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**Research Report**

## Liquidity in resolution: Comparing frameworks for liquidity provision across jurisdictions

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Liquidity in resolution:  
comparing frameworks for liquidity  
provision across jurisdictions

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# Abstract

As a response to the global financial crisis that started in 2008, many countries established dedicated resolution regimes that seek to limit the use of taxpayer money while maintaining the functions of failing banks that are critical for financial stability. This paper extends the existing research by zooming in on the specific topic of liquidity provision to banks in resolution. It examines the provision of liquidity in the United States, the United Kingdom, Japan, Canada and the banking union of the European Union (thereafter: the “banking union”). The paper observes the differences and commonalities of policy choices across jurisdictions with regard to both the relationship between private prefunding and temporary public liquidity provision and the roles of the public budget and the central bank. The comparison also reveals that the role of fiscal authorities is strong and that guarantees from a public budget are a common feature. The framework for the provision of liquidity in the banking union is not yet complete as the construction of a public sector backstop of sufficient size and speed is comparatively more complex in the banking union than in other jurisdictions. Therefore, the idea of establishing a European-level guarantee framework – which would allow access to Eurosystem liquidity for banks coming out of resolution with limited collateral – is being further investigated.

**Keywords:** European Central Bank, liquidity, resolution, banking union.

**JEL codes:** G01, G21, G28, G33, E58.

# Non-technical summary

**As a response to the global financial crisis that started in 2008, countries established different legal frameworks that would allow public authorities to resolve failing banks.** The objectives of resolution are to maintain the critical functions of banks, avoid significant adverse effects on financial stability, and minimise the use of taxpayer money. This paper examines in greater detail the provision of liquidity to banks in resolution across different jurisdictions, knowing that banks in, or recently out of, resolution may not be able to obtain sufficient liquidity, for example due to a lack of adequate collateral to access market-based or central bank funding. This creates the risk that resolution actions ultimately fail to achieve their objectives. The paper shows that the United States, the United Kingdom, Japan, Canada and the banking union of the European Union (thereafter: the “banking union”) have opted for remarkably different mechanisms to address liquidity needs in the context of bank resolution procedures. Our comparative analysis focuses on the institutional design and the limits (size, time, and collateralisation) of the respective national public sector backstops that can be employed to provide liquidity to banks. We observe different policy choices both with regard to the relationship between prefunding by the private sector and temporary public liquidity provision within the public sector backstop and with regard to the roles of the public budget and the central bank within the backstop.

**In spite of the differences between the national frameworks, we detect three notable common features.** First, in most jurisdictions the relationship between prefunding by the private sector and temporary public liquidity provision within the public sector backstop shows some elements of a hierarchical approach, in which private funding takes priority over temporary public support. Second, all jurisdictions covered in this analysis stipulate a role for temporary public liquidity provision within their backstop arrangements, i.e. the public budget or the central bank or both. Third, as regards the division of work between the public budget and the central bank, the comparison of the various liquidity frameworks reveals that the role of fiscal authorities is strong and that guarantees by a public budget are a common feature.

**The framework for the provision of liquidity in resolution in the banking union is not yet complete.** The construction of a public sector backstop of sufficient size and speed is comparatively more complex in the banking union than in other jurisdictions. EU legislators have set up the Single Resolution Fund (SRF) – an industry-financed fund the objective of which is to support resolution measures taken by the Single Resolution Board (SRB). The SRF can be used for both capital and liquidity measures. As its size might be insufficient in extreme cases, euro area member countries have agreed to develop the European Stability Mechanism (ESM) into a last-resort backstop to the SRF. In addition to the SRF, central banks may also provide liquidity to banks, provided these banks are solvent and have sufficient collateral. In this context, the idea of establishing a European-level guarantee framework – which would allow banks coming out of resolution with limited collateral to access a dedicated Eurosystem liquidity facility – is being further investigated. A European guarantee would help to align control over credit institutions (supervision and resolution) and

liability in the event of their failure at the same level of government and would help to weaken the financial interdependence between bank balance sheets and the public finances of the member countries that banks are based in, known as the “bank-sovereign nexus”.

# 1 Introduction

**During the global financial crisis (GFC), liquidity support to financial institutions by central banks and governments was both essential and substantial.** Given that the private market for (short-term) interbank funding had rapidly dried up at the peak of the crisis, many financial institutions were close to illiquidity and large-scale public sector interventions became unavoidable. In the EU, for instance, roughly €900 billion in guarantees and €70 billion in other liquidity measures were provided to banks in the form of State aid at the height of the GFC (European Commission, 2017).<sup>1</sup> This paper zooms in on the specific topic of liquidity provision to banks in resolution<sup>2</sup>.

**Even if a resolution successfully restores a bank’s solvency, the bank may not be able to obtain sufficient liquidity while it is in resolution – and immediately thereafter.** The reason for this is mainly a lack of adequate collateral to access market-based or central bank funding. This creates the risk that resolution actions ultimately fail, not because a bank is insolvent, but because it lacks the liquidity to roll over (short-term) liabilities (see FSB, 2018a). We examine the frameworks in the United States, the United Kingdom, Japan, Canada, and the banking union; which have been established with the very aim of closing such liquidity gaps in resolution. Based on this analysis, we seek to draw lessons for the ongoing policy debate on liquidity in resolution, with a particular focus on the European Union.

**This paper is structured into five sections.** Section 2 provides a brief overview of the liquidity gaps that arose during the GFC and discusses how the post-crisis regulatory framework, notably the introduction of bank resolution frameworks, has affected the provision of liquidity from the public sector during bank crises. Section 3 describes the different frameworks to ensure the provision of liquidity in the context of bank resolutions, comparatively assessing the United States, the United Kingdom, Japan, Canada and the banking union. Section 4 draws some horizontal lessons, focusing on the set-up of the public sector backstop. Section 5 concludes.

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<sup>1</sup> In extreme cases, liquidity support surpassed €100 billion for individual banks, e.g. Dexia in Belgium and Hypo Real Estate in Germany, see de Groen (2018).

<sup>2</sup> “Liquidity provision in resolution” is the provision of liquidity to a bank that has been placed in resolution by the relevant authority. The precise moment when resolution starts and ends during the trajectory of a bank in crisis depends on the applicable national legal framework. This paper abstracts from these differences of legal frameworks by generally referring to “banks in resolution”. However, when discussing a European-level guarantee framework to allow banks to access Eurosystem liquidity the paper refers to banks coming out of resolution, i.e. banks for which the resolution scheme has already been adopted.

## 2 Liquidity provision during and after the global financial crisis

### 2.1 The traditional “lender of last resort” concept: between illiquidity and insolvency

**Before delving deeper into the provision of liquidity during and post resolution, it is useful to recall the distinction between solvency and liquidity in the context of bank failures.** In the 19th century, Bagehot and Thornton recognised that the business of banks, i.e. to transform maturities, was vulnerable to sudden, potentially lethal, stops of liquidity inflows (see Bignon et al., 2012). However, both economists also thought that such temporary situations of illiquidity would not necessarily mean that a bank is insolvent: indeed, its assets may still be worth more than the money it owes to depositors and creditors. Against this backdrop, in his famous book, *Lombard Street* (Bagehot, 1873), Bagehot argued that the central bank – the Bank of England in this case – should provide a mechanism to lend to solvent but illiquid banks against collateral and at high rates as a last resort, while making sure that the losses do not stay with the central bank. Nowadays, “the lender of last resort” (LOLR) function is deeply ingrained in the DNA of central banking around the world.<sup>3</sup>

**The idea of drawing a clear line between a truly insolvent bank, and one that is merely illiquid, is intellectually alluring.** While an illiquid institution could be supported through the central banks’ LOLR function, an insolvent one should be wound up or resolved. At the same time, the balance between illiquidity and insolvency reflects a broader dichotomy, namely the tension between (longer-term) market discipline and (short-term) financial stability. Winding up banks that have temporarily lost access to funding might not be desirable, in the light of the serious adverse implications this may have for the stability of the wider financial sector. At the same time, providing liquidity support to a bank that is insolvent could undermine market discipline and thereby nurture moral hazard on the banks’ side.

**Bagehot considered that central banks should merely lend to illiquid but solvent banks against sufficient collateral and at high rates.** This principle continues to be applied in the frameworks of central banks around the world.<sup>4</sup> The GFC underscored the importance of having emergency procedures for liquidity assistance in place. Indeed, central banks broadened their LOLR policies and collateral frameworks, sometimes even allowing lending against highly illiquid collateral to avert the collapse of the global banking sector (see CGFS, 2015). It should be recognised that major central banks did not make losses with their LOLR activities during the GFC. That shows “the powerful economic logic underlying the LOLR” (Bindseil & Laeven, 2017).

<sup>3</sup> For a recent analysis of central banks’ LOLR functions, see Hofmann (2018).

<sup>4</sup> For instance, Article 18(1) of the ECB Statute stipulates that ECB lending to credit institutions must be based on “adequate collateral”.



**Governments around the world responded to the GFC by revisiting their legal frameworks to better deal with bank failures.** Across the world, the crisis has fostered the common view that taxpayers should be protected from the fallout from future bank failures. In this light, the Financial Stability Board (FSB) recommended the introduction of resolution frameworks, which aim to ensure that banks can be “resolved safely, quickly, and without destabilising the financial system and exposing the taxpayer to the risk of loss” (FSB, 2010). In other words, resolution is about “saving the function of the bank, but not its shareholders or other investors” (Lindblad, 2018), a paradigm shift from bail-out to bail-in.

**Rather than returning to the debate about resolution frameworks, this paper focuses on a specific problem that may arise in the resolution of a credit institution: the provision of liquidity when resolution measures are being implemented.**<sup>5</sup> Liquidity problems during bank crises are by no means a phenomenon that arises exclusively in the context of resolution – the crisis has shown that liquidity shortages can rapidly transform into serious solvency crises. A problem that needs more attention in some jurisdictions is that resolution frameworks typically aim at re-establishing a bank’s solvency but may lack instruments to ensure that the institution has sufficient liquidity to maintain its critical operations (see FSB, 2016b). Thus, while resolution allows authorities to deal with solvency problems, for instance by bailing-in certain creditors, the absence of liquidity provision could still jeopardise the success of an otherwise flawless resolution scheme.

**In some cases, a bank that is undergoing resolution or has just emerged from a resolution action and is considered solvent may still not immediately obtain access to funding.** Generally speaking, banks can be in three states with regard to their short-term funding: in a single no-run equilibrium (banks with good solvency and good liquidity), in a multiple equilibrium in which depositors may or may not run (solvent banks but with insufficient liquidity buffers), and in a single-run equilibrium (non-solvent banks) (Bindseil, 2013). Banks after resolution would most probably be of the second type. Even if investors and depositors are convinced that the resolution has credibly restored the bank’s capital position, uncertainties may remain about the bank’s liquidity situation. The bank may still be faced with continued (deposit) outflows and the bank may not have access to unsecured funding sources. Furthermore, the bank may lack sufficient high-quality collateral that would enable it to access secured (private or public) funding sources, notably because many eligible assets are already encumbered.<sup>6</sup>

**In this situation the presence of a credible LOLR is very useful to support the bank’s (re-)access to market funding sources.** Following the logic of the previous paragraph, the existence of a sufficient LOLR can push a bank from state two into state one. The function of LOLR is not necessarily about actual lending, but potential

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<sup>5</sup> Several policymakers have highlighted the problem of liquidity in resolution in speeches. See, for example, Mersch (2018); Carstens (2018) and König (2018).

