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Designing frameworks for central bank liquidity assistance: addressing new challenges

Report submitted by a Working Group on Policy Challenges and Open Issues in Liquidity Assistance (WGLA)

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Preface

During the 2007–09 Global Financial Crisis, central banks in many countries provided unprecedented amounts of liquidity assistance (LA) in order to deal with major episodes of systemic financial distress. They also had to find new arrangements for cooperating in providing LA to internationally active institutions. The lessons learned from that experience remain highly relevant today.

Against this background, the Committee on the Global Financial System (CGFS) mandated a Working Group under the Chairmanship of Hiroshi Nakaso (Bank of Japan) to identify areas where central banks continue to face common challenges in dealing with liquidity stress, especially in a cross-border context. They concern three issues in particular: the provision of LA to internationally active financial intermediaries; transparency about LA; and the provision of LA to a market.

The following report summarises the Group's conclusions in a set of principles. The overarching message is the need to prepare in calm times to be able to provide LA effectively in times of stress. In this context, central banks need to consider how their national frameworks for LA might interact when providing LA in a cross-border context. They also need to cooperate with a wide range of other policy making institutions, including regulators, supervisors, and resolution authorities. I hope that the report will facilitate this work and help ensure that central banks are as well prepared as possible for dealing with future crises.

William C Dudley

Chair, Committee on the Global Financial System
President, Federal Reserve Bank of New York

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During the 2007–09 Global Financial Crisis (GFC), central banks in many countries provided large amounts of liquidity assistance (LA) in order to deal with major episodes of systemic financial distress. Central banks extended credit to prevent the disorderly failure of systemically important institutions and also stepped in to counteract malfunctioning interbank markets and to increase liquidity in specific financial markets. The unprecedented scale and scope of the LA provided in the GFC played a decisive role in preventing a total collapse of the global financial system with possibly catastrophic impact on the real economy.

LA operations that took place during the crisis were necessary and did make a positive contribution to the eventual stabilisation of the financial system, but they also presented a number of challenges. In many cases, central banks found they had to develop new facilities at short notice to deal with unprecedented and widespread liquidity shortfalls. They also had to find new arrangements for cooperating in providing LA to internationally active institutions. As a result of this experience, central banks have made advances in building their capacity to deal with future systemic episodes. At the same time, the experience highlighted a number of open issues related to the provision of LA in an evolving institutional and economic environment.

The lessons learned from that experience remain highly relevant to central banks today, and in some cases have taken on added importance in the light of ongoing changes to the structure of financial intermediation and capital markets. They concern three issues in particular: the provision of LA to internationally active financial intermediaries; transparency about LA; and the provision of LA to a market.

The first issue arises because of the growing importance of the international dimension of liquidity shortages. Financial institutions operate in different currencies and funding markets are increasingly global, making it more likely that liquidity shortfalls will affect several jurisdictions simultaneously. The cooperation between central banks in the case of a cross-border institution requiring LA not only relates to the allocation of responsibilities between home and host authorities. It extends to a range of issues relating to how national frameworks interact in sharing information and making assessments about the eligibility and solvency of recipients, as well as operational issues regarding the use of collateral and acquisition of foreign exchange in supplying LA.

The second issue relates to the increased emphasis on transparency in many aspects of central banking, including the provision of LA. Central banks must balance the competing needs for flexibility in responding to the specific circumstances of stress episodes against the demands for greater accountability and disclosure. Achieving that balance becomes particularly challenging when considered against the backdrop of a continuing trend towards greater transparency in central banking, and increasingly stringent disclosure requirements for market participants.

The third issue reflects the critical role of market-based intermediation. Throughout the GFC, central banks' actions were on many occasions motivated by the need to support the working of important funding markets, either by engaging directly as a participant or, indirectly, by supplying liquidity to key players. The issues that arise in this context relate to the instruments that are available to channel liquidity, the associated communication about the objectives and also the complexities that arise when these markets are by nature international.

The overarching message in this report can be summarised as the need to enhance preparedness in calm times to facilitate effective operations in times of stress for situations where LA might be required. In particular, central banks need to consider how the interaction of national LA frameworks might affect the cross-border coordination and provision of LA and how they might engage ex ante in bilateral discussions to facilitate the timely execution of an operation when the need arises.

This general message is articulated in a set of eight principles which address specific challenges related to LA. These principles are as follows:

1. Allocation of responsibilities

For internationally active financial intermediaries, home and host central banks should explore bilaterally how to establish ex ante clarity on the division of responsibilities for providing LA, recognising the institution-specific nature of LA needs and the country-specific features of their LA frameworks. Such coordination could also involve other relevant authorities (for example, supervisors) in home and host jurisdictions, as necessary, and include considerations of how to keep to a minimum the period over which the recipient is reliant on LA.

Effective ex ante coordination would aim to take into account the key aspects related to cross-border provision of LA discussed in the principles put forward in this report. This could facilitate cooperation during specific LA operations where required (including on issues such as how to ensure an effective exit from LA), with the recognition that the appropriate nature of such cooperation will depend on individual circumstances.

