International Finance 18:3, 2015: pp. 321–342
DOI: 10.1111/infi.12075

The Federal Reserve: The Weakest Lender of Last Resort Among Its Peers*

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Abstract

This article for the first time compares the Federal Reserve's powers as lender of last resort ('LLR') and its ability to fight contagion, with its three major peers, the Bank of England (the 'BOE'), the European Central Bank (the 'ECB') and the Bank of Japan (the 'BOJ'). It concludes that the Federal Reserve (the 'Fed') is currently the weakest of the four, largely due to a hostile political environment for LLR powers, which are equated with bailouts, and restrictions placed by the 2010 Dodd–Frank Act on the Fed's ability to loan to non-banks, whose role in the financial system is ever-increasing. This is a concern for the global as well as the US financial system, given the economic importance of the United States and the use of the dollar as a reserve currency.

I. Background: The Fed and Dodd–Frank

The Fed's primary LLR authorities are set forth in Sections 10B and 13(3) of the Federal Reserve Act ('FRA'). Section 10B authorizes the discount window, through

*I would like to thank Megan Vasios, John Gulliver and Brian Johnson for their general research assistance. This article forms the basis of a chapter in a forthcoming book about connectedness and contagion to be published by MIT Press in spring 2016.

which the Fed extends short-term collateralized loans to depository institutions with reserves at the Fed. At the time of the 2008 crisis, §13(3) permitted the Fed to lend to non-banks 'in unusual and exigent circumstances'. On 14 March 2008, the Fed (2014a) used §13(3) to extend a $12.9 billion secured bridge loan to Bear Stearns through JPMorgan Chase Bank ('JPMC'), and then two days later authorized an additional $29 billion loan to facilitate JPMC's acquisition of Bear Stearns. The Fed (2008a, 2008b) later used §13(3) in September 2008 to provide $85 billion to AIG. Section 13(3) was further invoked to establish general lending facilities for non-banks,[1] and to provide liquidity to money market funds, commercial paper issuers and securitization markets.

The Fed relied on its §13(3) authority to provide individual loans and general market liquidity to non-banks during the 2008 financial crisis. Non-banks require a strong LLR because their share of runnable short-term liabilities (liabilities of 30 days or less without a government guarantee) in the banking system has been growing. I estimate that the US financial system has approximately $7.4 to $8.2 trillion in runnable short-term liabilities. Non-banks have issued approximately 60% of this total.

In 2010, the Dodd–Frank Act (US House 2010) amended §13(3) to impose restrictions on the Fed's power as LLR to non-banks. These limitations hold that (i) loans cannot be made to single institutions – they must be part of a broad programme approved by the US Secretary of the Treasury; (ii) all non-bank loans must be approved by the Secretary of the Treasury; (iii) loans can only be made to solvent non-banks; (iv) discount-window loans to banks cannot be used to fund broker–dealer affiliates; (v) loans must meet heightened collateral requirements; and (vi) loans must be publicly disclosed within one year and disclosed to Congressional leaders within seven days.

This article reviews the powers of the Fed's three peer banks (the BOE, ECB and BOJ), then compares these powers with those of the Fed and concludes with observations about the differences.

II. The Bank of England

The BOE was formed as a private corporation in 1694 by royal charter. The Bank assumed its LLR role gradually, but by the end of the 19th century, the 'promotion of financial stability through its role as the effective LLR' was among the BOE's informal responsibilities (Carney 2014).

The BOE was nationalized in 1946, and its independent responsibility for monetary policy was codified in 1998 (BOE, 'Bank of England Legislation', n.d.;

[1]For example, the Fed (2014b, 2014c) established the Primary Dealer Credit Facility and Term Securities Lending Facility in March 2008 to provide liquidity to broker–dealers that acted as counterparties to the Fed's open market operations.

'Monetary Policy Framework', n.d.).[2] Today, the BOE ('One Mission', n.d.) expressly acknowledges that 'financial stability requires an efficient flow of funds in the economy and confidence in financial institutions. This is pursued through . . . the Bank's financial operations, including as LLR'.

A. The Sterling Monetary Framework

The BOE's publicly available Sterling Monetary Framework ('SMF') records the guidelines governing money market operations to implement monetary policy (BOE 2015a, p. 3; Winters 2012, p. 5). In a 2008 consultative paper, the BOE 'for the first time recognized that it should be an explicit objective of the SMF to provide liquidity insurance to the banking system'. The SMF formally includes liquidity facilities, including the discount window facility ('DWF'), the traditional LLR facility and a Contingent Term Repo Facility ('CTRF') that the Bank can activate in times of extreme market-wide stress (BOE 2015a, pp. 6, 13).

B. Participation in the SMF and Acceptable Collateral

Participation in the SMF is voluntary, and banks are eligible to apply for access at any time (BOE 2015a, p.7).[3] SMF participants are required to submit documents showing compliance with prudential regulatory requirements (e.g. on capital requirements). In addition, the BOE 'may, in its absolute discretion, waive, add to or vary any or all of the criteria' for SMF participant eligibility (BOE 2014b).