<sup>6</sup> The problem of post-resolution funding may become particularly acute if no buyer with access to liquidity can be found. In the first and only resolution case since the establishment of the Single Resolution Mechanism (SRM) in the euro area, i.e. the resolution of Banco Popular Español (BPE), a larger bank acquired BPE enabling its liquidity problems to be remedied through other means. For an overview of the BPE case, see Binder (2017).

lending, i.e. the belief of market participants that the solvent bank might not be cut off from funding.

## 2.2 Liquidity provision under the post-crisis bank resolution framework: the Financial Stability Board's Key Attributes of Effective Resolution Regimes

**During the GFC, many large banks experienced serious liquidity shortfalls when confidence in the value of their assets started to erode (Acharya et al., 2011).** One of the main reasons was that many large financial institutions, in the United States but also in Europe and Asia, had loaded up their balance sheets with US mortgage-backed securities, the prices of which were cast into doubt when the US housing market experienced a sharp downturn. This precipitated an evaporation of mutual trust among financial market participants. In mid-March 2008, a wholesale run on the investment bank Bear Stearns led to the first failure of a significant investment bank, precipitating the start of a crisis of unprecedented scale (see Mishkin, 2011).

**While banks' capital shortfalls were often covered through direct government ownership, liquidity gaps in the crisis were often filled by the provision of central bank money.** This triggered a debate as to whether these large-scale interventions by central banks and fiscal authorities, respectively, went a step too far. Given this paper's focus, the subsequent sections will concentrate on the frameworks for the provision of liquidity in crisis situations.

**Liquidity needs of banks in resolution can be very large, especially in adverse scenarios.** Amamou et al. (2020) have estimated possible ranges of liquidity gaps for significant banks in the euro area under different assumptions and scenarios. They find that on average the liquidity gaps are limited but there are significant outlier banks with much larger liquidity gaps. The results become significantly more severe in case of a simulated systemic crisis with several banks simultaneously failing, a crisis with two G-SIBS failing and when accounting for contagion effects within the banking sector. While such modelling is always associated with assumptions and scenario caveats, the results are consistent with some observations of high liquidity aid (in relative terms) provided during the global financial crisis.

**After the GFC, many jurisdictions introduced stricter rules for the use of public money to provide capital and liquidity support to banks in crisis.** In some cases these rules also aimed to limit or reduce the role of central banks in providing liquidity support in a crisis.<sup>7</sup> At the core of these new rules, legislators around the globe have implemented dedicated bank resolution frameworks, which aim at resolving banking crises without the use of taxpayer money.<sup>8</sup> The rationale of establishing bank resolution mechanisms was compelling to policymakers, who faced a daunting public backlash in reaction to their crisis management measures.

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<sup>7</sup> See, notably, the post-crisis framework in the United States in Section 3.1.

<sup>8</sup> See Dewatripont and Freixas (2011) for an overview of the debate on post-crisis bank resolution frameworks.

**At first, in some jurisdictions these regulatory activities focused on developing a toolkit that would allow resolution authorities to restore the solvency of failing banks.** The primary attention to solvency can be explained by the rationale that a bank should quickly be able to re-access both public and private funding sources once its capital position has been brought back to the required levels. In particular, it can be argued that a well-capitalised bank is less vulnerable to suffer a large-scale flight of depositors.

**“Bail-in” became the buzzword of the international regulatory reform agenda: bank shareholders and creditors should bear the burden in the case of future failures, instead of the taxpayer who too often had to step in during the GFC (see, Avgouleas and Goodhart, 2015).** In contrast to usual insolvency proceedings where the defaulted company is wound up and the proceeds from the remaining assets are distributed among creditors and shareholders, resolution has the objective of maintaining the critical functions of banks in order to avoid a bank failure inflicting damage on the real economy and causing financial instability.<sup>9</sup> While some countries had long recognised the pitfalls of trying to wind up (complex) banks under normal insolvency procedures without sufficient ex ante planning, the crisis fostered the consensus view that liquidating systemically important banks in a disorderly way may seriously undermine the stability of the financial sector as a whole.

**The FSB and its Key Attributes played a central role in defining and coordinating the international regulatory activities related to bank resolution after the GFC.** The FSB brings together national and international authorities to monitor and address global financial stability risks. As part of its mandate, it fosters international standards aimed at managing the failure of financial institutions, notably by means of sophisticated bank resolution frameworks.<sup>10</sup> Since 2014 the FSB has adopted a series of standards to inform the establishment of national resolution frameworks and to facilitate their international interoperability<sup>11</sup>. While the transposition of standards devised by the FSB rests with national lawmakers and authorities, a relatively high level of cross-fertilisation has been achieved. The FSB Key Attributes of Effective Resolution Regimes for Financial Institutions (FSB, 2014) is the key document defining the post-crisis standard for the resolution of systemically important institutions. The ensuing regulatory changes at national level have undoubtedly restricted the recapitalisation of banks with tax payers’ money, as can be seen in the relevant legislation, such as the EU Banking Recovery and Resolution

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<sup>9</sup> See Ringe (2018) for a discussion of the differences between resolution and insolvency procedures for banks.

<sup>10</sup> See also Financial Stability Board (FSB), “[About the FSB](#)”. The creation of the FSB in 2009 was part of an ambitious effort to strengthen international prudential standards – as a global standard-setting body, the FSB would use soft-law instruments with a view to gradually harmonising domestic legislative and regulatory frameworks (Helleiner, 2010; Lombardi, 2011).

<sup>11</sup> For an overview, see BIS (2017).

Directive (BRRD)<sup>12</sup> <sup>13</sup>, the Single Resolution Mechanism Regulation (SRMR)<sup>14</sup> and the Dodd-Frank Act<sup>15</sup>.

**After this first wave of activities addressing solvency issues the attention of the regulatory debate turned to liquidity in resolution, building on FSB Guiding Principles and Funding Strategy Elements.** It became apparent that a bank that is in the process of recapitalisation – or even one that has already been recapitalised – may still be unable to obtain funding in private markets for some time. In order to maintain the critical functions of the bank it may thus be necessary to have a framework in place to provide temporary funding to a bank in resolution. In 2016 the recognition of this challenge motivated the FSB to develop and adopt the “Guiding principles on the temporary funding needed to support the orderly resolution of a global systemically important bank (G-SIB)” (FSB, 2016b), hereafter referred to as the “Guiding Principles”. They build on the Key Attributes and their objective is to define a structure through which temporary funding could be made available under certain conditions to enable the resolution of G-SIBS without a bail-out by the taxpayer. Furthermore, in 2018 the FSB adopted the “Funding Strategy Elements of an Implementable Resolution Plan” (FSB, 2018b), hereafter referred to as the “Funding Strategy Elements”. It provides additional details to Guiding Principle 5 and makes practical recommendations as to how resolution plans should account for liquidity needs in the case of a bank’s failure. Together, these three documents provide comprehensive guidance on how national regulators can enable the provision of liquidity to banks in resolution while remaining faithful to the overall objectives of resolution. Box 1 provides a more detailed description of the content of these documents.

**A closer inspection of the three FSB documents reveals three findings that are relevant in the context of this paper. First, the inherent tension between the policy objectives of maintaining financial stability and minimising the financial risk for the taxpayer is even more pronounced for liquidity support than for solvency support.** The amounts needed for liquidity support can greatly exceed those for solvency support and it can be very challenging or even impossible to provide such amounts via a prefunded, industry-financed vehicle. A temporary recourse to a budget that is financed by the taxpayer may be unavoidable. In any

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<sup>12</sup> [Directive 2014/59/EU](#) of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council (OJ L 173, 12.6.2014, p. 190). In the euro area, the use of the resolution fund is restricted to resolution actions where at least 8% of all liabilities have been bailed-in, establishing a high threshold for the employment of official sector financing. Furthermore, a public recapitalisation is in itself a legal trigger to establish the default of a bank unless certain conditions are met.

<sup>13</sup> Recital 31 of the BRRD for instance stipulates that “[r]ecover and resolution plans should not assume access to extraordinary public financial support or expose taxpayers to the risk of loss.”

<sup>14</sup> [Regulation \(EU\) No 806/2014](#) of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010 (OJ L 225, 30.7.2014, p. 1).

<sup>15</sup> Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 929-Z, 124 Stat. 1376, 1871 (2010) (codified at 15 U.S.C.).

case, a public sector backstop must be able to provide large amounts of funds on short notice even in times of very significant market stress.

**Second, the distribution of tasks between the industry-financed and the taxpayer-financed parts of a public sector backstop is deliberately left open in the FSB documents in order to accommodate national specificities.** Having this in mind, possible candidates for providing such a backstop include the resolution funds and deposit insurance funds for which the industry is typically loss bearing as well as the public budget and the central bank for which the taxpayer is loss bearing. In line with Key Attribute (KA) 6.2 and Guiding Principle 4, the public sector backstop should be constructed in a way that any losses can be recovered from the industry. That means that in the event of any temporary recourse to the public budget or the central bank, any losses emanating from such credit lines would need to be fully recovered from the industry.

**Third, there is also a choice to be made as to whether the public budget or the central bank should be first in line when there is a need for temporary recourse to taxpayer-financed resources.** This is deliberately left open in the FSB guidance. If the central bank takes a role in the construction of the public sector backstop, an additional consideration enters the picture. Central banks usually rely on a double-layered protection of their credit exposures towards banks: (i) point-in-time solvency of the bank, and (ii) adequate collateral. This double-layer protection is especially important in a resolution situation where the point-in-time solvency of a bank may be difficult to determine and where high-quality collateral can allow the central bank to continue to provide liquidity to a bank. If the bank in resolution cannot provide such high-quality collateral, the related risk would need to be assumed by a third party.

**Lawmakers and regulators around the world have recognised the problem of potentially insufficient liquidity provision in resolution and some have devised frameworks that allow for the temporary funding of banks that undergo a resolution.** However, as this paper shows, different jurisdictions have chosen different approaches to achieve this.

## 3 Frameworks for the provision of liquidity coming out of resolution across selected jurisdictions

**This section reviews selected national frameworks that have been set up to enable the provision of liquidity to banks that are, or were, subject to a resolution, as defined in the FSB Key Attributes.** Our comparative analysis focuses on the institutional design and the limits (size, time, collateralisation) of the respective national public sector liquidity backstop. We review five major jurisdictions, all of which have some type of backstop in place to provide liquidity in resolution: (a) United States, (b) United Kingdom, (c) Japan, (d) Canada, and (e) the banking union.<sup>16</sup> Subsequently, in Section 4, we draw some conclusions from the comparison, identifying differences and pointing out important commonalities of the existing frameworks for liquidity provisions, while keeping in mind that the objectives for providing liquidity may differ across jurisdictions.

