice to the Bank of England then was ... to lend in a panic on every kind of current security, or every sort on which money is ordinarily and usually lent (Bagehot, 1873, p. 90). Theory suggest, and experience proves, that in a panic the holders of the ultimate Bank reserve should lend to all that bring good securities, quickly, freely, and readily (ibid, s. 79).

Bagehot was frustrated that the Bank of England was not supportive enough of the stability of the financial system: *The public have a right to know whether the Bank of England acknowledges this duty, and are ready to perform it. But this is now very uncertain* (s. 79). Bank

1 Bloomberg received data for the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, the Primary Dealer Credit Facility, the Term Auction Facility, the Term Securities Lending Facility, the discount window and single-tranche open market operations, or ST OMO. Their cover story appears here.

of England, on the other hand, was concerned about the adverse incentive effects (moral
hazard) if it assumed such a role, and therefore wanted the banking industry to settle the
liquidity problems on its own.

This adverse incentive effects may be limited by the terms and conditions for such loans.
Bagehot proposed that central banks should ... lend early and freely (without limit), to solvent
firms, against good collateral and at “high rates”. Many have since argued that the conditions
for central banks support need to be even stricter and that liquidity support should only be
provided at a penalty rate during a crisis.

In this note I first document what Bagehot actually said about the penalty rate in his 1873 book.
Then I review the modern discussion of the penalty rate, before ending with some policy
conclusions. I note that during a systemic banking crisis it is not uncommon for central banks to
provide liquidity support to banks at below market rates. This enables the banking system to
recoup and eventually recover its capacity to provide essential payment services to the public.

**Background**

During the recent crisis many central banks found that illiquid (but solvent) banks were
reluctant to ask for extraordinary liquidity loans, either because the interest rate was too high,
or it was associated with "stigma" to ask for such loans. This applied to both the use of “regular”
standing facilities and the use of more discretionary borrowing facilities. Paul Tucker Bank from
the Bank of England described this dilemma well.³

... during the turmoil of the past eighteen or so months, around the world banks have at times
been reluctant to pay such “penalty” rates of interest for fear of signaling, if somehow their use
leaks or is revealed by a “witch hunt”, that they have an idiosyncratic problem even when they
don’t. During 2007 this became known as the “stigma problem”, and it caused standing lending
facilities, a key piece of central bank machinery for providing overnight liquidity to the payments
system, to more or less atrophy in some centers during the first phase of the crisis.

Many central banks found new and innovative ways to provide liquidity during the recent
banking crisis, both regarding the terms of the loans and who could get them. In the US, the
Federal Reserve developed a whole range of new tools, the so-called "alphabet soup" of
lending facilities. Early on the Fed reduced the penalty rate in the discount window from 100 bp
to 25 bp. But the most important policy change was perhaps the establishment of separate
auctions for banks with liquidity problems (the so-called TAF scheme), which de facto led to a
borrowing rate (the "stop-out rate in the auction") below the borrowing rate in the discount

³ Paul Tucker (2009): The repertoire of official sector interventions in the financial system – last resort lending,
market-making, and capital.
window ("the primary credit rate"); even after the spread was reduced). Banks that needed liquidity could bid for funds in the anonymous TAF auction, thus avoiding the negative stigma associated with discount window borrowing.

In Norway, the crisis was less extensive, but still serious enough for the government to implemented extraordinary liquidity measures. Norges Bank added more liquidity into the banking system than normal, and also established dedicated short term lending facilities. But the most important policy measure was a new swap facility that “enabled the banks to finance themselves with cheap money in the central bank”, backed by mortgage securities. The scheme was so favorable for the banks that finance minister Kristin Halvorsen at the time even described it as the "State's gold card to the banks." Several other central banks established similar schemes which provided additional liquidity to the banks at favorable terms (i.e. not just at "penalty rates", as many believe Bagehot would have advocated).

Some terminology
Before proceeding, it may be advisable to clarify some key concepts. Since I want to discuss the terms and conditions of central bank liquidity support during the crisis, we need to distinguish between ordinary liquidity facilities and extraordinary liquidity support, or lender of last resort loans.