In November 2014, the BOE (2014c) opened SMF access to broker–dealers and central counterparties ('CCPs'). Eligible broker–dealers must be supervised by the Prudential Regulation Authority ('PRA'), and CCPs must be authorized under the European Market Infrastructure Regulation and be subject to regulations approved by the European Securities and Markets Authority (BOE 2014d, 2.1).

The BOE expanded the collateral it accepts following Governor Carney's (2013) announcement that '[t]he range of assets we will accept in exchange will be wider, extending to raw loans and, in fact, any asset of which we are capable of assessing the risks'. The Bank provides detailed guidance on collateral and haircuts of collateral on its website (BOE, 'Sterling Monetary Framework – Eligible Collateral', n.d.; BOE 2015b).

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[2]The 1998 Act provides that the government may give instruction to the Bank in extreme circumstances if the national interest demands it.

[3]The application to participate in the SMF facilities is available at: http://www.bankofengland.co.uk/markets/Documents/money/documentation/smfapplicationform.pdf (BOE 2014a).

C. Discount Window Lending

The DWF is generally available on-demand to banks, broker–dealers, and CCPs (BOE 2015a, pp. 7, 12). Borrowers must submit a 'DWF Transaction Notice' (BOE 2014d, 6.23–6.25), which sets forth the loan's proposed terms and certifies that no event of default or potential event of default exists or will result from the DWF drawing (BOE 2014e). DWF loans have 30-day maturities for banks and broker–dealers and 5-day maturities for CCPs (BOE 2015a, p. 12). DWF borrowers may apply to roll over drawings, when needed over a longer period.

The cost to access the DWF is designed to reflect 'a premium to the market in routine circumstances but should offer SMF participants affordable liquidity in less normal conditions' (BOE 2015a, p. 12). The BOE manages the impact of the potential stigma of DWF borrowing by not disclosing individual institutions' borrowing activity, instead publishing the activity averaged across borrowers over the period of a quarter, with a five-quarter lag (BOE 2015a, p. 13).

D. Contingent Term Repo Facility Lending

The purpose of the CTRF is to supply cash in periods of 'actual or prospective market-wide stress of an exceptional nature' (Plenderleith 2012, p. 91; BOE 2015a, p. 13). The CTRF accepts the 'full range of eligible collateral', and the BOE determines the operational details of the CTRF (e.g. term, size, and price) each time the facility is activated (BOE 2014d, 5.23–5.25; BOE 2015a, p. 13). CTRF lending is available to all SMF participants, except for CCPs. CTRF operations have not been initiated since 2012 (BOE, 'Contingent Term Repo Facility', n.d.).

E. Emergency Liquidity Assistance

Under Section 65 of the Financial Services Act of 2012 (the 'FSA'), the BOE, the Treasury and the PRA are required to establish a memorandum of understanding on financial crisis management (the 'MOU'). The MOU (UK Parliament 2012, c.21; BOE 2013, p. 1) sets forth the cooperative framework under which the Treasury and the BOE provide ELA that goes beyond the SMF. The need for the MOU, and overall clarification of the policies of emergency liquidity assistance, arose due to confusion over how such determinations were made during the 2007–8 crisis, particularly as it related to Northern Rock (Plenderleith 2012, p. 51). Neither the FSA nor the MOU limits the types of financial institutions that may obtain ELA.

During the financial crisis, the need for covert ELA was highlighted, most prominently by the 2007 run on Northern Rock. In response, Section 245 of the Banking Act of 2009 removed the legal requirement to publish the weekly summary of the Bank's balance sheet, which could effectively disclose the Bank's liquidity operations (Mehta and Salmon 2014). The BOE now only discloses aggregate lending on a quarterly basis and with a five-quarter lag (BOE, 'The Bank Return', n.d.).

E.1. ELA to Solvent Institutions

The BOE may provide ELA, defined as 'support operations outside the Bank's published frameworks', to solvent but 'at risk' firms (BOE 2013, pp. 1–2). The BOE can initiate such ELA, but must obtain Treasury approval before executing the aid. Rules regarding the terms and collateral policies of these loans are not publicly available (Plenderleith 2012, p. 51). The Treasury may, in some cases, indemnify the BOE against ELA losses to ensure that the Bank's capital will not be eroded, premised on the idea that emergency lending is as much a fiscal policy decision as a central bank LLR function. However, there is no published guidance as to when indemnification will be provided. Either way, the government absorbs central bank losses, since the BOE remits its profits to the Treasury (Kuttner 2008).