### 3.1 The United States of America

**Following the GFC, the United States has introduced a new process to facilitate the resolution of large, complex financial companies: the Orderly Liquidation Authority (OLA).** The OLA creates an alternative process to the application of the US Bankruptcy Code for systemically important financial institutions. The Federal Deposit Insurance Corporation (FDIC), rather than bankruptcy courts, acts as the receiver of the failing institution, provided that the firm's bankruptcy would have serious adverse effects on US financial stability and that there is no private sector alternative to prevent default.

**The OLA also includes an Orderly Liquidation Fund (OLF) which is a separate fund at the US Treasury to provide liquidity to the financial company.** OLF funding is subject to several safeguards and restrictions, including: (i) the provision of adequate collateral, (ii) a statutory subordination of private creditors to the Treasury, (iii) recoupment of funds from the industry, (iv) the existence of an orderly liquidation plan approved by the US Treasury, and (v) an initial maximum obligation limitation (MOL) of 10% of the total consolidated assets of the financial institution (that can be raised to 90% after 30 days).

**The Federal Reserve System may also provide liquidity to depository institutions, provided that they fulfil the eligibility requirements under respective monetary policy instruments.** Notably, the Federal Reserve may provide emergency liquidity assistance (ELA) under Section 13(3) of the Federal Reserve Act (FRA). However, as part of the post-crisis reforms, the US Congress

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<sup>16</sup> The Annex includes a detailed description of the respective national frameworks for liquidity in resolution in the selected jurisdictions.

limited the scope of this provision, prohibiting lending to individual institutions and requiring approval from the Treasury Secretary. When approval from the Treasury Secretary has been obtained, the Federal Reserve may establish a lending programme or facility with “broad-based eligibility” for solvent financial companies. Therefore, even with fiscal backing, the Federal Reserve cannot assist a single and specific company with the purpose of avoiding bankruptcy.

**Table 1**  
Resolution liquidity arrangements in the United States

Overview of the key elements of the resolution liquidity framework in the United States<sup>17</sup>

Liquidity provider	Description	Preferred creditor status	Maximum capacity	Interaction with fiscal authorities or guarantee/indemnity	Solvency requirement	Collateral requirements	Recoupment mechanism
<b>Federal Reserve System</b>	The Federal Reserve may provide central bank liquidity through emergency lending under Section 13(3) FRA.	No	No ex ante limits	Section 13(3) FRA lending requires approval by the Treasury Secretary.	Yes	Full collateralisation under the Federal Reserve's Collateral Guidelines	No recoupment of losses
<b>Federal Deposit Insurance Corporation (FDIC) via the Orderly Liquidation Fund (OLF)</b>	The FDIC may provide resolution financing via the OLF to banks resolved under Title II of Dodd-Frank (OLA).	Yes	10% of total consolidated assets of the firm based on the most recent public filing; after 30 days, 90% of total consolidated assets available for repayment	Treasury approval required before use of OLF funds.	OLF can only be used for liquidity once the firm is placed in receivership.	Expectation is full collateralisation (collateral must be acceptable to US Treasury)	Ex post recoupment of losses from the industry

## 3.2 The United Kingdom of Great Britain and Northern Ireland

**In the United Kingdom, authorities set up a dedicated resolution liquidity framework (RLF) in 2017 (Bank of England, 2017).**<sup>18</sup> The RLF creates a fiscal backstop by the Treasury for liquidity operations by the Bank of England in relation to banks in resolution. The RLF's objective is to (i) support the effectiveness of the resolution regime, (ii) incentivise the transition of the firm back to market-based funding, and (iii) protect public money. RLF lending is expected to be collateralised and its activation is subject to the approval of the UK Chancellor of the Exchequer.

**The RLF is a dedicated facility separate from the Bank of England's traditional LOLR framework, namely the ELA.** The Bank of England has not made public any information regarding the potential size of the RLF nor its duration. However,

<sup>17</sup> This is the framework for systemically important non-banks. The framework is different for insured depository institutions.

<sup>18</sup> The establishment of the RLF does not, however, exclude the provision of liquidity by the Bank of England through other tools, such as the Sterling Monetary Framework (SMF) or ELA.

constraints may arise from the mandatory involvement of Her Majesty's Treasury (HMT), which needs to approve and indemnify the Bank of England's operations, as described above.

**Table 2**  
Resolution liquidity arrangements in the United Kingdom

Overview of the key elements of the resolution liquidity framework in the United Kingdom

Liquidity provider	Description	Preferred creditor status	Maximum capacity	Interaction with fiscal authorities or guarantee/indemnity	Solvency requirement	Collateral requirements	Recoupment mechanism
<b>Bank of England (BoE)</b>	The BoE may provide resolution financing via the RLF	Not defined	No ex ante limits	The Chancellor of the Exchequer has to approve any provision of RLF funds. The BoE may request an indemnity from HMT.	Yes, RLF funding is not available to insolvent banks, or banks in administrative procedures.	Full collateralisation against a wide range of collateral, building on the collateral eligible under the Sterling Monetary Framework	It is stated that losses would be recovered from the industry.

### 3.3 Japan

**The Deposit Insurance Corporation of Japan (DICJ), which can also act as the receiver of a failing firm, may provide a loan or guarantee debts of financial institutions under the orderly resolution regime.** Financial assistance from the DICJ is prefunded by industry contributions, but the DICJ may also borrow from the Bank of Japan against a government guarantee – an emergency option that caters for the possibility of systemic funding crises. The DICJ's overall lending capacity is limited to JPY 35 trillion, and losses incurred by the DICJ in the provision of resolution funding are recovered from the financial industry via ex post contributions. The liquidity provision by the DICJ can be uncollateralised (Kodachi, 2013).

**Table 3**  
Resolution liquidity arrangements in Japan

Overview of the key elements of the resolution liquidity framework in Japan

Liquidity provider	Description	Preferred creditor status	Maximum capacity	Interaction with fiscal authorities or guarantee/indemnity	Solvency requirement	Collateral requirements	Recoupment mechanism
<b>Deposit Insurance Corporation of Japan (DICJ)</b>	The DICJ provides funding to financial institutions in resolution from a fund, funded by industry contributions.	Not defined	JPY 35 trillion	The DICJ may borrow (additional) funds from the market or the Bank of Japan against a guarantee by the Government	Confirmation of orderly resolution by the Prime Minister is necessary. If confirmed, liquidity support can be provided to a firm regardless of its solvency.	Uncollateralised lending is possible.	Yes, contributions from the financial industry can be raised ex post to recover losses at DICJ's fund.



## 3.4 Canada

**In Canada, both the resolution authorities and the Bank of Canada (BoC) have a role in liquidity provision in resolution.** The Canada Deposit Insurance Corporation can provide financial assistance to deposit-taking institutions on a collateralised and uncollateralised basis. It may use its investment portfolio and/or borrow from the Canadian government, subject to the approval of the Canadian Minister of Finance. The BoC may also provide ELA “to support the broader efforts of authorities to conduct an orderly resolution of the firm” (Bank of Canada, 2016). Banks in recovery or resolution may access ELA if, besides the standard eligibility conditions<sup>19</sup>, a credible recovery and resolution framework is in place.<sup>20</sup>

**Table 4**  
Resolution liquidity arrangements in Canada

Overview of the key elements of the resolution liquidity framework in Canada

Liquidity provider	Description	Preferred creditor status	Maximum capacity	Interaction with fiscal authorities or guarantee/indemnity	Solvency requirement	Collateral requirements	Recoupment mechanism
<b>Canada Deposit Insurance Corporation (CDIC)</b>	The CDIC can provide financial assistance to federally regulated deposit-taking institutions in resolution.	Not defined	Not defined	The Minister of Finance has the right to direct the corporation to utilise its powers in effecting the use of its powers consistent with its Mandate	Not defined	Uncollateralised lending possible under certain circumstances	Yes, losses can be recovered from the industry
<b>Ministry of Finance (MoF)</b>	The MoF can provide liquidity assistance to maintain financial stability.	Not defined	Not defined	N/A	Not defined	Not defined	Not defined
<b>Bank of Canada (BoC)</b>	The BoC can provide ELA to support the resolution authority's actions under a credible resolution framework.	Not defined	No ex ante limits	No involvement of fiscal authorities; in some cases, provinces may need to indemnify the BoC for losses	No strict solvency requirement	Lending occurs on a fully collateralised basis	No mechanism in place

## 3.5 Banking union

**The GFC brought about fundamental changes in the European regulatory, supervisory and resolution framework for banks. Most notable is the creation of the banking union, which currently consists of two pillars: the Single Supervisory**

<sup>19</sup> The eligibility conditions depend on the type of bank that seeks to access ELA facilities. See *ibid* for a comparison.

<sup>20</sup> See Bank of Canada (2016) for more details as regards the criteria for a credible recovery and resolution framework.

Mechanism (SSM) and the Single Resolution Mechanism (SRM), which became fully operational in 2014 and 2016, respectively. In addition to euro area member countries, the banking union also includes non-euro area Member States that have chosen to opt in<sup>21</sup>.

**The SRB resolves significant banks and cross-border groups in the banking union under the umbrella of the Single Resolution Mechanism (SRM) if it sees the public interest in such action.** SRB bank resolutions are supported by the Single Resolution Fund (SRF), the objective of which is to avoid the creation of obstacles for the exercise of fundamental freedoms or the distortion of competition in the Internal Market due to divergent national practices.<sup>22</sup> The SRB collects contributions from banks, both during the build-up phase and when the resolution fund comes into use and needs replenishing.<sup>23</sup> In 2024, when the SRF is fully built up, it will be equal to at least 1% of covered deposits of all credit institutions in participating Member States, resulting in a target level of about €60 billion according to SRB figures from 2019.<sup>24</sup> Liquidity support falls under the SRB's power to make loans to the institution under resolution.<sup>25</sup>

**The SRF can only be used to provide liquidity to an institution that is subject to a EU resolution procedure.**<sup>26</sup> The amount, duration and other relevant elements of liquidity support (e.g. renewals) must be defined in the resolution scheme and any provision of SRF liquidity not set out in it would require it the scheme to be amended.<sup>27</sup> With roughly €60 billion as of 2024, the SRF's firepower might be insufficient to address the liquidity problems experienced by medium-sized to large banks in the wake of a resolution action. While the potential liquidity needs of a bank that comes out of resolution are difficult to ascertain in the absence of sound historical evidence, the SRF's firepower may not suffice if several banks have to be resolved at the same time.