Norges Bank provides the following definition in its publication Financial Stability 2/2004:

*If the liquidity needs are so great that the approval of other types of securities (for example equities) or waiver of the standard requirement of collateral is the last remaining opportunity to bring more liquidity, special assessments are made. It is such liquidity that will be called extraordinary.*

This way of providing emergency liquidity is often referred to as the central bank's “lender of last resort" role. Note that such lending can take the form of either new, discretionary facilities or expanding regular lending facilities by accepting a wider set of collateral. In practice, what is "extraordinary loans" would vary from the central bank to central bank depending on what was their collateral policy before the crisis. This was evident during the recent crisis, where some

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4 Thornton …. cite
5 Quote from the newspaper Dagens Næringsliv, May 7, 2009.
6 *Norges Bank’s role in the event of liquidity crises in the financial sector*, p. 36
7 The term was first used by Sir Francis Baring in 1797; he referred to as the Bank of England: ... the "dernier resort" from which all banks could obtain liquidity in times of crisis. Henry Thornton (1760-1815) gave a theoretical justification for the LRR in his magnum opus: *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain* (1802). Walter Bagehot (1826-1877) popularized the LRR role in *Lombard Street* (1873).
8 In Norway, this would imply that Lender of Last Resort loans would not only be the special loan facility (S loans), but also all lending under the regular facilities with extended or waived collateral requirements (D- and F- loans).
central banks had to change their policies quickly to provide more liquidity, while others had more flexibility within their existing systems.

Governor Bernanke drew attention to this in a speech from 2008:

... *some central banks (such as the ECB) have greater flexibility than the Federal Reserve in the types of collateral they can accept in open market operations. As a result, some foreign central banks have been able to address the recent liquidity pressures within their existing frameworks without resorting to extraordinary measures.*

Many central banks will only provide extraordinary liquidity if financial stability is threatened, which is also referred to as a "systemic crisis". In such situations, the interest rate should be set low in order not to aggravate the crisis, according to the chief economist of BIS. The key question then is whether Bagehot's recommended high interest rates (or penalty rates) for isolated cases of inappropriate bank behavior leading to temporary illiquidity, or if he also would have favored high (or penalty) rates in a generalized systemic crisis?

Before proceeding, it is interesting to note that central banks use the term "lender of last resort" somewhat differently. Thus, Bank of Canada includes their regular open market operations within its broad Lender of Last Resort function, while they use the term ELA (*Emergency Lending Assistance*) for what we would otherwise call "extraordinary liquidity provision". The Australian Reserve Bank has a different terminology, when they delimit Lender of Last Resort loans to "lending to one specific entity, when no one else will".

**What did Bagehot say about the penalty rate in his Lombard Street book?**

**Brief background about the book *Lombard Street***

Walter Bagehot wrote the book *Lombard Street* in 1873 after having been editor of The Economist for many years. He had already criticized the Bank of England for not accepting its responsibility as "lender of last resort". Especially after the crisis in 1866 (which was sparked by the BoE would not lend to the Overend Gurney Bank, which then had to close), he argued that the bank should acknowledge its expanded role, not least because the bank in this crisis *de facto* had acted as a central bank – but only after Overend had closed. To support his views, Bagehot showed that the Bank of England had acted as "lender of last resort" during the crisis in 1825; the following quote from one of the directors in the Bank of England is a classic:

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10. "... a systemic event almost surely requires lending at an effectively subsidized rate compared to the market rate while taking collateral of suspect quality", in *Central bank tools and liquidity shortages*
12. An internet version of the book is available here
We lent by every possible means and in modes we had never adopted before; we took in stock on security, we purchased Exchequer bills, we made advances on Exchequer bills, we not only discounted outright, but we made advances on the deposit of bills of exchange to an immense amount, in short, by every possible means consistent with the safety of the Bank, and we were not on some occasions over-nice. Seeing the dreadful state in which the public were, we rendered every assistance in our power.

Bank of England, however, was unhappy about Bagehot's views and one of the bank's directors - Thomson Hankey – defended the bank’s policy in a book published right after the crisis: 13

The Economist newspaper has put forth what, in my opinion, is the most mischievous doctrine ever broached in the monetary or Banking-world in this country; viz., that it is one of the proper functions of the Bank of England to keep money available at all times to supply the demands of Bankers who have rendered their own assets unavailable. Until such a doctrine is repudiated by the Banking-interest, the difficulty of pursuing any sound principle of Banking in London will be always very great.