2. Information-sharing

Central banks should identify ex ante what information they would need to facilitate the provision of LA – for example, information relating to collateral eligibility, solvency assessment and liquidity profiles. To that end, central banks, cooperating with other relevant home and host country authorities, should work to ensure that: internationally active financial intermediaries can generate such information in a timely manner; such information can be communicated to the central bank promptly when it needs to consider a request for LA; and the legal and operational arrangements are in place to support the sharing of such information with the relevant authorities when needed.

Central banks recognise that, during an operation for the provision of LA to an internationally active financial intermediary, the timely sharing of appropriate information between central banks and other relevant authorities is an important part of effective coordination.

3. Eligibility

Central banks should seek to identify constraints on the eligibility of internationally active financial intermediaries for LA in relevant jurisdictions and, where necessary, consider bilaterally how to manage such constraints when allocating responsibilities in accordance with Principle 1.

4. Solvency

Most central banks require LA recipients to be fundamentally solvent on an ongoing basis, albeit temporarily illiquid. Assessing solvency involves judgment, and central banks may formulate their formal requirements and criteria around assessing solvency (and/or viability) in a range of ways. Recognising the degree of judgment involved, central banks should seek to communicate with each other both ex ante on solvency requirements and, in a crisis situation, on solvency assessments.

5. Collateral

LA would generally be secured against collateral acceptable to the lending central bank. In a cross-border situation, such collateral may sometimes be located in another jurisdiction. Central banks may therefore wish to consider developing arrangements for lending against such collateral, taking into account possible operational, legal and other impediments. Central banks, together with other relevant authorities as appropriate, may wish to: understand the consequences of ring-fencing for the use of collateral located in another jurisdiction for the provision of LA; and identify obstacles to the flow of liquidity within a financial group.

6. Provision of foreign currency

Central banks should consider the need to assess the nature and size of potential demands for foreign currency and how they would deal with the foreign currency needs of internationally active financial intermediaries in situations of liquidity stress.

Central banks should also assess their own options for meeting these demands, including obtaining foreign currency directly in the market, as well as drawing on FX reserves and on foreign currency swap lines. It may be appropriate for more than one of these options to be used in any given circumstance. Their effectiveness will depend on the size of foreign currency needs, the speed with which such needs have to be met, and the potential impact on financial stability, including through signalling effects (ie possible impact on financial market sentiment).

7. Transparency

Central banks recognise that there can be important benefits to both ex ante transparency in relation to their powers to provide LA and ex post transparency in relation to specific LA operations. Transparency also fosters accountability.

Central banks also recognise that premature disclosure of specific cases of LA may give rise to financial stability concerns. Accordingly, it would be desirable for disclosure policies to be mindful of the trade-offs between transparency, which strengthens accountability, and the need for flexibility in the timing of disclosures, within the boundaries of prevailing legislation, on account of promoting financial stability. To ensure accountability, LA should be revealed at an appropriate time, in a way consistent with legal reporting requirements and with financial stability.

Central banks involved in cross-border provision of LA, and those whose jurisdictions are exposed to contagion risks, should, where possible and desirable, seek to coordinate their communication strategies.

8. LA to a market

Building upon the experiences during the GFC, central banks should seek to better understand the implications of the evolution of market-based forms of financial intermediation. Information exchange on aspects such as market conditions, funding behaviour of market participants and intentions regarding possible policy actions would be useful in enhancing the efficacy of such central bank cooperation.

1. Introduction

During the 2007–09 Global Financial Crisis (GFC), central banks in many countries provided large amounts of liquidity assistance (LA) to stabilise the financial system and support the flow of credit to the real economy. LA contributed significantly to the eventual stabilisation of the financial system. However, designing and conducting LA operations was not without challenges. In many cases, central banks found they had to develop new facilities at short notice to deal with unprecedented and widespread liquidity shortfalls. They also had to find new arrangements for cooperating in providing LA to internationally active institutions.

In the light of that experience, central banks have made advances in building their capacity to deal with future systemic episodes. That said, the lessons learned remain highly relevant to central banks today, and in some cases have taken on added importance given ongoing changes to the structure of financial intermediation and capital markets. Three issues that stand out relate to the provision of LA across national borders, the challenges posed in an era of heightened transparency and the growing role of capital markets in financial intermediation. These are the areas of focus of this report.

The first issue relates to the growing importance of the international dimension of liquidity shortages. Tighter and more complex links among national financial systems increase the likelihood that liquidity shortfalls will simultaneously affect several jurisdictions. Financial institutions operate in different currencies, and funding markets are increasingly global. Dealing effectively with liquidity stresses during the GFC required the close cooperation of central banks. Elements of this cooperation in the case of a cross-border institution requiring LA include the allocation of responsibilities across home and host authorities, and a range of issues relating to how national frameworks interact in sharing information and making assessments about the eligibility and solvency of recipients, as well as operational issues regarding the use of collateral and acquisition of foreign exchange in supplying LA.

The second issue relates to the increased emphasis on transparency in many aspects of central banking, including the provision of LA. Central banks must balance the competing needs for flexibility in responding to the specific circumstances of stress episodes against the demands for greater accountability and disclosure. Achieving that balance becomes particularly challenging when considered against the backdrop of a continuing trend towards greater transparency in central banking, and increasingly stringent disclosure requirements for market participants.