**To further strengthen the resilience of the banking union crisis resolution framework, member countries agreed in principle to a common backstop to the SRF in 2013.** This backstop is to be provided by the ESM, as last-resort insurance in the event of a bank resolution in case the resources available in the SRF were insufficient. The common backstop is planned to be in place by 2024 at the latest and its size will be aligned with the target level of the SRF, raising the combined capacity of SRF and backstop up to approximately €120 billion in total.<sup>28</sup>

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<sup>21</sup> At the moment of publication non-euro area Member States in the banking union include Bulgaria and Croatia.

<sup>22</sup> See Recital (19) of Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014. For an economic analysis of a public backstop in an asymmetric banking union, see Segura and Vicente (2018).

<sup>23</sup> For the mechanism, compare Chapter 2 of the SRM Regulation.

<sup>24</sup> See SRB website for current information on the [Single Resolution Fund](#).

<sup>25</sup> See Article 76(1)(b) SRM Regulation. Another provision that implies that the SRF may be used for liquidity support is Article 50 SRM Regulation, which in paragraph 1(c) and (d) distinguishes between capital and liquidity support for the purpose of voting thresholds in the SRB's Board.

<sup>26</sup> As a general principle, the SRF may only be tapped to the extent necessary to ensure the effective application of the resolution tools. See, in particular, Article 76(1) SRM Regulation.

<sup>27</sup> See Article 27(5) SRM Regulation.

<sup>28</sup> According to Schoenmaker (2017), the optimal size for a fiscal backstop in the euro area would be closer to €230 billion.

**The gap in the banking union framework for the provision of liquidity in resolution occurs mostly following the adoption of the resolution scheme when the bank is already coming out of resolution.**

The banking union's resolution framework is designed to enable the resolution of a bank over the weekend. That means a bank that is determined as failing or likely to fail in close proximity to the weekend by the prudential supervisor<sup>29</sup> will undergo resolution over the weekend and resolution procedures would be finalised by market opening on Monday. This swift procedure can be achieved through close cooperation between the prudential supervisor and the resolution authority ahead of and during the resolution weekend. The swift execution of the procedure can greatly reduce the liquidity needs of a bank between the moment it is declared to be failing or likely to fail and the moment the resolution scheme is adopted and the bank recapitalised. However, as previously explained, the bank coming out of resolution may still have difficulty to access regular private and public funding sources and require resolution liquidity.

**The ECB and national central banks may also make additional liquidity available for banks.** National central banks may provide ELA in line with their respective domestic frameworks. In the absence of adequate collateral, they may request a guarantee from their national government. However, the reliance on ELA runs counter to the objectives of the banking union. Most importantly, it could increase the bank-sovereign nexus, as the government guarantee given for ELA provision could also weigh on the public budget. Furthermore, it would run counter to the principle of align control over credit institution and liability in case of their failure at the same level of government as a bank that is supervised and resolved at the European level would ultimately depend on the provision of public funds of a particular member country.

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<sup>29</sup> Depending on the national legal framework, the days until the weekend could be bridged via a moratorium.

**Table 5**

**Resolution liquidity arrangements in the banking union**

**Overview of the key elements of the resolution liquidity framework in the banking union**

Liquidity provider	Description	Preferred creditor status	Maximum capacity	Interaction with fiscal authorities or guarantee/indemnity	Solvency requirement	Collateral requirements	Recoupment mechanism
<b>Single Resolution Fund (SRF), including a backstop European Stability Mechanism (ESM)</b>	The SRF, which is prefunded through industry contributions, can be used to provide funding to banks entering an SRB resolution procedure; the ESM backstop may be activated if the SRF is depleted subject to strict conditions.	No, the SRF has no preferred creditor status but ESM claims towards the SRF enjoy a preferred creditor status	~€60 billion, plus another €60 billion from the ESM backstop	SRF funds may be drawn by the SRB, while reliance on ESM backstop funds requires approval by the ESM Board of Governors (i.e. euro area finance ministers)	No solvency requirement, but at least 8% of liabilities needs to be bailed-in before the use of SRF funds to absorb losses or to recapitalise the bank if possible	Uncollateralised lending possible	Yes, losses can be recovered from the industry
<b>National central banks (NCBs)</b>	The NCBs may provide ELA as part of their financial stability mandate.	Not defined	No ex ante limits, but can be capped by ECB Governing Council if interference with ECB's monetary policy	NCBs may require guarantees by the national government for the provision of ELA	Positive solvency assessment by bank supervisor required	Lending against adequate collateral, at NCB discretion	No recoupment mechanism in place

## 4 Lessons from different frameworks for liquidity provision post-resolution

**A central piece of the post-GFC reform has been the establishment of bank resolution frameworks, which essentially aim to shift the burden of absorbing losses from such failures away from the taxpayer, and towards shareholders and creditors, without jeopardising financial stability.** To ensure the effectiveness of resolution procedures, the FSB has stressed the importance of ensuring adequate resolution funding, including insolvency support and specifically the provision of liquidity (FSB, 2018b). While private sources of funding should always constitute the first line of defence, they might not be sufficient in a given case, depending on prevailing macroeconomic conditions and the markets' confidence in the future viability of a firm. Similarly, even if a resolution procedure was successful and the bank has been recapitalised, an institution may not have adequate collateral to immediately access central bank lending operations.

**To address this situation, major jurisdictions have not only established bank resolution procedures that aim to restore solvency but also developed new tools for the provision of liquidity in the context of resolution,** or at least adjusted existing tools in order to follow FSB guidance, which has been endorsed by the G20, as we have shown in the previous sections. Table 6 provides an overview of the resolution liquidity regimes in the five jurisdictions we analysed, comparing the following key features: (i) type of resolution financing, (ii) collateralisation, (iii) solvency requirement, (iv) recoupment mechanism, and (v) interaction with fiscal authorities.

**Table 6****Overview of resolution liquidity framework across different jurisdictions**

The table provides an overview of the key elements of selected frameworks for liquidity provision in resolution

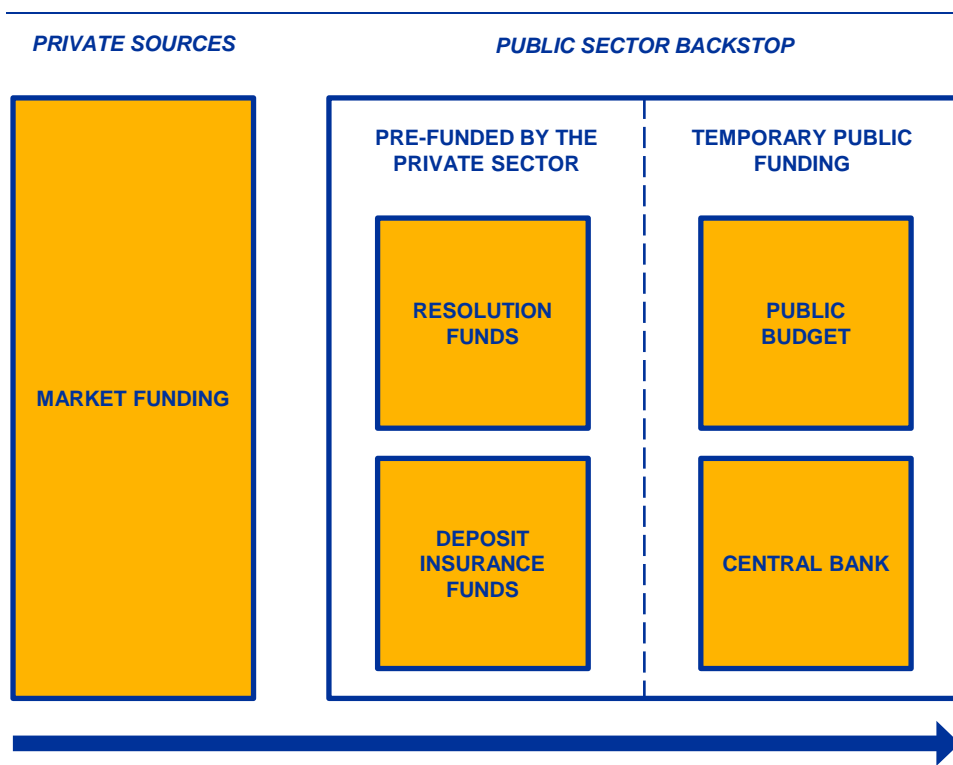
Jurisdiction	Liquidity provider	Collateralisation	Solvency requirement	Recoupment mechanism	Interaction with fiscal authorities
United States	Federal Deposit Insurance Corporation Federal Reserve	Yes	Yes	Yes	Fed lending and FDIC borrowing require approval by Treasury Secretary
United Kingdom	Bank of England (backstopped by the Treasury)	Yes	Yes	Yes	Chancellor of the Exchequer has to approve RLF funds.
Japan	Deposit Insurance Corporation of Japan	No	Yes	Yes	Ministry of Finance must approve government guarantee
Canada	Bank of Canada Canada Deposit Insurance Corporation Ministry of Finance	Yes (but not specified for CDIC liquidity provision)	Yes (some exceptions for ELA)	No	Ministry of Finance must approve CDIC assistance (but not BoC ELA operations)
Banking union	European Central Bank National central banks Single Resolution Fund (poss. backstopped by European Stability Mechanism)	Yes, for monetary policy operations and ELA (no explicit requirement for SRF lending)	Yes	Yes	NCB liquidity sometimes requires government guarantee (possible ESM backstop funds require approval by the ESM Board of Governors)

As already noted in Section 2.3, the FSB guidance leaves open some important aspects of the frameworks for liquidity provision in resolution to accommodate national specificities. This applies in particular to the construction and composition of the public sector backstop. The possible sources are resolution funds, deposit guarantee funds, the central bank and the public budget as pictured in Figure 1. In this study, we consider resolution funds and deposit guarantee funds as privately funded because their funds are usually collected from the financial industry ex ante. Relying on the public budget or the central bank within the backstop, we consider as temporarily publicly funded, because the central bank or the public budget may at least temporarily take a financial risk that may have to be passed on to the taxpayer if it cannot be recovered from the private sector ex post.

Three important policy choices can be made as regards the set-up of the public sector backstop, which are: (i) the possible involvement of sources of funding that involve temporary public liquidity provision, i.e. the public budget and the central bank; (ii) the relationship between the parts of the public sector backstop that involve private funding and those that involve temporary public liquidity provision; and (iii) the division of work between the public budget and the central bank when it comes to a temporary public liquidity provision. The following three sections will analyse in more detail the reasons why jurisdictions may have chosen a certain format for their public sector backstop. Furthermore, Section 4.4 will draw some lessons for the set-up in the banking union.

**Figure 1**

Funding sources for banks in resolution



Source: Own depiction.

Notes: The horizontal arrow suggests a possible hierarchy or sequence of funding sources that would help to reduce moral hazard. The central bank is regarded as a public risk taker but distribution of realised losses may differ across central banks.