So the debate about how the central bank should act in a crisis continued in England, and it was against this background that Bagehot completed his book Lombard Street in 1873. Bignon et. al (2009) in a recent working paper on lender of last resort policy, characterize this debate as “the mother of all controversies on the incidence of lending of last resort on moral hazard”. But despite the Bank of England acting more like a central bank after the 1966 crisis, they still would not officially acknowledge this role.

The wanted to maintain "market discipline" and strengthen the credibility of the bank, after redemption in gold had been suspended twice in previous crises (in 1847 and 1857). 14 There was a desire not to formally adopt an exception to the fixed exchange rate regime, or as Lord Overstone said in a parliamentary debate: A contingency plan for the suspension of the currency rule under pressure would make (the rule) “a nullity”. This line of argument is still used when central bankers defend pegged exchange rates or their policy of "constructive ambiguity" when deciding who should get liquidity support in a crisis. The debate between Bagehot and Hankey in the 19th century therefore still has a resonance in today's discussions about the LLR policy, not the least regarding the terms and conditions of central bank liquidity support in a crisis.

13 Hankey (1867): The principles of banking, its utility and economy
14 Parliament adopted the "Peel’s Act" in 1844, which established a fixed exchange rate between the pound sterling and gold, after a long preceding period without a fixed reference point (i.e. a fiat money system). A modern parallel to the gold standard is the dollarizing policy in some countries, such as Argentina and Ecuador. Argentine left the peg in 2001.
What did Bagehot say in *Lombard Street* on the terms and conditions for the "lender of last resort" support?

If we look closer at what Bagehot actually wrote about the interest rate on liquidity loans from the Bank of England during a crisis, we find that he did not use the word "penalty rate", but rather consistently used the term "high rate" and a few times even a "very high rate". The most quoted passage in the book is as follows:

*The end is to stay the panic; and the advances should, if possible, stay the panic. And for this purpose there are two rules: First that these loans should only be made at a very high rate of interest. This will operate as a heavy fine on unreasonable timidity, and will prevent the greatest number of applications by persons who do not require it. The rate should be raised early in the panic, so that the fine may be paid early; that no one may borrow out of idle precaution without paying well for it; that the Banking reserve may be protected as far as possible. (s.89)*

This section is often used as evidence for the claim that Bagehot recommended a "penalty rate". But the reference to a "very high rate" should be read as a precondition for dealing with a "twin crisis", i.e. a simultaneous balance of payments and banking crisis. Other place in the book, when Bagehot discusses the general principles of the lender of last resort policy, the term “high rate” is not mentioned at all:

*Theory suggests, and experience proves, that in a panic the holders of the ultimate Bank reserve (whether one bank or many) should lend to all that bring good securities quickly, freely, and readily. (s. 79)*

*The only safe plan for the Bank is the brave plan, to lend in a panic on every kind of current security, or every sort on which money is ordinarily and usually lent. (s. 90)*

*They must lend to merchants, to minor bankers, to 'this man and that man,' whenever the security is good. In wild periods of alarm, one failure makes many, and the best way to prevent the derivative failures is to arrest the primary failure which causes them. (s. 23)*

When did the term "penalty rate" emerge?

Bagehot's main theme in *Lombard Street* was the responsibility of the Bank of England for the liquidity of the banking system, based on the Bank's role as issuer of money (Bank of England notes became legal tender in 1833) and manager of the country's reserves. From this basic

15 This quote illustrates this point well: *We must look first to the foreign drain, and raise the rate of interest as high as may be necessary. ... And at the rate of interest so raised, the holders—one or more—of the final Bank reserve must lend freely. Very large loans at very high rates are the best remedy for the worst malady of the money market when a foreign drain is added to a domestic drain. (s. 26)*
vision, he argued that the bank had to provide liquidity crises in large quantities against good collateral. This was his main message.\textsuperscript{16}

It appears the use of the term high interest rates is primarily related to the discussion of the "twin crisis", in which the central bank is faced with a "foreign drain" (remember that England was on the gold standard at the time) as well as a domestic banking crisis ("internal drain"). To resolve such a crisis requires a fine balancing act and Bagehot therefore recommend that the bank first stop the outflow of gold, and then deal with the domestic crisis.