E.2. Lending at Treasury Direction

The MOU (BOE 2013, p. 4) also provides that the Chancellor may direct the BOE to provide ELA to firms the BOE does not judge to be solvent and viable, or on terms that diverge from those the BOE proposes. The Chancellor may also issue a directive to 'conduct special support operations for the financial system as a whole' with means that are outside the SMF. These directions may only be made after the BOE has notified the Treasury of a material risk to public funds, and either (i) there is a serious threat to financial stability or (ii) the Treasury has already committed public funds to reduce or resolve such a threat, and it would be in the public interest to do so (UK Parliament 2009, part 4.21). The funds for a Treasury-directed operation are segregated from the BOE's balance sheet into a special purpose vehicle ('SPV'), and the Treasury indemnifies the SPV and the BOE. The Treasury direction and the Bank's proposed response must also be 'laid immediately before Parliament', but disclosure may be postponed when confidentiality is crucial to financial stability.

III. The European Central Bank

The ECB was established in 1998 pursuant to the Treaty on European Union and the Statute of the European System of Central Banks and of the European Central Bank ('ESCB Statute') (Scheller 2004, pp. 28–9). The ECB is uniquely independent, since its existence is protected by the equivalent of a Constitution in a single country. The ECB is responsible for conducting monetary policy and for assuring the stability of the financial system. To conduct these policies, the ECB coordinates with national central banks ('NCBs') in the 28 EU countries, particularly the 19 NCBs in the countries that have adopted the euro as currency (the 'Eurosystem') (Protocol 2003; Wallace 2015a). The ECB's central bank tasks and authorities are prescribed in the Treaty on the Functioning of the European Union (TFEU) and the ESCB Statute (ECB 2015a). Because it shares central bank powers with the NCBs, the ECB's LLR role is distinctive.

The treaties and ESCB Statute do not directly address LLR authority, and the role of the ECB has been somewhat unclear. To clarify LLR responsibilities, the ECB announced in 2000 (ECB 2000, p. 98) that Emergency Liquidity Assistance (ELA), defined here as 'the support given by central banks in exceptional circumstances and on a case-by-case basis to temporarily illiquid institutions' was 'the responsibility and cost of the NCBs'. However, the ECB oversees NCBs' provision of ELA and retains authority to restrict the aid in certain circumstances. One important consequence of leaving ELA authority with NCBs is that they also retain the risk of loss.

Certain experts believe that the ECB itself should provide ELA. Charles Goodhart and Dirk Schoenmaker (2014) argue that the ECB should be responsible for LLR functions for the significant banks in the EU banking union. Rosa Lastra (2015, pp. 151, 378) offers a statutory basis for this authority. Article 18 of the ESCB Statute empowers the ECB 'to conduct credit operations with credit institutions and other market participants, with lending being based on adequate collateral'. The ECB could use this authority to act as an LLR by lending to temporarily illiquid institutions.

A. *Emergency Liquidity Assistance*

ELA becomes necessary when a solvent financial institution (or group thereof) faces a liquidity shortage but lacks collateral or is ineligible to access funds via the ECB's open market operations and standing facilities (ECB 2015b, 2015c; Wallace 2015b). Although ELA is technically available to 'financial institutions', only banks have so far received ELA. Each NCB is generally responsible for determining the terms of ELA, and the ECB does not restrict borrowers' use of the funds (so long as the purposes are commercial in nature).

Eligible counterparties for the ECB's monetary policy facilities must be 'financially sound' and meet certain minimum reserve requirements set by the ECB (2015d). They must also be subject to supervision applicable to credit institutions and investment firms regarding compliance with Basel III requirements, as introduced in the EU as 'CRD-IV' (Austrian Federal Ministry of Finance 2015). Banks' compliance with CRD-IV's capital requirements appears to serve as a proxy to satisfy the 'solvency' requirement for ELA recipients (Merler 2015; Ruparel 2015). The reliability of this data assumes that Basel capital is 'real' capital. This may be an unreasonable assumption: CRD-IV permits certain deferred tax assets to be counted as capital, and in 2015, up to 57% of Greek banks' Common Equity Tier 1 capital was attributable to such assets (EC 2013a; Merler 2015).

Collateral posted for ELA may be of a lower quality than that used in normal monetary operations. The ECB (2007, p. 80) has stated that 'adequate collateral' is necessary to receive ELA but does not further specify what collateral is sufficient (ECB 2015e). Indeed, the ECB states that 'NCBs can in principle autonomously design their own collateral framework for ELA, including the applicable risk control measures' (2015f, p. 35).

Although institutions 'have to be considered solvent to be eligible . . .[,] the exact terms and conditions for ELA are shrouded in even more secrecy than those of the ECB's regular operations' (Jones 2015). During the Eurozone crisis, certain NCBs provided ELA at a penalty interest rate (Black and Doyle 2012). Cyprus, Ireland and Greece are among the countries whose financial institutions have received such aid (Carrel and Kuehnen 2013).