## 4.1 The rationale for temporary public liquidity provision within the public sector backstop

**We find that all jurisdictions covered in this analysis include some temporary public liquidity provision by creating a role for the public budget or the central bank (or both) within their respective frameworks.** This can be explained by the required characteristics for a public sector backstop: Principle number 2 of the FSB Guiding Principles (FSB, 2016b) recommends that any such backstop should be of sufficient size and timeliness. As regards size, the Guiding Principles state that the backstop “should be sufficiently large to support the orderly resolution of potentially multiple G-SIBs simultaneously”. The liquidity needs of a bank in resolution depend greatly on its size and business model, the macro-financial conditions and the applicable resolution framework. For large and complex institutions which are resolved in a period of severe economic and financial crisis, liquidity needs can be very large, reaching hundreds of billions of euro. Some indication can be given by the amounts of funds which were provided to banks in the form of State aid in the EU which reached roughly €900 billion in guarantees and €70 billion in other liquidity measures at the height of the GFC (European Commission, 2017). When assessing these numbers, it should be kept in mind that at that time the new EU resolution framework was not yet in place. Furthermore, the size of some of these guarantees

was aimed at sending a positive signal to the market, not necessarily at filling a particular liquidity gap. In addition, these funds were not only provided to banks being resolved but to the banking system at large. Qualitatively speaking any facility providing liquidity in resolution should be able to sustain the liquidity needs of multiple G-SIBs.

**If liquidity needs of banks in resolution are very large in a given situation, this may overburden the privately-financed parts of the public sector backstop, i.e. the resolution and deposits funds.** In addition, and in line with the FSB Guiding Principles, funds under the backstop may have to become available on very short notice when a specific resolution operation is being carried out. This means that time can be too short for the privately prefunded sources of the backstop to collect or contract any additional means.

**In summary, the need for the backstop to be sizeable and speedy may require authorities to provide access to temporary public liquidity provision or to create large amounts of liquidity at short notice.** All jurisdictions acknowledge this in the set-up of their frameworks. At the same time, this should always be read in conjunction with other Guiding Principles: Guiding Principle number 1 states that the use of private sources of funding should take priority. And Guiding Principle number 4 suggests that any losses incurred under the backstop should be recovered from the industry.

## 4.2 Relationship between private prefunding and temporary public liquidity provision within the public sector backstop

**Private sources of funding should be relied upon as a first-choice source of funding to reduce the need for temporary liquidity support from the public sector and to minimise the risk of moral hazard<sup>30</sup>.** This means first and foremost that private market funding should be used and possibly exhausted before relying on the public sector backstop (see also Figure 1). While the principle does not explicitly prescribe to apply the same hierarchy between the sources of funding within the public sector backstop, i.e. those that are prefunded by the private sector and those involving temporary public liquidity provision, it can be argued that the same logic should apply within the backstop in order to minimise public liquidity provision.

**With this in mind, various backstop design choices are thinkable: hierarchical, parallel or streamlined.** In the first approach, which we term “hierarchical”, the use of the privately prefunded sources (e.g. deposit insurance funds or resolution funds) takes priority, with temporary public liquidity provision (i.e. via the public budget or the central bank) stepping in only once the privately prefunded sources are exhausted. In Figure 1, this is illustrated by the horizontal arrow, showing the sequence of funding from left to right. In the “parallel” approach, private and temporary public liquidity provision is on an equal footing with no absolute hierarchy (see again Figure 1), with the actual choice between different possible sources being made on a case-by-case

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<sup>30</sup> See FSB Guiding Principle number 1.



basis, depending on the category of bank (e.g. G-SIB vs. smaller bank), the amounts needed, the type of firm being resolved etc. The third design choice, which we call the “streamlined” approach because it is a simplified method involving checks and balances between various authorities and, as we explain later, is only possible in an institutional set-up, where there is close cooperation between different authorities. In this approach, temporary public liquidity provision could be the standard solution, with prefunding by the private sector being less prominent, as long as an effective loss-recovery mechanism in line with Guiding Principle 4 is in place. This would possibly mean bypassing the privately funded part of the public backstop in Figure 1. If the loss-recovery mechanism works reliably, any involvement of public liquidity provision within the backstop would only be temporary and principal and interest would be recovered earlier or later.

**Our analysis shows that the jurisdictions covered in this paper, rely on a variety of different backstop design choices.** The set-up in the United Kingdom comes close to a streamlined approach, with the RLF, which is a central bank operation guaranteed by the public budget, taking a prominent role. Loss recovery can be ensured, if an appropriate mechanism is in place, especially if collateral is insufficient. The framework in the United Kingdom is facilitated by the fact that central bank, prudential supervisor and resolution authority are all under one roof at the Bank of England. Canada follows a parallel approach with ELA being the likely instrument of choice for large and complex banks while the Canada Deposit Insurance Corporation can deal with other cases directly. The set-up in Japan leans towards a hierarchical approach. The DICJ has become the main provider of liquidity to banks in resolution and can arrange borrowing from the Bank of Japan based on a government guarantee. The framework in the United States is again another variant of a hierarchical approach. The expectation is that the firms first rely on privately funded part of the backstop (i.e. FDIC) and the OLF is a temporary backstop. The OLF is the backstop funding source for the resolution of financial companies (including bank holding companies) for which the FDIC has been appointed receiver under Title II of the Dodd-Frank Act. The deposit insurance fund provides resolution funding for insured depository institutions for which the FDIC has been appointed receiver under the FDI Act.

**The final set-up of the backstop in the banking union is yet to be seen, but the currently envisaged structure follows a rather hierarchical approach.** The SRF is the main provider of liquidity to banks in resolution. The SRF is backstopped by the ESM and ESM funds may also be used for liquidity provision. There is a clear hierarchy embedded in the design of the ESM backstop as the last resort principle requires that the ESM credit line to the SRF can only be activated once the SRF is exhausted. Any possible losses are recovered through the SRF.

**Overall, in the analysed jurisdictions, all design choices for the relationship between private prefunding and temporary public liquidity provision within the public sector backstop show at least some elements of the hierarchical approach, with private prefunding having priority over temporary public liquidity provision.** The notable exception is the United Kingdom where temporary public liquidity provision can be significant while possible losses for the public sector

may be recovered ex post. In fact, all jurisdictions covered in our analysis rely on a recoupment mechanism through which they can raise funds from the banking sector to compensate for losses ex post. However, such mechanisms do not necessarily extend to all kinds of public liquidity provision. Recoupment mechanisms are easiest to operate if they are implemented as part of an authority that is prefunded by the private sector. They are less accessible for central banks. If central banks do not have access to such mechanisms, they need to rely on prudent collateral requirements for their operations.

### 4.3 The roles of the public budget and the central bank within a public sector backstop

**Building on the two previous sections, this section discusses the division of work between the public budget and the central bank when it comes to a temporary public liquidity provision within the backstop.** In the United Kingdom, the Bank of England is centrally involved liquidity provision within the public sector backstop, though liquidity operations always require prior approval by the Treasury, and the Bank may well request an indemnity from the Treasury in a variety of scenarios. As a result, the Bank of England's relationship with the Chancellor of the Exchequer has been reinforced in the context of the new resolution liquidity framework. The Bank of Canada's ELA framework foresees a central role for the central bank in providing liquidity to support the broader efforts of authorities to conduct an orderly resolution of a firm. In contrast to the United States and the United Kingdom, there is no explicit requirement for Treasury approval in Canada, as ELA provision remains at the discretion of the Bank of Canada. The Bank of Canada will in some cases require a provincial indemnity that covers any residual loss after the realisation of all collateral. In the United States, the role of the central bank is very limited and emergency liquidity requires approval from the Treasury Secretary. In Japan, the central bank is part of the public sector backstop as it may provide liquidity to the Deposit Insurance Corporation of Japan. However, this will only be done on the basis of a government guarantee. In the banking union, the ECB is not covered by the public sector backstop that is currently being put in place at the European level. In many banking union member countries, NCBs require national public guarantees to provide emergency liquidity.

**The comparison of different frameworks reveals a common theme: the role of fiscal authorities is strong and it has in some cases increased significantly since the global financial crisis.** This should not come as a surprise against the backdrop of large-scale interventions by central banks in the wake of the GFC, which were subject to criticism from across the political spectrum. Finance ministries have thereby underscored that bank resolutions are, in principle, government tasks. That being said, central banks can still play an essential role if they are adequately protected against solvency risks, as they provide the infrastructure as well as the funds to bridge liquidity gaps that might temporarily arise post resolution.

**Our analysis also shows that up to now governments and fiscal authorities themselves, rather than the central bank, have become the intermediate risk**

**taker within the arrangements of the public sector backstop.** In those cases where the central bank is involved, it operates on the basis of a government indemnity with a partial exception in Canada, where indemnities are only available for a subset of banks. The decision as to whether it is in the public interest or not to resolve a bank in resolution is taken by the government, i.e. a branch of government with very strong democratic legitimacy or by a government agency that is specifically legitimised to decide on the application of the resolution toolkit. This is justified by the fact that a resolution likely entails the infringement of private property rights and that a resolution may involve the assumption of significant idiosyncratic financial risk related to one particular bank for the public sector balance sheet. In addition, the obligation of banks to make ex ante and/or ex post contributions to finance the failure of (other) banks should have a sound legal footing, which only the legislator can create.

**At the same time, central banks could play a crucial role in providing the necessary amount of liquidity.** Domanski et al. (2014) argue that “in a systemic liquidity shock [...] the traditional arguments for the central bank acting as lender of last resort may be particularly important”, as “[the central bank] can create virtually unlimited funds instantaneously, while liquidity failures at systemically critical institutions can materialise in days or even hours”. Therefore, central banks could play a useful role as a liquidity provider in resolution, provided that sufficient safeguards to protect its balance sheet are in place. If they are, the central banks’ role as instantaneous liquidity provider to banks in resolution can be decoupled from the role of risk taker.

## 4.4 Lessons for the banking union

**The framework for the provision of liquidity in resolution in the banking union is not yet complete and the size of the public liquidity backstop is not likely to be sufficient.** While an industry-funded backstop exists in the form of the SRF, at approximately €60 billion in 2024, it is unlikely to be enough to provide both capital and liquidity support in a major crisis. The political agreement on developing the ESM into a last-resort backstop to the SRF, which is fiscally neutral over the medium term, is an important step to strengthen the resolution framework of the banking union. It expands the SRF’s lending powers by about €60 billion. However, even if both the SRF and the common backstop were used solely for the purpose of liquidity support, their joint firepower may still be insufficient to provide the amounts of liquidity provided to banks in a systemic crisis.<sup>31</sup> As mentioned previously, qualitatively speaking any facility providing liquidity in resolution should be able to sustain the liquidity needs of several large banks at the same time or one single globally systemic institution.