Whether Bagehot would have recommend a (very) "high rate" to deal with just a domestic crisis, is uncertain. The high rate would in any case have been low by todays standards, since there was very strict usury laws in effect that limited the banks' ability to move the interest rate freely. \textsuperscript{17} Goodhart (2002) notes that an interest rate of 6 - 7\% was considered very high; a rate of 7\% "would bring gold from the moon"!\textsuperscript{18}

Paul Tucker (2010) also notes that Bagehot never used the term "penalty rate":

\textit{Bagehot said that the rate should be “high”. But since he wrote in the context of the Gold Standard and of domestic financial crises that were typically accompanied by external (or capital account) crises, his notion of a “high rate” was bound up with the central bank tightening monetary conditions to stem the outflows (of gold). But it is clear enough that, although he did not in fact talk of “penalty” rates, the relevant measure for him was the rate charged by the central bank relative to that prevailing in the market in normal conditions, ie before a crisis breaks.}

This view is supported by Stanley Fischer (1999), who admittedly uses the concept of penal interest, but emphasizes that \textit{"the penalty rate must be set relative to the interest rate during normal times"}.

It is not quite clear when the term "penalty rate" was used first in a statement of the "Bagehot's principle". An early source is Humphrey and Keleher (1984). In a more recent article on the same theme, Humphrey (1989) notes that Bagehot ... \textit{advocated that last resort}

\textsuperscript{16} Bagehot argued that the Bank should accept as collateral everything that in normal times would be considered good security, and if need be even provide liquidity on the basis of more non-traditional securities, such as railway shares .

\textsuperscript{17} Goodhart (2002) argues that this is at least one reason for the term ("penalty rate") not being used in Thornton’s classic discussion of LLR policy in his 1802 book on Paper Credit.

\textsuperscript{18} Goodhart (1999) also notes that ... \textit{Bagehot did not state that the interest rate necessarily needs to be above the market rate prevailing after the onset of the panic. While Bagehot insisted on a 'high' rate of interest, it seems that the only condition was that the interest rate be above the pre panic market rate.}
accommodation be made at a penalty rate. Borrowers should have relief in times of crisis, but they should be prepared to pay a price that implied a stiff penalty.

He highlights four reasons why (in his view) Bagehot advocated a penalty interest rate (for LLR support):

- It would slow the outflow of gold (and stimulate imports of the same)
- It would ensure a rapid repayment of the loans and thus a stable money supply growth
- It would stimulate those with available funds to lend to the needy
- It would also ensure that banks tapped all other sources of liquidity before approaching the Bank of England

Many prominent economists have subsequently supported this interpretation of Bagehot, including Robert Solow (1992):

“Bagehot’s insistence that the Bank of England should lend freely but at a penalty rate fits in here... a fundamentally sound bank would be able to pay off with interest, thus the penalty rate is a way of reducing moral hazard [and] a form of coinsurance”.

And Andrew Crockett, former head of the BIS (1997):

“Bagehot’s proposal to lend only to solvent but illiquid institutions, and to do so only at penalty rate, is an attempt to counteract moral hazard”.

This emphasis on "punishment" when banks borrow from the central bank has certain moral overtones that Bignon et. al (2009) attributes to

“... the beginning of the 20th century, when both in the U.S. and in the U.K., central bankers progressively focused on open market operations and began to fix official discount rates at a considerably higher level than market ones: in this context, resort to standing facilities could only be envisaged by very bad agents, and the higher fees they were obliged to face may have come to be seen as “penalty” ones.

But Bagehot's advice to central bankers was, according to a Bignon. al, actually to extend loans to all solvent borrowers of "good standing" whenever they faced a liquidly crisis.

Central banks rarely extend emergency liquidity loans at penal rates

Bagehot "penalty rate" were supposed to limit moral hazard, but history shows that central banks in practice have acted more pragmatically. Giovanni (1999) that

The information we have on individual rescue packages is all too clear. Most central banks have been willing to extend last-resort rescue packages at market or even at subsidized rates. In addition, some (rescue) packages sometimes feature uncollateralized liquidity support.
Bignon et al. (2009) also address this split between principles of LLR and central bank policy during crises:

... if modern authorities had wanted to follow Bagehot’s advice, they would have lent on good collateral only at penalty rates, instead of lending at very low rates on what some observers described as poor-quality financial products. Would that have worked? In the unlikely case economists ended up reading these pages, they should let us know.