B. Restrictions on ELA

The ECB ('ELA Procedures', n.d.) has the authority to 'restrict ELA operations if it considers that these operations interfere with the objectives and tasks of the Eurosystem'. For example, the ECB might cap the amount of ELA a particular NCB can provide, such as the cap on ELA extended to Greece in 2015 (Black and Ziotis 2015; Georgiopoulos 2015). Under Article 14.4 of the ESCB Statute, such a determination requires a two-thirds vote of the ECB Governing Council.

An NCB must also provide the ECB with various details regarding any ELA loan within two days after extension, but the ECB does not make those details public (Black 2012; 'ELA Procedures', n.d.). The NCB must provide advance notice to the ECB if the funds will exceed €500 million (ECB 2015f). If the volume of funds is expected to be greater than €2 billion, the ECB Governing Council 'will consider whether there is a risk that the ELA involved may interfere with the objectives and tasks of the Eurosystem' (Draghi 2014).

NCBs' provision of ELA is also indirectly constrained by the European Commission's (EC) state aid policies. These policies prohibit assistance from a member state that is 'incompatible with the common market', and the EC must approve of aid to confirm that it would not fall into this anticompetitive category (Lastra 2015, p. 157). Such approval was given, for instance, for the BOE's 2007 loan to Northern Rock, as the loan 'was secured by sufficient collateral and was interest-bearing' (EC 2007).

In August 2013, the EC (2013b) issued guidance on the application of state aid rules to ELA, clarifying that '[d]edicated support to a specific credit institution . . . may constitute aid unless . . . [certain] cumulative conditions are met'. These conditions include: (i) the institution is temporarily illiquid but solvent; (ii) the facility is fully secured by collateral with appropriate haircuts; (iii) a 'penal interest rate' is applied; and (iv) 'the measure is taken at the central bank's own initiative, and in particular is not backed by any counter-guarantee of the State'.

C. Liquidity via ECB Monetary Policy Operations

Although the ECB delegates ELA to NCBs, the ECB provides market-level liquidity in crises through monetary operations. Article 18 of the ESCB Statute empowers the ECB to conduct open market and credit operations, which can be used to supply liquidity. During the recent financial crises, '[t]he 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 the interbank market at the height of the crisis' (Domanski and Sushko 2014, p. 3). It is somewhat difficult to draw a clear line between LLR activity and liquidity provided via ECB monetary operations.

Long-term refinancing operations (LTROs) are one key monetary tool the ECB used to provide liquidity during the 2008 and 2010–12 financial crises (Domanski and Sushko 2014, p. 3). The ECB uses LTROs to provide cash to credit institutions at low interest rates (~1%) collateralized by EU member state sovereign debt. The LTRO programme size peaked with a €1 trillion injection into the European banking system in December 2011 through February 2012 (ECB 2011; De Grauwe 2012; Enrich and Forelle 2012).

In 2012, the Bank announced a new programme, Outright Monetary Transactions (OMT). Under OMT, the ECB would 'address severe distortions in government bond markets' based on investors' 'unfounded fears' by purchasing government bonds in the secondary markets (Draghi 2012a). The programme resonates with Mario Draghi's declaration, shortly before the announcement of OMT, that '[w]ithin our mandate, the ECB is ready to do whatever it takes to preserve the euro' (Draghi 2012b). However, whether OMT indeed fell within the ECB's mandate was subject to legal challenge. In June 2015, the European Court of Justice upheld OMT's legality as 'the purchase of government bonds on secondary markets does not exceed the powers of the ECB in relation to monetary policy and does not contravene the prohibition of monetary financing of Member States' (Court of Justice of the European Union 2015). Although the OMT programme has not been activated, EU market conditions improved after its announcement (Wolff 2013, p. 27; Keohane 2015).

IV. The Bank of Japan

The BOJ was founded in 1882 under the Bank of Japan Act (Miyamoto 2014, p. 11). Its LLR role was highlighted during Japan's depression in the 1920s, when the BOJ extended special loans to banks to stem contagion. The BOJ was later reorganized under the Bank of Japan Act of 1942 and its LLR authority set forth in Article 25 thereof. The Bank exercised this authority liberally during Japan's financial crisis in the 1990s. The current Bank of Japan Act ('BOJ Act') was enacted in 1997. The BOJ Act organizes LLR procedures into three main provisions: Article 33 (collateralized loans), Article 38 (special loans) and Article 37 (temporary uncollateralized loans). Although each type of loan addresses a different borrowing scenario, none contain express restrictions on borrowers' use of funds.

A. *Article 33*

The primary provision governing the BOJ's LLR authority is Article 33 of the BOJ Act, which contemplates the flexible provision of collateralized loans at the BOJ's sole discretion (International Monetary Fund 2013, p. 181). The BOJ (2014) provides details on eligible collateral and applicable haircuts on its website. There are no legal constraints on which types of institutions may hold BOJ accounts. A non-bank financial institution (such as a securities company or money market dealer) that is a BOJ account holder can receive an Article 33 loan (BOJ, 'Outline of Financial System Stability', n.d.; Miyamoto 2014, p. 23). The BOJ discloses only the aggregate value of loans extended under Article 33, not individual institutions' borrowings (BOJ 2015).