A third issue highlighted in the recent crisis relates to the critical role of market-based intermediation in the functioning of the financial system. In several instances, central banks' actions were directly motivated by the need to support the working of important funding markets either by engaging directly as a participant or indirectly by supplying liquidity to key players. The issues that arise in this context relate to the instruments that are available to channel liquidity, the associated communication about the objectives and also the complexities that arise when these markets are by nature international.

This report discusses these three sets of issues related to the provision of LA, highlights challenging areas and derives lessons for central banks. The overarching message can be summarised as the need for enhancing preparedness in calm times to facilitate effective operations in times of stress. The analysis suggests that LA frameworks in different jurisdictions evolve over time in response to lessons learned and to changes in the relevant institutional and market environment, but, for understandable reasons, they do not always provide the same answer to the same question. Differences in LA frameworks across jurisdictions may at times go beyond legal structures to reflect different perspectives on the role central banks should play in providing LA. At the same time, however, central banks do share the aim of maintaining financial stability and may be called on to work closely with each other to reach this shared goal – for instance, in providing LA to an internationally active financial intermediary.

This puts a premium on achieving a good understanding of the requirements and limitations of each other's frameworks. To that end, they should consider engaging in bilateral discussions on possible steps that could facilitate the timely execution of an operation when the need arises. Central banks should seek, where appropriate, to strengthen accountability through transparency, while recognising that premature disclosure of specific cases of LA may pose financial stability concerns. Therefore it is important for central banks to promote disclosure requirements and policies that support financial stability objectives. Finally, in preparing for future episodes of stress, central banks should develop an improved understanding of the evolving nature of market and non-market financial intermediation and the trade-offs involved in different channels that can be used to achieve this goal.

The fact that the term "liquidity assistance" does not resonate the same way across jurisdictions is by itself an illustration of the differences in the respective policy frameworks. The report adopts a working definition of LA as referring to the provision of liquidity to solvent financial firms to cover liquidity needs that arise under stress (Box 1). In the context of LA to individual institutions rather than a market, the firms in question are generally defined to be internationally active financial intermediaries with a significant systemic footprint in one or more jurisdictions.

Box 1

Working definition of the term "liquidity assistance" (LA)

The definition of LA in this report focuses on the lending of central bank money, or securities that serve as collateral in money markets by the central bank with the aim of overcoming extraordinary and temporary liquidity shortages at financial institutions caused by market-wide or firm-specific stress. It may be supplied through facilities that are permanently and regularly used for day-to-day central bank operations, or through crisis-specific facilities, as specified in the framework of each jurisdiction. This notion of LA covers terms that are used with different meanings in different jurisdictions.

In broad terms, most of the issues debated in this report relate to the provision of liquidity through facilities that entail a degree of discretion by the central bank. They might be less relevant for facilities to which access is granted more or less on demand, subject to published terms and conditions (eg the Bank of Japan's complementary lending facility, the Federal Reserve's discount window primary credit programme and the Reserve Bank of Australia's overnight repo standing facility). That said, focusing on the purpose of liquidity provision, rather than on the specific facility through which it is effected, means that facilities that are used to implement monetary policy might also be useful for implementing LA in the sense used in this report (see, for instance, the discussion in Chapter 9, on the provision of LA to a market).

Issues that are related to the provision of LA to financial institutions that, have been deemed non-viable, or are undergoing resolution, are outside the scope of this report.

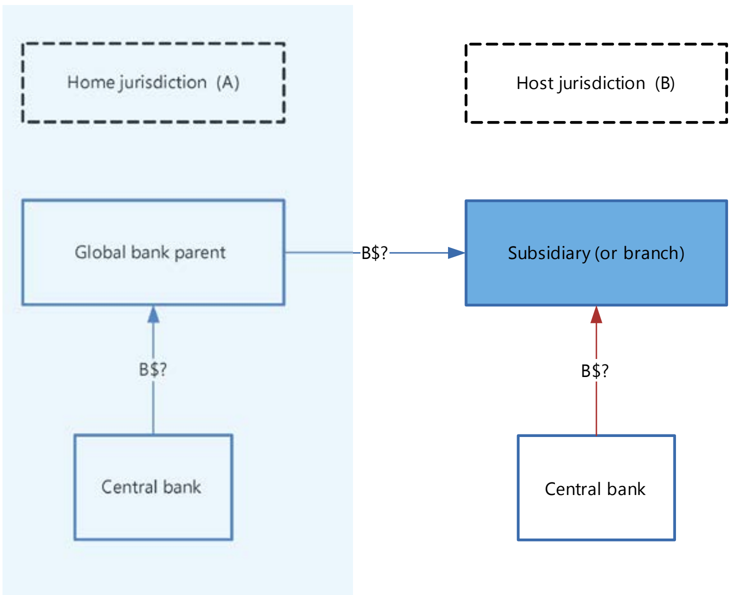
The remainder of this report is organised in nine chapters. Chapters 2–7 focus on the challenges posed when an internationally active financial intermediary requires LA. In this context, Chapter 2 discusses the allocation of responsibilities across home and host central banks, while Chapter 3 covers issues relating to the exchange of information. Chapters 4–7 examine various aspects of LA frameworks that may affect which central bank is able to provide LA in a cross-border context: eligibility, solvency and collateral requirements, as well as access to foreign currency where needed. Chapter 8 discusses the issues that relate to the transparency surrounding various aspects of LA. Chapter 9 investigates the challenges that arise when LA is granted not to a cross-border institution but to a market. Each chapter ends with a principle summarising the WGLA's recommendations on how cooperation between central banks could be strengthened. The final chapter provides a summary of the conclusions.