**The construction of a public sector backstop of sufficient size and speed is comparatively more complex in the banking union than in other jurisdictions.** The banking union has a single prudential supervisor and a single resolution authority

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<sup>31</sup> For instance, ELA by the Bank of England to HBOS and the Royal Bank of Scotland reached an intraday peak of GBP 61.5 billion. American authorities (Fed, FDIC and Treasury) provided Citigroup and Bank of America with liquidity of more than USD 400 billion in November 2008 and January 2009, respectively. See Domanski et al. (2014).

but consists of 19 sovereign member countries with 19 public budgets and ELA schemes. The ECB can play a role within the public sector backstop as long as it is compliant with the legal framework it operates in. Three aspects are particularly important in this context. First, the monetary financing prohibition laid down in Article 123 of Treaty on the Functioning of the EU prevents the ECB from taking actions which would directly finance a government task such as resolution. This means, for example, that an arrangement as in Japan where the central bank can provide a credit line to the resolution fund would not be compatible with the legal framework in the banking union. Second, central bank functions in the area of liquidity provision are divided between the ECB, which has the power over monetary policy tools, and the NCBs of the 19 member countries, which provide ELA under their financial stability mandate. Third, the ECB Statute requires the ECB to make sure that its credit operations are collateralised at all times. When unencumbered assets are no longer available in sufficient amounts and quality on a bank's balance sheet, two solutions are feasible. Either unencumbered assets of sufficient quality need to be channelled to the bank as part of the resolution operation (e.g. the resolution authority lends securities to the bank) or third-party guarantees can be given to make up for the lack of collateral or the low quality of collateral.

**In this context, European policymakers have – among other solutions – been discussing a potential role of public guarantees to be provided to the ECB as collateral which could allow the central bank to act in line with the economic logic of a LOLR.** The details of any such set-up would have to be further analysed. However, provided a political agreement can be reached, the technical obstacles to creating a credible framework to stem extreme liquidity shocks, post-resolution, seem surmountable. A bank exiting resolution procedures has been brought back to solvency and that has been verified by the resolution authority. Hence, economically speaking, the problem has been reduced to the lack of high-quality collateral. Overcoming such a deficiency would allow the ECB to provide liquidity to an illiquid but solvent bank, in line with the Bagehot principle for a LOLR. Public guarantees to be provided to the ECB at the European level could remedy the lack of high-quality collateral.

**Further progress towards the establishment of such a guarantee framework at the European level would make the resolution framework of the banking union more credible.** An ex ante European-level guarantee framework combined with the ability of the Eurosystem to provide liquidity to a bank coming out of resolution would constitute a public sector liquidity backstop that could live up to the standards developed by the FSB in its Guiding Principles. In particular, it would be sufficiently speedy and sizeable, provided that the guarantee amount is sufficiently large. This would allow the SRB to engage in resolution actions, with the certainty that the bank coming out of resolution has access to the liquidity that is necessary for it to operate its critical functions for the financial system. Such a guarantee framework would provide a solution at the European level which would be equally available for all banks across the banking union. This would also allow the bank-sovereign nexus to be further reduced and avoid a situation in which a bank that is supervised and resolved at the European level would ultimately depend on the provision of public funds of a particular member country. As part of the guarantee framework, it could also be envisaged to

design a mechanism that would allow recovering any remaining losses of the guarantor from the sector.

## 5 Conclusion

**The global financial crisis has brought about fundamental changes in the global regulatory framework for banks in the form of raised capital and liquidity requirements and strengthened supervisory oversight.** The post-crisis reform of the international financial architecture has gone beyond the philosophy of the risk-focused Basel framework and introduced a new regime to address the failure of large banks without the use of taxpayer money. Bank resolution regimes seek to achieve the two public policy objectives of ensuring financial stability and fiscal neutrality at the same time, and thus minimising the involvement of the taxpayer in banking crises. However, given that a resolution measure may still warrant temporary public support in order to be effective, the FSB recommended the establishment of dedicated resolution funds, financed by the banking industry as a whole rather than the public sector.

**As our paper shows, countries have opted for different frameworks to address liquidity needs in the context of bank resolution procedures.** Generally speaking, we observe different policy choices across jurisdictions, both with regard to the relationship between prefunding by the private sector and temporary public liquidity provision within the public sector backstop, and with regard to the roles of the public budget and the central bank within a public sector backstop. The US legislature has limited the Federal Reserve's authority to support banks in the wake of the crisis and the Federal Deposit Insurance Corporation is in the lead to provide liquidity to banks in resolution. Similarly, in Japan, the deposit insurance fund is the first port of call when it comes to liquidity provision. As regards temporary public liquidity provision within the public sector backstop, in the United States the onus lies on the public budget alone while in Japan the central bank can extend a loan to the deposit insurance fund against a government guarantee. In the United Kingdom and Canada, the central bank has an important role within the public sector backstop but has the possibility to request an indemnity from the public budget (in Canada only for a subset of banks). All jurisdictions covered in this analysis have set up recoupment mechanisms but recoupment is less straightforward to implement when the central bank is in the lead. It appears that all jurisdictions assign a prominent role in bearing the risks associated with post-resolution liquidity provision to fiscal authorities.

**In the banking union, a guarantee framework could be established to allow banks coming out of resolution with limited collateral to access Eurosystem liquidity.** Member States have set up the SRF – an industry-financed fund the objective of which is to support resolution measures taken by the SRB. However, while the SRF can be used for capital and liquidity measures, its size might be insufficient. Besides the SRF, the ECB may also provide liquidity to banks, provided these banks are solvent and have sufficient collateral, (but normally banks immediately after resolution do not have enough collateral). In the light of the SRF's potentially insufficient volume, policymakers have called for specific instruments to address potential liquidity shortfalls following future resolution cases (see König, 2018). In this context, the idea of establishing a guarantee framework, which would allow banks

coming out of resolution with limited collateral to access Eurosystem liquidity , is being further investigated. Such public guarantees would protect the Eurosystem against losses and should be provided at the European level with a view to fostering a single market for banks in the banking union and reducing the bank-sovereign nexus. Within this context, it needs to be further analysed how potential losses under such public guarantees could be recovered from the sector ex post to reduce moral hazard and ensure fiscal neutrality.

# Annex 1

## The FSB Key Attributes, Guiding Principles and Funding Strategy Elements – a primer

This box provides an overview of the three standard-setting documents by the Financial Stability Board (FSB) which are central to the provision of liquidity to banks in resolution: The Key Attributes of Effective Resolution Regimes for Financial Institutions (Key Attributes), the Guiding principles on the temporary funding needed to support the orderly resolution of a global systemically important bank (Guiding Principles) and the Funding Strategy Elements of an Implementable Resolution Plan (Funding Strategy Elements). While they have a guiding rather than a binding legal character, most jurisdictions have modelled their respective bank resolution regimes on these standards. The box focuses on a summary of the parts of the documents which are particularly relevant for the design of the national frameworks aimed at regulating the provision of liquidity to banks in resolution.

### Key Attributes

The FSB Key Attributes (FSB, 2014) define 12 features, which should be part of resolution frameworks across all jurisdictions as they are deemed essential to ensure smooth bank resolutions. The Key Attributes were adopted by the FSB and endorsed by the G20 Heads of States and Government in 2011, in the wake of the financial crisis, with a view to setting an umbrella standard for the resolution of significant financial institutions. In 2014 additional guidance was adopted by the FSB and annexed to the Key Attributes without changing the text of the 12 attributes themselves. These attributes, inter alia, address the following central aspects of resolution: resolution authority (KA 2), resolution powers (KA 3), set-off, netting, collateralisation, segregation of client assets (KA 4), funding of firms in resolution (KA 6), legal framework conditions for cross-border cooperation (KA 7), resolvability assessments (KA 10) and recovery and resolution planning (KA 11). Resolution tools typically include the bail-in of (junior) bondholders and shareholders and/or the transfer of assets and liabilities to a bridge institution or a new entity. While the overarching rationale of resolution is to avoid using taxpayer funds, in some jurisdictions some exceptions may be inevitable in order not to jeopardise the stability of the financial systems. For example, temporary public ownership can still be considered a stabilisation option but should be used as a last resort only. The FSB monitors the implementation of the Key Attributes on a periodic basis, and has provided detailed guidance to countries regarding their consistent implementation across borders. In the context of liquidity provision in resolution, KA 6 is of particular importance, as it establishes five sub-attributes: resolution toolkit, loss recovery, privately-financed deposit insurance and resolution funds, conditionality to reduce moral hazard, and temporary public ownership.



## Guiding Principles

Back in 2014, the FSB identified the provision of temporary funding to banks in resolution as an issue that needed to be resolved in order to ensure a smooth resolution process. In 2016 the FSB adopted the Guiding Principles (FSB, 2016b) which build on and are fully consistent with the Key Attributes and in particular KA 6. They particularly focus on liquidity provision as opposed to solvency. There are six Guiding Principles: (i) the use of private sources of funding should take priority; (ii) a public sector backstop funding mechanism should be available with appropriate size, timing and terms of funding; (iii) the use of the public sector backstop should be subject to strict conditions; (iv) a mechanism to recover any possible losses from the private sector should be in place; (v) a well-developed and implementable resolution plan should be in place; (vi) home and host authorities should closely cooperate to ensure smooth implementation of the resolution action.

## Funding Strategy Elements

The Funding Strategy Elements (FSB, 2018b) stipulate that a resolution plan should always contain a resolution funding plan that defines the strategy, key actions and measures that the resolution authority would rely on to ensure adequate access to liquidity for banks in resolution. The elements include a strategy for maintaining liquidity in resolution, firm capabilities to support monitoring, reporting and estimating funding needs in resolution, the development of the resolution funding plan by the authorities, firm assets and private sources of resolution funding, temporary public sector backstop funding mechanisms and ordinary central bank facilities, and information sharing and coordination between authorities.

## Annex 2

### Detailed descriptions of national frameworks for liquidity in resolution

#### The United States of America

**As part of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), the United States has introduced a new process to facilitate the resolution of large, complex financial companies – the so-called Orderly Liquidation Authority (OLA).** The OLA under Title II of the Dodd-Frank Act provides a process to quickly and efficiently liquidate a large, complex financial company that is close to failing. Title II can only be used if the financial company is in default or danger of default and its failure and resolution under otherwise applicable law would have serious adverse effects on US financial stability. The OLA thus creates an alternative process to that of the US Bankruptcy Code, which was applied in the case of Lehman Brothers (Massman, 2015).<sup>32</sup> Title II procedures enable the Secretary of the Treasury, in consultation with the President, to appoint the Federal Deposit Insurance Corporation (FDIC) as the receiver of a failing institution, subject to a number of conditions and based on a recommendation by the Board of Governors of the Federal Reserve and the Board of Directors of the FDIC, the commissioners of the Securities and Exchange Commission, or the director of Federal Insurance Office, depending on the type of financial company involved.<sup>33</sup> The Secretary of the Treasury also must determine that the company's bankruptcy would have serious adverse effects on US financial stability and that there is no private sector alternative to prevent default.

**The Dodd-Frank Act provides for the establishment of the Orderly Liquidation Fund (OLF) which is a separate fund at the US Treasury, from which the FDIC may borrow to provide liquidity to the financial company in receivership or a bridge financial company established in connection with the resolution (Federal Reserve Board, 2017).** The FDIC has the power to issue guarantees backed by its ability to borrow from the OLF, which may be used to attract private sector support for or ensure funding of the failed financial company or bridge financial company.