B. *Article 38*

The BOJ is authorized to extend special loans ('toku-yu') under Article 38 of the BOJ Act when 'necessary for the maintenance of stability of the financial system'. Institutions need not hold a BOJ account to receive special loans, and the loans may be uncollateralized (Miyamoto 2014, p. 25). The Article 38 process must begin with a request from the Prime Minster and the Minister of Finance for the BOJ to 'conduct the business necessary to maintain stability of the financial system', though the BOJ may ask the Minister of Finance to make this request. The Policy Board of the BOJ then decides whether to extend Article 38 loans according to four principles (General Accounting Office 1996; Nakaso 2014).

The first, and most important, principle is that 'there must be a strong likelihood that systemic risk will materialize' (BOJ 2012, p. 156). The goal of a special loan to an individual firm must be to prevent systemic risk, not to rescue or protect that firm. The 'Financial Crisis Response Council', which includes the BOJ governor and certain government officials (including the Prime Minister and Minister of Finance) typically determines whether such risk exists. The second principle is that the loans must be necessary for the borrower to obtain the funds; there should be no other options. Third, the recipients must be penalized and held responsible to avoid moral hazard (Nakaso 2014). Applying penalties, which might include replacing management and removing existing shareholders, are unique to the BOJ as compared with its peers. Fourth, the BOJ's financial soundness must not be jeopardized by the loan, so as to preserve public confidence. Considerations relating to the fourth principle include: (i) liquidity, not risk capital should be provided; (ii) 'there must be reason to believe that special loans are collectable'; and (iii) provisions should be set aside for each individual case, to prepare for potential losses (BOJ 1999).

If the Policy Board of the BOJ finds that special loans are necessary, the BOJ determines the loan terms at its sole discretion, on a case-by-case basis (Miyamoto 2014, pp. 25, 28). A penalty interest rate applies to uncollateralized loans (BOJ 2003). Interestingly, the extension of special loans and details regarding their terms are disclosed by press release shortly after these decisions are made. This disclosure is different from LLR practices at the peer banks, where the stigma associated with disclosure is thought to discourage borrowers from coming forward.

Importantly, the BOJ may also extend special loans under Article 38 to insolvent institutions 'in exceptional cases, as measures to prevent a financial crisis from materializing' (BOJ 2012, p. 157). These loans facilitate the resolution of failed institutions when the government or Deposit Insurance Corporation of Japan (DICJ) ensures that funds will be available for the BOJ to collect on its loans (Miyamoto 2014, p. 27). 'For example, [they may be extended] when the government decides to fully guarantee all liabilities of failed institutions'.

C. Article 37

The BOJ may also offer uncollateralized loans to financial institutions (including non-BOJ account holders) under Article 37 of the BOJ Act, in order to address temporary liquidity shortages (Miyamoto 2014, p. 24). These loans are for 'unexpected' shortages 'due to accidental causes' (e.g. technological failures), where 'necessary to secure smooth settlement of funds' and may be provided for up to one month. The Bank may provide Article 37 loans at its own discretion and may determine their terms on a case-by-case basis, but must report any lending thereunder to the Prime Minister and Minister of Finance 'without delay'. The BOJ has not extended any loans under Article 37.

D. Article 44

On-site examinations of financial institutions that receive loans under Article 37 or Article 38 are contemplated under Article 44 of the BOJ Act (Miyamoto 2014, p. 49). These procedures 'ensure that the Bank prepares or adequately conducts . . . (i) temporary loans to financial institutions (Article 37) [and] (ii) business contributing to maintaining the stability of the financial system (Article 38)' (BOJ 2012, p. 165).

V. Comparison of LLR Powers of the Four Central Banks

The Fed's LLR power post-Dodd–Frank, particularly to non-banks, is weak as compared to its three peers. This is a matter of global concern given the economic importance of the United States and the status of the US dollar as the main reserve currency. The key features of the comparison of LLR powers are set forth in Figure 1 and below.

A. Independence and Political Environment

First, consider the overall independence of the four central banks (unless specifically noted, the ECB here includes the NCBs). The ECB is the most structurally independent, having been created by Treaty among EU countries, the equivalent of a Constitution in a single country. The other three banks were created by statute and can be limited or abolished by the legislature. But the US Congress poses a different threat to the Fed than Parliament does to the central banks in Japan and the United Kingdom. In a parliamentary democracy, the government controls the parliament, so the central bank is better protected from the legislature. In the United States, Congress is not part of the presidential administration and may be controlled by the President's political opponents. Central bank independence has traditionally been about independence from the administration, but the Fed's independence from Congress may be more important. Congress limited the Fed's §13(3) powers with Dodd–Frank, and many members still attack the Fed for 'bailing out' Wall Street. In terms of independence from a legislature, I would rank the Fed last.