2. Allocation of responsibilities

When an internationally active financial intermediary requires LA, central banks in jurisdictions in which the intermediary is active have an interest in coordinating their policy responses. Practical experience during the crisis highlighted several challenges that arise in this context. A basic and fundamental aspect of this coordination is the question of which central bank will assume the responsibility and the leading role in this response.

Graph 1 presents a schematic illustration of some of the issues that arise in the context of an internationally active firm in a scenario where it experiences a liquidity shock in jurisdiction B, in which it has a foreign branch or subsidiary. Liquidity shortages in the firm's operations in jurisdiction B (the dark blue box) may need to be addressed either by the host central bank (B) or by the central bank in the home jurisdiction (A).

An internationally active firm requiring liquidity support — Graph 1



This will invariably involve the exchange of information between authorities in the two jurisdictions as well as an assessment of the eligibility and creditworthiness of the firm. It will also potentially involve the handling of collateral located in different jurisdictions and the procurement of foreign currency by the central bank supplying LA (in Graph 1, of B$ if the central bank in jurisdiction A provides LA). All these issues become more complex as a result of the fact that actual LA operations are almost always conducted under significant time pressure and that differences in national, legal and institutional frameworks (including those governing the provision of LA) can create significant constraints as to what can be done in a cross-border situation.

This chapter discusses factors that might influence the answer to the question of whether central bank A (home) or central bank B (host) would take the lead in providing LA, assuming that both central banks would be operationally capable of doing so. Subsequent chapters (4–7) discuss the effect of constraints on that ability, arising from eligibility, solvency and collateral requirements as well as the possible need to source foreign currency for LA.

2.1 Factors influencing coordination

How central banks define responsibility for, and coordinate their response to, a cross-border intermediary requiring LA is likely to depend on a range of factors. These include: whether the firm operates as a branch or a subsidiary; the ease of access to supervisory information about the firm's financial condition; the ability to monitor and control how the firm uses the LA obtained; and the relative systemic importance of its establishments in each jurisdiction. Each of these factors will apply to a varying degree depending on the circumstances. This renders it impossible to draw firm conclusions about which central bank is best-placed to lend in one or the other case. It is, however, possible to set out some general considerations for each factor.

Branch or subsidiary? A branch is not a separate legal entity from the bank of which it is a part. It is typically primarily supervised by the home authorities as part of supervision of the bank as a whole, and not separately capitalised. In contrast, subsidiaries are separate legal entities from their parents. Like domestically owned banks in the host jurisdiction, they are individually authorised, typically supervised by the host authorities, and separately capitalised. This legal distinction can lead to different treatment of branches and subsidiaries in LA frameworks, both with respect to eligibility (Table 1 in Chapter 4) and in terms of how the other factors listed below apply to specific circumstances. Box 2 provides an example of how this was dealt with in a particular situation.

Access to supervisory information. Access to detailed supervisory information is vital in assessing a firm's liquidity needs, its eligibility for LA, and the financial risk to the central bank from the associated credit exposure. The organisation of supervisory responsibilities in the home and host countries can therefore be an important factor in determining which central bank might be better positioned to take the lead in providing LA. According to the Basel Concordat, the host supervisor has responsibility for monitoring the liquidity and solvency of the foreign bank's subsidiaries in its jurisdiction and the home supervisor has responsibility for monitoring the liquidity and solvency of the banking group as a whole.[1] The host supervisor is therefore likely to have better information for foreign banks' subsidiaries operating in its jurisdiction

[1] BCBS (1983) still underpins the international standards on banking supervision.

than for branches. Also, while it is sometimes the case that host authorities may control the liquidity of foreign banks' branches that appear weak, the liquidity of the branch is more closely dependent on decisions taken at the headquarters of the bank and is difficult to analyse in isolation from the rest of the entity. Of course, depending on arrangements for sharing information between authorities in different jurisdictions (Chapter 3), it is possible that all relevant authorities will consider themselves to have adequate access to relevant supervisory information.

Ability to monitor and control the use of funds. A significant reason why a host central bank may be unwilling to lend to a branch of an overseas bank is that it is unable to ensure that the recipient of LA will apply the funds for use in the host jurisdiction because the branch does not have a separate legal identity from the overseas bank itself. In the case of a subsidiary, the host central bank is likely to have greater control over how the foreign establishment uses any funds than if it was a branch. How the funds are used is likely to have a significant impact on how effective LA is in enhancing financial stability in the host jurisdiction. There may also be local banking laws that dictate how funds are to be used.