**However, OLF resolution funding is subject to several conditions and constraints:**

1. The FDIC generally expects that OLF advances are secured with collateral that is acceptable to the US Treasury.

<sup>32</sup> The FDIC has issued a final rule as well as five supplemental rules to implement the OLA; see [Final Rule re. Certain Orderly Liquidation Authority Provisions under Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act](#), 76 Fed. Reg. 41,626 (July 15, 2011) (codified at 12 C.F.R. pt. 380). More generally, see Jackson and Massman (2017).

<sup>33</sup> The fact that the Treasury, the Federal Reserve and the FDIC must all agree to activate Title II procedures is also referred to as “three keys”.

2. According to the statutory creditor hierarchy in Title II, OLF borrowings have a higher priority than claims of private creditors (akin to debtor-in-possession financing in bankruptcy).
3. To avoid exposure of taxpayer funds to loss, OLF borrowings that cannot be repaid from a return to private sector funding, customary liquidity sources, or liquidation proceeds of assets of the failed financial company must be repaid from assessments on the industry.
4. The FDIC can only tap OLF funding on the basis of an orderly liquidation plan that is approved by the US Treasury and intended to address provision and uses of temporary public funds.
5. The initial maximum obligation limitation (MOL) is 10% of the total consolidated assets of the financial institution. If more funds are necessary during the first 30 days or if funds are to be advanced more than 30 days after the appointment of the FDIC as receiver, the FDIC can borrow amounts up to an MOL of 90% of the fair value of total consolidated assets available for repayment.
6. The FDIC may use OLF advances to fund operations of a bridge bank and has the authority to make any other advances to the covered financial company's receivership.

**Besides the funding available in FDIC-administered Title II resolutions via the OLF, the Federal Reserve may also provide liquidity to depository institutions, provided that they fulfil the eligibility requirements under respective monetary policy instruments.** Most notably, deposit-taking institutions may access primary or secondary credit under the Federal Reserve's discount window. However, the Federal Reserve may only extend credit under the discount window to solvent institutions and on a fully-secured basis.<sup>34</sup>

**With respect to ELA, the Dodd-Frank legislation has limited the Federal Reserve's ability to provide credit.** Most of the Federal Reserve's lending to distressed non-bank financial institutions during the GFC (most of which were not deposit-taking institutions at the time) was based on its legal authority under Section 13(3) of the Federal Reserve Act (FRA).<sup>35</sup> Section 13(3) allowed the Federal Reserve to extend credit in unusual and exigent circumstances to banks and non-banks, but was rarely used before the financial crisis.<sup>36</sup>

**Congress limited the Federal Reserve's 13(3) authority to programmes and facilities with "broad-based eligibility"<sup>37</sup>, explicitly prohibited lending to**

<sup>34</sup> For the Federal Reserve's collateral policy, see Federal Reserve, "[Discount Window Margins and Collateral Guidelines](#)".

<sup>35</sup> § 1101(B)(iv) of the Dodd-Frank Act.

<sup>36</sup> When the market turmoil of September 2008 threatened US and even global financial stability, the provision was invoked not only to directly lend to companies, it also served as the source of authority for broader programmes, such as the Term Asset-Backed Securities Loan Facility (TALF) and the Commercial Paper Funding Facility (CPFF).

<sup>37</sup> According to the Federal Reserve's own interpretation of the law, "broad-based eligibility" means that the programme or facility: (i) is designed for the purpose of providing liquidity to an identifiable market or sector of the financial system, (ii) must not be designed for the purpose of assisting one or more specific companies to avoid bankruptcy or resolution, and (iii) covers more than five institutions (Fed, 2015).

**insolvent firms, and restated that the power may only be used in “unusual and exigent circumstances.”** Additionally, the activation of Section 13(3) now hinges on the approval from the Treasury Secretary. In November 2015, the Federal Reserve approved a final rule specifying its procedures for emergency lending under Section 13(3) of the FRA, in which it clarified that Section 13(3) FRA may not be used for the purpose of aiding specific companies to avoid bankruptcy or resolution and broadened the definition of “insolvency” (Board of Governors of the Federal Reserve System, 2015). Moreover, the final rule requires the interest rate for credit extended under Section 13(3) to be set at a level that is at a premium to the market rate.

## The United Kingdom of Great Britain and Northern Ireland

**The authorities in the United Kingdom have set up a dedicated resolution liquidity framework (RLF) in 2017 (Bank of England, 2017).**<sup>38</sup> The essential feature of the RLF is that it establishes a fiscal backstop by the Treasury for the Bank of England’s liquidity operations in relation to banks in resolution. The RLF provides the tools to lend to banks, building societies or investment firms subject to the resolution regime, where the entity or its holding company is in a resolution led by the Bank of England (see Bank of England, 2017). In terms of general principles, the Bank of England has clarified that the terms and conditions of the RLF would be set in a way designed to: (i) support the effectiveness of the resolution regime, (ii) incentivise the transition of the firm back to market-based funding, and (iii) protect public money. The RLF may be secured against a wide range of collateral and builds on the collateral eligible in Sterling Monetary Framework operations, as set out in the “Red Book.”

**Besides the existing powers of the Chancellor of the Exchequer to direct the Bank of England in financial crises<sup>39</sup>, the RLF makes any temporary liquidity support to banks in resolution dependent upon the authorisation of the Chancellor.** In a “Memorandum of Understanding on resolution planning and financial crisis management” (MoU), signed in 2017, the Bank of England and HMT have further specified the governance of the RLF.<sup>40</sup> The MoU, for instance, obliges the Bank of England to share relevant information with the Treasury about resolution plans, assessments of systemic risks, and an assessment of the implications of the resolution plans for public funds.<sup>41</sup> Moreover, the Bank of England is obliged to take

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<sup>38</sup> The establishment of the RLF does not, however, exclude the provision of liquidity by the Bank of England through other tools, such as the Sterling Monetary Framework (SMF) or ELA. At the same time, the very reason for setting up the RLF was to ensure liquidity provision if the requirements to accessing liquidity under the existing facilities are not fulfilled in a given resolution case. For an overview of the different tools, see e.g. IMF (2016).

<sup>39</sup> According to Section 61 of the UK Financial Services Act 2012, the Chancellor has additional powers during a financial crisis to direct the Bank of England, including directing the Bank to conduct special support operations for the financial system as a whole and provide ELA in a support operation going beyond the Bank’s published frameworks to one or more firms that are *not* judged by the Bank to be solvent and viable.

<sup>40</sup> HMT, ‘Memorandum of Understanding on resolution planning and financial crisis management’, October 2017.

<sup>41</sup> The Bank of England will have to share the following information: an explanation of the risk to public funds; identification of the options the Bank is considering to mitigate the risks to stability including, where relevant, resolution options under consideration; an assessment of the potential systemic or firm-level impact of each option; and identification of specific risks to public funds arising from any action being considered, including inaction. See *ibid*, p. 5.

account of the Treasury's need to use public funds in a way which meets standards of regularity and propriety and provides good value for money.<sup>42</sup>

**The Bank of England expects that, due to the potential size of lending relative to the central bank's resources, an indemnity from HMT is likely to be required in a range of scenarios (Bank of England, 2017).** While not explicitly mentioned in the MoU between HMT and the Bank of England, the fact that it needs to "provide good value for money" to HMT arguably implies that any collateral available at the bank in resolution would have to be used. Finally, with respect to fiscal neutrality, the RLF states that all losses would be recovered from the industry although it remains unclear how this would be ensured.

**Therefore, overall, the RLF is a central bank liquidity line to banks in resolution, backed by a fiscal guarantee that is subject to broad information-sharing obligations for the Bank of England as well as the ultimate approval of the Chancellor of the Exchequer.** The RLF is a dedicated facility separate from the Bank of England's traditional LOLR framework, namely the ELA. The Bank of England has not made public any information regarding the potential size of the RLF, nor its duration. However, constraints may arise from the mandatory involvement of HMT, which needs to approve and indemnify the Bank of England's operations, as described above.

## Japan

**Since 2014, banks and non-bank financial institutions in Japan may request financial assistance such as a loan or the guarantee of debts from the Deposit Insurance Corporation of Japan (DICJ) – a corporation jointly owned by the Government, the Bank of Japan and the financial sector – under the orderly resolution regime, which was introduced to avoid causing disruption to the financial system (Tirado, 2017).** Akin to the US FDIC, the DICJ may act as a financial administrator of a failing firm. While in the past, the Bank of Japan used to provide liquidity even in resolution, the DICJ has become the main provider of liquidity to banks in resolution under the post-crisis framework (Kodachi, 2013).

**Financial assistance from the DICJ is prefunded by industry contributions, but in the event of an emergency the DICJ may also borrow on a temporary basis from the Bank of Japan.** Where the DICJ deems it necessary, it may obtain funding from the market, through the issuance of bonds and borrowings from financial firms, which can be guaranteed by the Government as necessary. In addition, should the DICJ need to secure additional funding (e.g. if market funding is not available in sufficient quantity), it may borrow on a temporary basis from the Bank of Japan against a government guarantee – an emergency option that caters for the possibility of systemic funding crises. For orderly resolution, the overall funding capacity of the DICJ is limited to JPY 35 trillion, and losses incurred by the DICJ in the provision of resolution funding are recovered from the financial industry via ex post contributions.

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<sup>42</sup> See *ibid*, p. 6.

**As a rule, liquidity support by the DICJ may be provided to financial institutions throughout the orderly resolution process.** For example, the DICJ can provide loans in order to repay the obligations of a failed bank that would put Japan's financial system at risk of extreme turmoil. It also has the authority to provide funding to a bridge institution to facilitate the transfer of systemic assets and liabilities from a failed financial institution to that institution. The liquidity provision by the DICJ can be uncollateralised (Kodachi, 2013).

## Canada

**In Canada, both the resolution authorities and the central bank have a role in liquidity provision in resolution.** For non-systemic firms it is generally expected that resolution authorities have sufficient resources to handle liquidity requests. For systemic banks, the central bank could continue to play a critical role in providing liquidity to banks in resolution via Emergency Lending Assistance.

**As regards resolution authorities, the Canada Deposit Insurance Corporation (CDIC) can provide financial assistance to federally regulated deposit-taking institutions on a collateralised or uncollateralised basis using its investment portfolio and/or its borrowing authority with the Government of Canada or capital markets<sup>43</sup>, subject to approval by the Canadian Minister of Finance.** Regarding any losses that it incurred as a result of pursuing its objectives the CDIC also has the power to recover these from individual member institutions or a class of institutions.<sup>44</sup> Furthermore, the Ministry of Finance may also provide liquidity assistance in accordance with the pertinent provisions of the Canadian Financial Administration Act.<sup>45</sup> Specifically, the Minister of Finance can enter into any contracts and/or provide credit that in the Minister's opinion are/is necessary to promote the stability or maintain the efficiency of the financial system in Canada.<sup>46</sup>

**As regards liquidity provision in resolution by the BoC, a bank undergoing resolution could, at the discretion of the Bank, continue to access ELA subject to meeting the eligibility conditions.** Therefore, ELA by the Bank "could serve as a source of temporary public sector liquidity to support the broader efforts of authorities to conduct an orderly resolution of the firm" (Bank of Canada, 2016). If a bank is supervised at provincial level, the province would need to indemnify the BoC if the borrowing institution were to default on its ELA loan. Banks in recovery or resolution

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<sup>43</sup> There is a borrowing authority formula whereby CDIC's borrowing authority grows in line with the growth of insured deposits, subject to approval by the Minister of Finance. Additional borrowing could be provided by Parliament through an appropriation act if available funding was not sufficient. CDIC could also receive loans from the Government of Canada beyond its statutory borrowing limit when deemed necessary to promote the stability or maintain the efficiency of the financial system in Canada (CDIC, 2019).