Of course, structural independence does not guarantee political independence. Some might argue that the ECB has been more politically motivated in its monetary policy than the Fed, which has adopted a more stimulative policy than many, if not a majority, in Congress would favour. Still, structural independence can be used to resist political pressure.

Most importantly, there is a significant difference in the political environments in which the four central banks operate. Only in the United States is there a widespread feeling that the use of LLR is at best a suspect exercise of government power and at worst illegitimate. This contrasts with Europe where the ECB has resisted calls to further expand its LLR activities, with the United Kingdom where the takeaway from Northern Rock was that emergency lending needed to be more forceful, and with Japan where LLR has long been considered an integral part of the state's involvement in the economy.

	Federal Reserve (Fed)	Bank of England (BOE)	European Central Bank (ECB)	Bank of Japan (BOJ)
Year Bank Established	1913	1694	1998	1882
Independence	Statutory	Statutory	Treaty	Statutory
Years of / Events Giving Rise to Significant LLR Changes	2010 Dodd-Frank, in response to global financial crisis.	Consultative Paper in 2008 and revised Red Book in 2010, in response to financial crisis.	ELA procedures clarified in 2013, after ELA extended during Eurozone crisis.	1997 BOJ Act, following 1990s financial instability.
Eligible Borrowers	DW Depository institutions with reserves at Fed. 13(3) Participants in programs with "broad-based eligibility."	SMF Banks, building societies, CCPs, broker-dealers. ELA No express exclusions.	Monetary Policy Instruments Credit institutions. ELA Financial institutions and credit institutions.	Article 33 Account holders (incl. non-banks). Article 37 Non-account holders eligible. Article 38 Non-account holders eligible.
Primary Liquidity Support Instruments	DW and 13(3).	SMF and ELA.	Monetary Policy Instruments and ELA.	DW; Temporary uncollateralized loans extended if a liquidity shortage; Special loans, initiated by government request.
Collateral Policies	DW Wide range. 13(3) "Security for emergency loans is sufficient to protect taxpayers from losses." Policies approved by Secretary of the Treasury.	SMF Wide range. ELA Not specified.	Monetary Policy Instruments Wide range. ELA Determined by NCBs, but must be "adequate collateral."	Article 33 Wide range. Article 37 Uncollateralized. Article 38 May be uncollateralized.
Collateral Policies Published	DW Yes. 13(3) Yes (after facilities established).	SMF Yes. ELA No.	Monetary Policy Instruments Yes. ELA Determined by NCBs.	Article 33 Yes. Article 37 Uncollateralized. Article 38 No.
Solvency Requirement	DW Primary credit available if in "generally sound financial condition." Secondary credit available if not "adequately capitalized" if consistent with "timely return" to market funding or to facilitate orderly resolution. 13(3) Solvency required, as restrictively defined.	SMF DW borrowers must certify no event of default. ELA To solvent firms requires HMT *authorization*. To firms BOE does not judge to be solvent requires HMT *direction*.	Monetary Policy Instruments Counterparties must be "financially sound" and meet certain capital requirements. ELA Recipients must be solvent. NCBs must report solvency assessment to ECB.	Article 33 Solvent account holders. Article 37 Only for *temporary liquidity* shortages. Article 38 Insolvent institutions eligible "in exceptional cases."

(*continued*)

Figure 1: Comparison of LLR Powers.

Restrictions on use of discount window loans	Yes-limits on transfer of funds to non-bank affiliates.	No.	No.	No.
Treasury approval to exercise LLR?	DW No. 13(3) Yes.	SMF No. ELA Yes.	N/A	Article 33 No. Article 37 No, but must notify Treasury. Article 38 Treasury must initiate.
Can central bank loans be initiated by Treasury?	No.	SMF No. ELA Yes.	N/A	Article 33 No. Article 37 No. Article 38 Yes (mandatory).
Treasury Indemnity	No.	SMF No. ELA Available.	N/A	No.
Limits on Emergency Lending to *Individual* Institutions	Broad program required.	No.	No.	Must be to prevent systemic risk, not to rescue firm.
Disclosure Rules	DW Published quarterly, with 2 year lag. Includes borrower identity and loan details. 13(3) To Congress within 7 days. To public within 2 years of termination.	SMF Average (not individual) DW use published quarterly with 5 Q lag. ELA Published quarterly, with 5 Q lag. Immediately disclosed to Parliament (unless confidentiality crucial).	ELA NCBs must disclose to ECB within 2 business days. Advance notice if > €500 million. Public disclosure determined by NCBs.	Article 33 Aggregate (not individual) lending disclosed. Article 37 Must report to government "without delay." Article 38 Announced with press release.
Pricing	DW Penalty rate, but none under Term Auction Facility. 13(3) No published guidelines. .	SMF Penalty rate. ELA No published guidelines, but penalty rate is expected.	ELA No published ECB pricing guidelines, but NCBs expected to charge penalty rate.	Article 33 Penalty rate. Article 37 No published guidelines. Article 38 No published guidelines, but penalty rate expected.
Express Examination Authority for LLR	No.	No.	No.	Yes.