Systemic importance. Aside from the ease of access to supervisory information, the relative systemic importance of the subsidiary or branch for the host jurisdiction also plays a role. If the systemic footprint of the entity in question for the host jurisdiction is relatively more significant than for the home jurisdiction, then the host central bank's incentive to ensure that LA is provided may be significantly higher.

Box 2

Case study: the Riksbank's liquidity assistance to Kaupthing Bank Sverige AB

Kaupthing, a major international bank headquartered in Iceland, was active in Sweden both via a subsidiary and via a branch. Both the branch and subsidiary had raised deposits in Sweden and both faced liquidity shortages in late 2008, after the Icelandic banking sector came under substantial strain.

In late 2008, the subsidiary, which was regulated and supervised by the Swedish authorities, requested liquidity assistance from Sveriges Riksbank. Kaupthing's home central bank, the Central Bank of Iceland, had no mandate to provide LA to Kaupthing's Swedish subsidiary. The Central Bank of Iceland granted LA to the parent, which also faced liquidity shortages, on 7 October. The following day, the Riksbank decided to grant LA to the Swedish subsidiary, for two reasons: the subsidiary was deemed solvent (by both the Riksbank and the Swedish Financial Service Authority (FSA)) and LA was seen to safeguard financial stability in Sweden.①

The Riksbank granted LA under the condition that the funds would be used to satisfy the needs of depositors and other creditors of both the Swedish subsidiary and branch. Granting LA to the branch via the subsidiary had a number of advantages. First, the Riksbank could more easily assess the solvency of the subsidiary than that of the branch, because it was supervised by the Swedish FSA. Second, the Riksbank could more easily control the use of funds than would have been the case otherwise. Even when the parent company of Kaupthing stopped payments to the depositors at foreign branches, the subsidiary could continue with the payments to the depositors of the Swedish branch.② Third, the Riksbank could avoid a direct exposure to the parent company since the loan was granted to the subsidiary and not to the branch. It did, however, retain an indirect exposure to the parent, since the subsidiary was paying out the depositors of the Swedish branch. This indirect exposure was reduced using collateral provided by the parent.

The Riksbank made LA public at the time the support was granted. Despite this publicity, deposit runs did not accelerate; instead, deposit outflows were smaller than recorded in previous days.

① See Sveriges Riksbank (2008). ② See Kaupthing (2008) and Kaupthing (2009), p 14.

Box 3

Examples of risk-sharing arrangements between central banks

During the GFC, some central banks designed specific arrangements to enable themselves deliver LA to cross-border financial institutions, including:

- establishing governance arrangements by which the central banks providing LA to a cross-border banking group would jointly decide on their maximum aggregate credit exposure to the group;
- adopting legally binding risk-sharing rules that clarified upfront how losses and profits incurred on LA operations to one entity of the cross-border group would be shared between the central banks involved; and
- creating collateral mobilisation and liquidation arrangements that allowed for collateral available in the group to be pledged at one or the other central bank, and, should the collateral have to be liquidated, to share the proceeds from liquidation.

To support these arrangements, central banks also developed various means and channels to achieve swift, regular and reliable reporting both from LA beneficiaries to them and between central banks and supervisory authorities (eg exchange of funding plans, joint assessment of LA prospects, regular monitoring and assessment calls).

Conversely, the home central bank may choose to take the lead in providing LA where the home entity is also experiencing liquidity difficulties and/or if the overseas subsidiary or branch is closely interconnected with the parent and therefore systemically important for the home jurisdiction.

Independently of which central bank takes the lead in providing LA in a given situation, they, and other relevant public authorities, can collaborate in a number of ways to make LA effective. Box 3 provides examples of arrangements that were used during the GFC. In particular, the authorities could exchange supervisory information and/or market intelligence (see Chapter 3, on information exchange, and Chapter 5, on solvency). They can provide assistance to each other with assessing the value of cross-border collateral and possibly act as a custodian for the other central bank (Chapter 6). Finally, central banks could also assist each other in sourcing foreign currency (Chapter 7).

Managing the exit from LA is also an area where collaboration between central banks would be desirable. LA is provided as a backstop measure to help one or more institutions overcome temporary situations of liquidity stress. As such, it is important that the firms do not rely on LA for longer than necessary to regain self-sufficiency. In situations involving stresses in firms with cross-border operations involving more than one currency, managing this exit might require a coordinated effort by both home and host authorities (see Box 8 in Chapter 9 for an example).

2.2 Principle

For internationally active financial intermediaries, home and host central banks should explore bilaterally how to establish ex ante clarity on the division of responsibilities for providing LA, recognising the institution-specific nature of LA needs and the country-specific features of their LA frameworks. Such coordination could also involve other relevant authorities (for example, supervisors) in home and host jurisdictions, as necessary, and include considerations of how to keep to a minimum the period over which the recipient is reliant on LA.

Effective ex ante coordination would aim to take into account the key aspects related to cross-border provision of LA discussed in the principles put forward in this report. This could facilitate cooperation during specific LA operations where required (including on issues such as how to ensure an effective exit from LA), with the recognition that the appropriate nature of such cooperation will depend on individual circumstances.