<sup>44</sup> See Section 7.3 of the Canada Deposit Insurance Corporation Act (R.S.C., 1985, c. C-3). Such recoupment mechanism does not exist in the context of ELA provided by the Bank of Canada (BoC) but ELA loans are required to be secured whereas other sources of assistance are not required to be secured.

<sup>45</sup> Specifically, the Minister of Finance, with Governor in Council authorisation, can enter into any contracts and/or provide credit that in the Minister's opinion is necessary to promote the stability or maintain the efficiency of the financial system in Canada (IMF, 2014).

<sup>46</sup> Ibid.

may access ELA if, besides the standard eligibility conditions<sup>47</sup>, a credible recovery and resolution framework is in place.<sup>48</sup> In any case, the BoC will always carry out its own due diligence before providing ELA to a bank in recovery and resolution. In contrast to most other jurisdictions, the BoC may also extend liquidity to firms that “may be temporarily insolvent”, though strict safeguards apply to reduce moral hazard (Graham et al., 2016). The reason is that providing ELA to an insolvent bank could allow bridging the time needed for authorities to recapitalise the institution as part of the broader resolution process – making such support dependent on a solvency assessment could delay or even prevent ELA from being provided.<sup>49</sup>

**The BoC’s ELA can be flexible and very sizeable: the central bank can create Canadian-dollar liquidity immediately and without any volume constraints<sup>50</sup>, but ELA does include certain restrictions.** According to the BoC Act the duration of the loan or advance made under ELA must, in principle, not exceed 6 months and banks are incentivised to return to private funding sources as quickly as possible through the application of a penalty interest rate. Most importantly, the ELA facility needs to be fully collateralised to reduce credit for the BoC which limits the amount of ELA that can be provided. At the same time, the BoC has introduced special policies to accept mortgage loans as collateral in order to increase the flexibility of ELA in case large amounts of liquidity are requested by banks.<sup>51</sup> As a result, the BoC, as a last resort, is willing to accept Canadian-dollar mortgages as collateral for ELA loans. This considerably increases an eligible financial institution’s capacity to borrow, as mortgages represent a large portion of Canadian banks’ assets and mortgages are not required to be of the highest quality<sup>52</sup> while haircuts would be applied to assets of lower quality.

## Banking union

**The GFC has brought about fundamental changes in the European regulatory, supervisory and resolution framework for banks. Most notably, the creation of the banking union**, which currently consists of two pillars: the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) that became fully operational in 2014 and 2016, respectively. The European Commission presented a legislative proposal for a European Deposit Insurance Scheme (EDIS) – to act as a third pillar – in November 2015.<sup>53</sup> Negotiations of EU co-legislators on this proposal

<sup>47</sup> The eligibility conditions depend on the type of bank that seeks to access ELA facilities. See *ibid* for a comparison.

<sup>48</sup> See Bank of Canada (2016) for more details as regards the criteria for a credible recovery and resolution framework.

<sup>49</sup> Moreover, according to Graham et al. (2016), “removing the solvency requirement also recognizes that solvency and illiquidity are closely linked and, in periods of stress, authorities can have difficulty differentiating between the two”.

<sup>50</sup> The interest rate on the ELA is determined case by case. The minimum rate that the BoC can charge on ELA loans is the Bank Rate, while the Bank of Canada has discretion to charge a higher interest rate if it sees fit. See IMF (2014), p. 25.

<sup>51</sup> *Ibid*.

<sup>52</sup> Graham et al. (2016).

<sup>53</sup> Proposal for a [Regulation of the European parliament and of the Council amending Regulation \(EU\) 806/2014 in order to establish a European Deposit Insurance Scheme COM/2015/0586 final – 2015/0270 \(COD\)](#).

are politically contentious and fundamental disagreements remain regarding a number of elements of the proposal. For the purpose of this paper, the establishment of the SRM, and with it the Single Resolution Fund (SRF), is particularly noteworthy. The SRM fostered a common approach across the banking union to resolve banks, provided there is a public interest in the resolution, and thus the preservation of certain key functions of the bank.

**The Single Resolution Fund became operational in 2016 to help ensure a uniform administrative practice in the financing of resolution in the banking union.** More broadly, its objective is to facilitate cross-border activities of banks and avoid the distortion of competition in the Internal Market due to divergent national practices.<sup>54</sup> The SRF is ex ante financed through bank contributions and also includes an ex post recovery mechanism from the industry for the costs of providing financing to facilitate the resolution of a firm. The SRB collects contributions from banks ex ante, both during the build-up phase and when the resolution fund comes into use and needs replenishing.<sup>55</sup> In 2024, when the SRF will be fully built up, it will be equal to at least 1% of covered deposits of all credit institutions in participating Member States.<sup>56</sup> This results in a target level of about €60 billion according to SRB figures from 2019.<sup>57</sup> Indeed, liquidity support falls under the SRF's power to make loans to the institution under resolution.<sup>58</sup>

**From the provisions of the SRM Regulation, it follows that the SRF can only provide liquidity to an institution that is subject to a resolution procedure.**<sup>59</sup> Thus, SRF funds may not be distributed to banks liquidated under national insolvency procedures or certain less significant institutions that fall outside the SRB's remit. Moreover, if the resolution authority decides to exclude certain liabilities from bail-in<sup>60</sup>, the SRF can only be used for solvency purposes if at least 8% of the bank's total liabilities are bailed-in, which means that these liabilities contribute to loss absorption and recapitalisation. For liquidity purposes, the SRM Regulation does not explicitly stipulate any such safeguards. The amount, duration and other relevant elements of liquidity support (e.g. renewals) must be defined in the resolution scheme and any provision of SRF liquidity not set out in it would require the scheme to be amended.<sup>61</sup>

**Thus, SRF funds can be employed in cases where a bank in resolution lacks sufficient adequate collateral to access central bank liquidity but its size is limited.** With roughly €60 billion as of 2024, the SRF's firepower might be insufficient

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<sup>54</sup> See Recital (19) of Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014. For an economic analysis of a public backstop in an asymmetric banking union, see Segura and Vicente (2018).

<sup>55</sup> For the mechanism, compare Chapter 2 of the SRM Regulation.

<sup>56</sup> Article 69(1) SRM Regulation.

<sup>57</sup> See SRB website for current information on the [Single Resolution Fund](#).

<sup>58</sup> See Article 76(1)(b) SRM Regulation. Another provision that implies that the SRF may be used for liquidity support is Article 50 SRM Regulation, which in paragraph 1(c) and (d) distinguishes between capital and liquidity support for the purpose of voting thresholds in the SRB's Board.

<sup>59</sup> As a general principle, the SRF may only be tapped to the extent necessary to ensure the effective application of the resolution tools. See, in particular, Article 76(1) SRM Regulation.

<sup>60</sup> The exclusion of certain liabilities from bail-in, inter alia, is allowed if it is not possible to bail-in a liability within reasonable time, if the exclusion is strictly necessary to achieve the continuity of critical functions or to avoid widespread contagion. See Article 27(7)(a) SRM Regulation.

<sup>61</sup> See Article 27(5) SRM Regulation.



to address the liquidity problems experienced by medium-sized to large banks in the wake of a resolution action. While the potential liquidity needs of a bank that comes out of resolution are difficult to ascertain in the absence of sound historical evidence, the SRF's firepower may not suffice if several banks have to be resolved at the same time.

**To further strengthen the resilience of the banking union crisis resolution framework, member countries agreed in principle to a common backstop to the SRF in 2013.** This backstop is to be provided by the ESM, as last-resort insurance in the event of a bank resolution in case the resources available at the SRF were insufficient. Roughly five years later, on 4 December 2018, the Eurogroup agreed to operationalise the common backstop and laid down the conditions for this in a dedicated Term Sheet.<sup>62</sup> The Eurogroup of 4 December 2019 reached an agreement in principle on the necessary revisions of the ESM Treaty and ESM legal framework, subject to the conclusion of national procedures.<sup>63</sup> The common backstop will be in place by 2024 at the latest and its size will be aligned with the target level of the SRF, which means that it will expand the SRF's maximum lending capacity by approximately another €60 billion, raising the combined capacity of SRF and backstop up to approximately €120 billion in total.<sup>64</sup>

**To make the common backstop operational, the ESM will provide a revolving credit line to the SRF.** It will be repaid with ex post contributions by the banking sector that the SRF will have to raise within three to five years. Thus, while the funds come from the ESM, whose capital is paid in by national governments, the repayment obligation ensures fiscal neutrality over the medium term. Euro area governments moreover agreed that money from the common backstop can be tapped for all possible uses of the SRF in a given resolution case. Like the SRF itself, the common backstop will be fiscally neutral in the medium term, because losses will be recouped via the banking sector as a whole.

**The establishment of the common backstop expands the funds available to support the orderly resolution of credit institutions in the banking union.** Whether this amount will ultimately be adequate to provide capital and liquidity support in the context of bank resolution depends, among other factors, on the success of a given resolution procedure and on the number of banks that are failing within a given time frame. The fact that the common backstop is re-financed through ex post contributions by the banking sector reflects the international standard under the FSB Key Attributes, and therefore the objective to deter moral hazard on the banks' side.

**The ECB and NCBs may also make additional liquidity available for banks.** NCBs may provide emergency liquidity assistance in line with their respective national frameworks. In the absence of adequate collateral, they may request a guarantee from their national government.

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<sup>62</sup> See EU Council, "Term sheet on the European Stability Mechanism reform", 4 December 2018.

<sup>63</sup> See Letter of the President of the Eurogroup to the President of the Euro Summit, 5 December 2019.

<sup>64</sup> According to Schoemaker (2017), the optimal size for a fiscal backstop in the euro area would be closer to €230 billion.

**Overall, the bank resolution framework in the banking union has been strengthened significantly when compared to the pre-crisis mechanism, which was, in essence, decentralised and ad hoc.** However, notwithstanding the creation of the SRF, banking union governments have agreed to undertake further technical work on liquidity provision.<sup>65</sup> In addition, the Eurogroup Working Group is expected to carry out more research into how to bridge the remaining gaps in the provision of liquidity to financial institutions in resolution.

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<sup>65</sup> See [Letter by President Centeno to President Tusk on the deepening of the economic and monetary union](#), 15 June 2019.

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