Note: Abbreviations: DW, discount window; ELA, emergency liquidity assistance; HMT, Her Majesty's Treasury; NCBs, National Central Banks; SMF, Sterling Monetary Framework

Figure 1 (*continued*)

B. Ability to Lend to Non-Banks and Supervisory Authority

All four central banks have the power to be an LLR to non-banks, but none of them supervise all non-banks to which they can lend. Thus, they must make lending decisions based on information from other regulators (e.g. the SEC or state insurance regulators). However, the BOJ has the express statutory right to examine any institution to which it lends, an idea that should be more widely adopted. While the other three banks lack such express authority, it is possible that they could require examination as a lending condition. This would be a prudent approach.

C. Regime Structure

While all four central banks have the power to be an LLR to non-banks, the Fed is the only central bank with a different regime for banks and non-banks. These separate regimes were made much more dissimilar by Dodd–Frank's limitations on lending to non-banks. Under Section 10B of the FRA, the Fed can lend to a single bank, with whatever collateral it deems sufficient, without the Secretary of the Treasury's approval, and with no solvency requirement. In contrast, Dodd–Frank amended §13(3) of the FRA to permit lending to non-banks only as part of a broad programme, only with the approval of the Secretary of the Treasury, with adequate collateral effectively approved by the Secretary of the Treasury and with a requirement that the non-bank be solvent.

D. Collateral

All four central banks accept a wide range of collateral for loans to banks and non-banks, but only in the United States does the Treasury control collateral policy for non-banks; the three other central banks determine collateral policies on their own. While Dodd–Frank technically requires the Fed only to 'consult' with the Secretary of the Treasury regarding adequacy of collateral, the Secretary's power over whether to lend at all to a non-bank effectively lets the Secretary control collateral policy as well. In contrast, the right of the Treasury in the United Kingdom and Japan to approve loans does not extend to collateral policy.

Further, Japan stands alone in permitting some emergency loans, those under Articles 37 and 38, to be uncollateralized. During the crisis, the Fed was able to make uncollateralized loans to commercial paper issuers because its loans could be 'otherwise secured to the satisfaction of the Fed', but Dodd–Frank has since eliminated this language.

E. The Requirement of Solvency

The ECB alone requires the solvency of borrowers from all of its facilities, including NCBs' ELA facilities, but this requirement can be minimized through generous interpretations of what constitutes solvency, as in the case of loans to Greek banks. The 'constitutional' independence of the ECB itself virtually assures that neither its control of the NCBs nor its own lending policies can be effectively policed. The political environment for exercise of LLR powers in the Eurozone is also less hostile than in the United States. In this light, the solvency requirement is less stringent than it first appears.

In the United Kingdom, discount window borrowers must be solvent, and ELA initiated by the BOE also requires a solvency determination, but the Treasury can order the BOE to lend to an institution that the BOE does not deem to be solvent, so long as the Treasury supplies an indemnity. And the BOJ permits some borrowers to be insolvent where its loans are a bridge to more permanent government funding. This is similar to what happened with AIG in the United States, where the Treasury later refinanced a large part of the Fed's initial exposure through the Troubled Asset Relief Program (TARP).

In the United States, while the Fed may generally expect bank borrowers to be solvent, there is no statutory solvency requirement for banks. However, post-Dodd–Frank, the Fed can only lend to solvent non-banks.

Solvency determinations are inherently difficult, particularly during a panic, when asset values may represent fire sale prices that could bounce back after the provision of liquidity. This reality likely explains the flexibility built into the solvency policies in the United Kingdom and Japan. In contrast, the new non-bank solvency requirement in the United States discourages the Fed from lending to non-banks, given the prospect of gruelling congressional inquiries after the fact, particularly if a borrower later becomes insolvent.

F. Treasury Approval or Direction

The relationship between the central bank and the treasury differs in each country. There are two key dimensions of this relationship. The first question is whether the treasury can initiate central bank loans. This possibility exists in the United Kingdom for ELA and in Japan for Article 38 special loans (this power is inapplicable to the EU, as there is no EU Treasury). However, no such power exists in the United States. Giving the US Treasury power to order loans could strengthen LLR powers when the central bank is reluctant to act. Treasury orders to lend should probably be accompanied by indemnity, as provided in the United Kingdom.

The second question is whether the treasury must approve central bank lending. Again, this issue is moot in the Eurozone. In Japan, the BOJ can make Article 33 and Article 37 loans without the Minister of Finance's approval, but the Minister must initiate Article 38 loans. In the United Kingdom, the BOE can lend to banks and non-banks that meet the conditions of the SMF through the discount window or CTRF without HM Treasury approval; however, ELA requires Treasury approval (or direction). In the United States, the Treasury must approve any loans to non-banks.