3. Information-sharing

Effective cross-border LA provision depends critically on smooth and timely exchange of information, both between central banks and between central banks and other official sector stakeholders (eg supervisors and resolution authorities). This chapter discusses the information needs of central banks, both before and during LA operations, and reviews information-sharing arrangements that are currently in place to address such needs.

3.1 Information needs

The effective coordination of central banks confronted with liquidity stress at an internationally active financial intermediary (eg the one illustrated in Graph 1) requires both ex ante and real-time (situational) information. Ex ante information includes supervisory information, such as the general funding patterns of specific firms, and the attributes of the LA framework in the other relevant jurisdiction. Real-time information is very specific to the time at which the operation takes place and relates to the exact liquidity needs of the firm and its general condition.

In order to prepare for the possibility of cooperating with another central bank to provide LA to an internationally active financial intermediary, central banks need to understand the rules regarding eligibility, and requirements regarding solvency and collateral embedded in the LA framework of that jurisdiction. Exchanging information about these requirements bilaterally can allow central banks to better understand how judgment will be exercised in the application of those rules. This cannot be easily gathered solely on the basis of published information. With regard to particular firms, current and projected liquidity and credit risk profiles of local entities and the parent company, local and global liquidity position/plans, funding dependencies and intragroup funding flows are among the types of information that would be useful to prepare for LA (Principle 3, BCBS (2014)). Regular exchange of this type of information in normal times would provide the appropriate context and facilitate decision-making in times of stress. This would include home and host central banks promptly sharing with each other and with other concerned authorities any incipient signs of liquidity stress at a central counterparty (CCP).

When faced with the need to respond to a specific situation of acute liquidity stress in a cross-border firm, central banks also need up-to-date information about the strategy of other central banks, including their communication plans. Relative to a pre-crisis situation, information exchange also relies to a greater extent on the operational ability of firms and authorities to provide relevant data on a timely basis because a firm's financial situation can change quickly during stress. The set of central banks with whom such information is shared might include those that are the host central bank for material branches, or subsidiaries; and those that have systemically important firms in their jurisdictions which may be exposed to contagion risks. Within the legal frameworks in place, incentives to share such information are likely to be greater where financial stability and international contagion risks are greater. It is in those situations that international cooperation between central banks would be most likely to be necessary and the sharing of information would facilitate such cooperation. Box 4 provides an example from the GFC.

3.2 Information-sharing arrangements

A number of arrangements can facilitate the exchange of information both before and during an LA operation. In general, home and host country supervisors are expected to share appropriate information on a timely basis in line with their respective roles and responsibilities (Principle 13, BCBS (2012)). Based on experiences from the GFC, multilateral arrangements such as supervisory colleges and crisis management groups currently provide a solid foundation for information exchange among authorities (including many central banks) for internationally active banks and a small number of global CCPs.[2]

Box 4

Information exchange: experiences from the GFC①

The GFC highlighted the global nature of funding markets and the importance of information exchange among central banks in dealing with markets with a cross-border nature.

Strains in interbank funding markets first emerged in the middle of 2007 in the wake of growing unease about the exposure of financial institutions to US subprime mortgages and related structured debt securities. As counterparty risk became a key concern, stress spread from secured markets to unsecured markets, especially in onshore and offshore US dollar funding markets. Foreign banks operating in the United States facing more expensive, or limited, funding in US markets responded by increasingly relying on affiliates based outside the United States to raise US dollars. Time zone differences compounded counterparty risk concerns, adding to the pressures. Borrowing US dollars late in the European day became more difficult as US-based lenders became reluctant to lend early in the US day, when their own liquidity positions for the day were not yet known. European banks increasingly sought to secure funds during Asian trading hours. At the same time, the supply of US dollar liquidity in the Asian and European time zones declined as many lenders, particularly official sector lenders (eg central bank reserve managers), reduced unsecured lending. There were reports that some foreign banks were effectively shut out of interbank markets in some jurisdictions, particularly in Asia, as counterparty concerns took hold. As a result, US dollar funding pressures tended to build through the Asian and early European trading hours until US banks were prepared to provide liquidity late in their day.

In dealing with this situation, central banks exchanged market intelligence daily on developments in their markets and time zones and the behaviour of individual institutions. Such exchange of information enabled them to respond effectively to the situation in their markets, including through the introduction of facilities to alleviate these funding pressures (eg the Fed's Term Auction Facility). In the autumn of 2008, the Lehman bankruptcy escalated what until then had been mainly a US dollar funding problem among European banks to an acute US dollar shortage on a global scale with knock-on impacts on local currency liquidity. The central banks' network facilitated actions to address this situation, including the expansion of central bank swap lines in the weeks following the failure of Lehman.

① This box borrows heavily from CGFS (2010).

[2] Supervisory colleges offer one forum for exchanging such information (BCBS (2014, 2015)). Crisis management groups are maintained with the objective of facilitating the management and resolution of a cross-border financial crisis affecting global systemically important financial institutions (FSB (2014a)). For a template of a cooperation agreement between crisis management group members, see I-Annex 2 of FSB (2014b).