Martin (2002) argues that Bagehot advice on the terms and conditions of central bank liquidity support must be interpreted based on the policy setting of the Bank of England in the 1870s, specifically the presence of the gold standard. His advice to add liquidity at a very high rate was justified in relation to the "the drain of gold", as we mentioned above. However, if central banks are operating a fiat money systems (such as the Federal Reserves’), they can and should provide liquidity liberally in an emergency at a very low rate. He refer in this regard to the experience after 11 September 2001 - when the Federal Reserve injected large amounts of liquidity at a low interest rate. Martin believes we have more to learn from Henry Thornton (1802) who also wrote about the central bank's lender of last resort function, but in a situation where England was not the gold standard. And Thornton does not recommend a "penalty rate interest" for liquidity support in a crisis.

Daniel Thornton (2008) discusses the same point in a short essay where he notes that:

... rather than lending at a penalty as Bagehot recommended, the TAF has provided funds at rates that have generally been low relative to rates that depository institutions would have had to pay otherwise.

Cecchetti and Disyatat (2010) also note that "Bagehot lived in a different world" and "... it is natural to ask whether Bagehot's nineteenth century doctrine still applies":

Our analysis leads us to conclude that the appropriate principles for central banks’ LOLR support must be conditioned on the particular type of liquidity shortage that is taking place. When confronted with a simple shortage of central bank liquidity, for example, Bagehot’s rules apply. By contrast, a systemic event almost surely requires lending at an effectively subsidized rate compared to the market rate while taking collateral of suspect quality.

It remains then (only) to determine whether a banking crisis is systemic or no; the interest rate policy for liquidity support would then follow.

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19 Bank of England did not have to exchange gold for notes between 1798 and 1821.
20 As noted by Goodhart (2002) above.
21 Vice President at the time at the St. Louis Federal Reserve
Summary and conclusions

This review shows that there are different views on the terms and conditions that should apply for central bank emergency liquidity support, or “lender of last resort loans”. The recent crisis has shown that extraordinary liquidity support may be supplied in various ways.

The distinction between discretionary liquidity loans (to individual banks) and the standing facilities have become less clear, particularly as central banks have used innovative auction facilities to bypass the "stigma" problem related to discount window borrowing. Liquidity obtained through such auctions often carried an average interest rate well below the discount window borrowing rate (even after the lending spread of the corridor had been reduced).

The crisis has led to a reassessment of central bank policy tools, including the instruments used for liquidity provision (i.e. general standing facilities or specific, discretionary loans), as well as the terms and conditions for such loans (e.g. maturity, interest rate and collateral). The current discussion still revolves around the themes identified by Bagehot in his classic Lombard Street book from 1873. But as we have noted, since Bagehot wrote against the backdrop of a gold standard policy regime, his advice regarding the use of a “high rate” or even “very high rate” for liquidity support should be handled with care. Of more importance today is probably his advice to “lend to all that bring good securities quickly, freely, and readily”.

There is also a broad consensus that the interest rate on emergency liquidity loans from the central bank should not be set above the (extremely) high market interest rates that apply in the middle of a crisis. If the rate was set that high, there would be no borrowing form the central bank at all. The central bank is supposed to act as lender of last resort to correct a market failure, specifically the lack of credit for illiquid, but solvent banks in a crisis. By definition, there will then be a “subsidy element” in such loans, if one compares them with the extremely expensive market rates prevailing at the time (if loans are obtainable at all). As noted above, central banks will generally also require there to be material danger to financial stability before such “subsidized” loans are given.\textsuperscript{22}

Liquidity support from the central bank is designed to help solve acute liquidity problems. If the interest rate for such liquidity support is set too high, the central bank may exacerbate the crisis. To limit the risk of moral hazard, the central bank should attached strict conditions to such loans, combined with more intensive supervision and monitoring of the crisis banks. Write-down of creditors and changes in the board and management of the crisis banks should also be considered.

\textsuperscript{22} In the cost/benefit calculation for the central bank, the negative costs associated with not lending to solvent, illiquid banks will have to be factored in. The decision problem (to extend LLR or not) is made more difficult by large market-to-market valuation losses that can gyrate rapidly with huge implication for the banks solvency ratios. It is thus difficult to judge whether a bank is just illiquid, or also insolvent. The decision to lend would therefore often be based on going concern values, assuming an economic recovery and improved asset prices along the way.
References:
Federal Reserve (2011): *Correction of Recent Reports Regarding Federal Reserve Emergency Lending during the Financial Crisis*, Letter to Congress, December 6
Giovanni (1999):
Tomson Hankey (1867): *The principles of banking, its utility and economy*


Henry Thornton (1802): *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain*. The Online Library of Liberty