A Treasury approval requirement is more significant in the United States than in a parliamentary democracy because Congress and Treasury may be at political odds in the United States, but not usually in the United Kingdom or Japan. In the United

States, a dissenting Congress could attack or legislatively nullify Treasury approval for loans to clearly solvent institutions. The requirement of US Treasury approval carries with it a significant enough degree of uncertainty, and political controversy, to risk spooking the markets and accelerating panics.

Moral hazard, of course, always exists from providing loans to financial firms in difficulty, but such moral hazard is not removed by requiring Treasury approval; the source is just shifted. Furthermore, where an LLR is lending to a solvent institution that is the victim of financial panic, moral hazard concerns should be limited. Such borrowers do not need support because they took on too much risk, but instead because of indiscriminate withdrawals by short-term creditors.

G. The Need for a 'Broad Programme'

Only the United States prevents loans to single non-banks, instead requiring a broad programme approved by the Secretary of the Treasury. This means that programmes can no longer be tailored to individual situations, as in the cases of Bear Stearns and AIG. Furthermore, since runs often start at individual institutions, this prohibition makes it hard to stop the first run, and thus avoid the initial outbreak of contagion. In Japan, emergency lending must be intended to prevent systemic risk, not to rescue a firm.

H. Disclosure Requirements

In Japan, Article 33 loans are disclosed only in the aggregate, and Article 38 special loans are disclosed by press release. The United Kingdom publishes only aggregate DWF and ELA information (with a five-quarter lag). And while ELA loans must, in principle, be immediately reported to Parliament, this need not happen if confidentiality is crucial. In the ECB, disclosure policy on ELA loans is left to NCBs.

The United States has the most demanding disclosure policies, requiring §13(3) loans to non-banks to be disclosed publicly, including the borrower, after one year (Dodd–Frank Wall Street Reform and Consumer Protection Act 2010, 1103(s)(2)(a)). Dodd–Frank also requires §13(3) loans to be reported to Congressional leaders within seven days. Such public disclosure raises the prospect of stigmatizing borrowers, potentially causing them to avoid borrowing necessary funds from the Fed. This may lead to their collapse and to the broader collapse of the financial system.

I. Using Discount Window Proceeds to Lend to Affiliates

Finally, the United States is the only country that prohibits banks from using discount window loans to support their affiliates, such as broker–dealers. This requirement forces such affiliates to seek Fed funding independently as non-banks, with the added conditions of non-bank funding.

VI. Conclusion

In conclusion, the United States has the weakest LLR by far. Most importantly, the legitimacy of serving as LLR, to banks and non-banks, is under political attack in the United States from a broad spectrum of opinions. While all four central banks reviewed here place serious institutional constraints on the LLR, the political unpopularity of this traditional function is by far most strongly manifested in the United States. For example, the ECB is not, in principle, supposed to loan to insolvent banks, yet it has lent fulsomely to Greek banks. This resulted not only from the ECB's structural 'constitutional' independence but also from the fact that the LLR function itself is not under the kind of assault in Europe that it is in the United States.

Furthermore, laws and institutions do matter. As for the specific institutional issues, the Fed is the weakest LLR: (i) its independence from the legislature is the most fragile; (ii) it is the only central bank with limitations on lending to non-banks; (iii) only the United States and the Eurozone prohibit making loans to insolvent institutions, but as explained above, the Eurozone prohibition seems toothless in practice given the lending to Greek banks; (iv) while the United Kingdom and BOJ require Treasury approval or direction for emergency lending, the process is normally much less politicized than the US Treasury approval of loans to non-banks; (v) it is the only central bank that places restrictions on banks using discount window loans to support affiliates; (vi) it is the only central bank requiring a 'broad' programme for non-bank borrowing, thus precluding loans tailored to particular institutions (such as Bear Stearns) whose collapse threatens to trigger contagion; and (vii) its disclosure requirements are the most aggressive, which can inhibit borrowing due to the associated stigma.

The Fed's weakness puts the United States and the global financial system at risk if another financial crisis were to arise. This weakness endangers the long-term supremacy of the dollar as a reserve currency, the central role the United States plays in the international financial system and ultimately the global political power of the United States. For the present, this potential weakness of the dollar is masked by current problems for competitor currencies; in particular, the Eurozone crisis and Chinese stock market turmoil. But the United States would be better off with a strong LLR than to make its supremacy hinge on what may be temporary problems for others.

Unfortunately, it is unlikely that Dodd–Frank's weakening of the Fed's power will be rectified in the near future, given the politics surrounding bail outs. Some think that the most important role of a central bank is the conduct of monetary policy. In my view, it is rather its role as LLR. Bad monetary policy can be gradually corrected, while the absence of a strong LLR in a financial panic can destroy a financial system, the economy and political stability.

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