Additional cross-border arrangements for sharing information have been established through memoranda of understanding (MoUs) between national supervisory agencies. 3 Supplementary legal agreements aim to safeguard the confidentiality of shared data and information.

Central banks can also exchange supervisory information bilaterally. An informal survey among members of the WGLA indicated that many would not expect to face significant restrictions on sharing such information with foreign central banks. That said, experience reveals that constraints could emerge during times of stress or when sensitive supervisory information is involved. They are typically due to the central bank's own legal obligations vis-à-vis the domestic supervisor and the financial institution, or to considerations related to how the information may influence the allocation of responsibilities and sharing of costs. For instance, the home authorities of an internationally active bank that is under liquidity stress may hesitate to share information out of concern that the host central bank might try to reduce its counterparty exposure to the overseas offices of the bank. This may become self-fulfilling if a lack of information strengthens the host central bank's inclination to reduce risk.

In practice, any formal arrangements work better when supported by trust. Bilateral relationships, ideally built and strengthened during regular interactions in international forums (eg the BIS), can play a key role, in particular when sharing qualitative assessments. During the crisis, central banks developed various means and channels to achieve swift, regular and reliable reporting both from LA recipients to them and between central banks and supervisory authorities (exchange of funding plans, joint assessment of LA prospects, regular monitoring and assessments calls, etc). That said, the experience of many was that there is a general tendency for the flow of information to become formalistic, short of qualitative assessments, and sparser when stress emerges. Trust built ex ante over longer periods of time is an effective defence against this risk, and it is particularly important when information is shared during LA operations which are not immediately made public.

3.3 Principle

Central banks should identify ex ante what information they would need to facilitate the provision of LA – for example, information relating to collateral eligibility, solvency assessment and liquidity profiles. To that end, central banks, cooperating with other relevant home and host country authorities, should work to ensure that: internationally active financial intermediaries can generate such information in a timely manner; such information can be communicated to the central bank promptly when it needs to consider a request for LA; and the legal and operational arrangements are in place to support the sharing of such information with the relevant authorities when needed.

Central banks recognise that, during an operation for the provision of LA to an internationally active financial intermediary, the timely sharing of appropriate information between central banks and other relevant authorities is an important part of effective coordination.

[3] For essential elements of a statement of mutual cooperation, see BCBS (2014, 2015).

4. Eligibility

Central banks operate in widely varying environments with respect to legal framework and market structure, in part reflecting differences in views across jurisdictions regarding the appropriate role of the central bank in the financial system. This is reflected in the set of institutions which, in principle, are eligible to apply for LA.

Pre-GFC, banks were considered to be the main focus of LA. That said, if the need were to arise, some central banks had relative flexibility in defining and expanding LA eligibility. Post-GFC, with the recognition that a large share of financial intermediation occurs through non-bank financial intermediaries and/or capital market-based processes, many central banks have reassessed their focus. A number of countries have expanded eligibility to apply for LA or have formalised the conditions under which LA may be provided to non-banks or on a market-wide basis. As the emphasis on accountability for LA has increased, in some countries increased oversight and/or the involvement of government bodies are required when extending LA beyond the traditional realm of banks.

As a starting point, the scope of financial intermediaries eligible to apply for LA is generally defined legally or by central bank policy. Where central banks have scope to define eligibility criteria, they typically have taken into account the systemic importance of the borrower and the desire to mitigate moral hazard or financial risk associated with LA provision.

Differences in the eligibility of internationally active financial intermediaries across countries may raise challenges for LA. For instance, liquidity shortages occurring in one jurisdiction may lead to a demand for LA in another. After discussing differences in the eligibility of financial intermediaries across countries, this section explores these cross-border issues.

4.1 Differences in eligibility across jurisdictions

Key criteria for eligibility to apply for LA vary across jurisdictions and facilities but typically focus on institutional characteristics of the firm requesting LA (eg whether it is a bank, a broker-dealer, a CCP, or a branch or subsidiary). Whether the eligibility to apply for LA translates into eligibility to receive LA depends on the facility under consideration and national frameworks. In some jurisdictions, the central bank always decides on a case by case basis whether to provide LA.

In most jurisdictions, central banks have the legal power to provide LA to banks, including foreign banking organisations operating in their jurisdiction. Banks are critical for financial stability, because they (a) play a key role in payment systems, (b) are subject to the risk of runs and (c) are at the centre of the transmission of monetary policy. Prudential supervision and regulation provide insight into their solvency and serve to mitigate moral hazard. Reflecting the importance of this information, Sveriges Riksbank requires recipients of LA to be domestically supervised. The Bank of England has publicly stated its strong presumption that if a firm meets supervisory threshold conditions, it will be able to access the central bank's facilities.[4]

[4] See eg Carney (2013).

Conditions of LA: foreign bank branches vs subsidiaries

Selected WGLA jurisdictions Table 1

	Jurisdiction
Equivalent or broadly similar terms and conditions for LA for foreign branches and subsidiaries	AU, BR, CH,[1] EA,[2] GB, IN, JP, SE, US
In contrast to foreign bank subsidiaries, foreign bank branches are ineligible for LA	CA, CN, HK[3]

[1] The Swiss National Bank can provide emergency liquidity assistance to a domestic bank or a group of banks that must be of importance for the stability of the financial system. Since no foreign branch or subsidiary has been identified as systemically important, terms and conditions for these institutions have not been defined. [2] Euro area. Most national central banks apply the same terms and conditions for branches and subsidiaries. [3] However, the Hong Kong Monetary Authority can (i) swap HKD for USD held by the branch if no suitable counterparty could be found in the market; and (ii) provide urgently required bridging finance on a secured basis to a branch pending receipt by it of funds from head office.

The eligibility of branches of foreign banks to apply for LA varies across jurisdictions, reflecting potential difficulties in assessing the foreign banking group's solvency and the ability to monitor and control the use of the funds (see Chapter 2).[5] Table 1 provides a rough schematic overview as to where the key terms and conditions under which foreign-supervised bank branches can apply for LA are equivalent to those of domestically supervised bank subsidiaries.

Differences in LA eligibility (Table 2) are more prominent for non-banks for at least two reasons. First, the systemic importance of non-banks may depend on the domestic structure of financial markets. In some jurisdictions, some broker-dealers play an important role in the provision of critical financial services to the real economy (eg in Japan, the United Kingdom and the United States) or in the transmission of monetary policy (eg in Japan and the United States). Likewise, a few jurisdictions host systemically important CCPs that do not have a banking licence. Second, for non-bank financial intermediaries, the central bank's access to information may be more limited than in the case of banks, reflecting different approaches to supervision.[6]

Eligibility of selected non-bank systemically important financial institutions for LA

Selected WGLA jurisdictions Table 2

	Ineligible	Not present	Present and eligible	Present and eligible at selected facilities only / with additional restrictions compared with domestically supervised banks
Systemically important broker-dealers	HK, MX	AU, BR, CA, CH, IN, SE, SG	GB, JP	CN,[2] EA,[3] US[4]
Systemically important CCPs	HK, MX		AU, CA,[1] CH, GB, IN	CN,[2] EA,[5] JP,[6] SE,[1] US[5]

[1] Only domestic CCPs. [2] Permission from the State Council required for LA to non-banking institutions. [3] Euro area. Some national central banks can provide LA. [4] Not eligible on a routine basis, only via broadly based facilities under unusual and exigent circumstances and subject to a number of statutory requirements. [5] Do not routinely have access to LA. [6] The law does not preclude CCPs from receiving LA (no LA has ever been granted to CCPs).

[5] Some jurisdictions do not allow foreign bank branches to operate at all. See Fiechter et al (2011).

[6] See FSB (2016a) for institutional arrangements for the regulation and supervision of non-bank financial institutions.

4.2 Issues for cross-border coordination

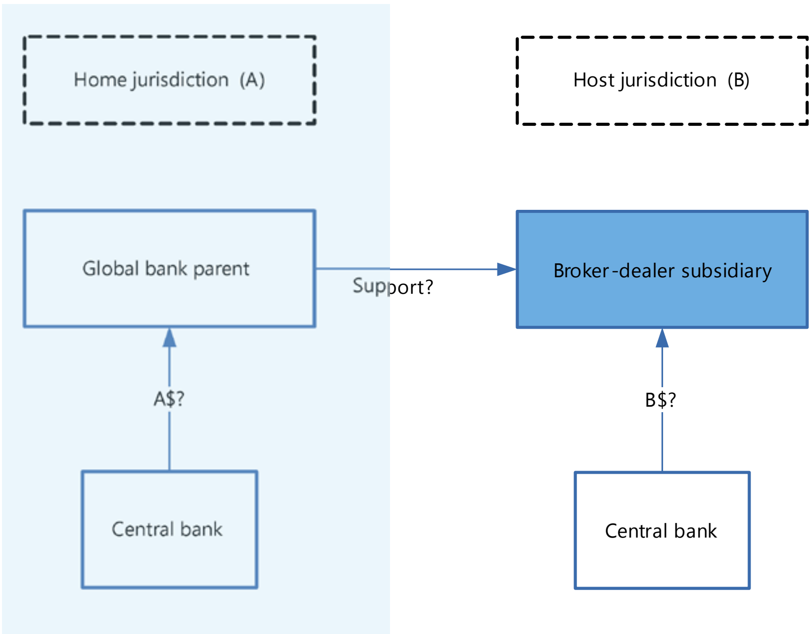
An internationally active financial intermediary may only be eligible for LA in some jurisdictions in which it is active. Consider the provision of LA to a broker-dealer subsidiary of a global banking group, and assume that the subsidiary requires LA in its host jurisdiction's currency (Graph 2).

If broker-dealers are not eligible for LA in the host country, the parent bank might request LA in the home currency in order to convert it into foreign currency and channel it to its subsidiary. This request for indirect provision of LA may raise a number of cross border issues:

- Inconsistency with the home central bank's LA eligibility criteria. This could be the case, for example, if, in the first instance, the broker-dealer's illiquidity had no systemic repercussions on the home jurisdiction.
- Difficulties in converting LA into host country currency if foreign exchange markets are severely stressed (Chapter 7).
- Use of LA for other purposes than the support of the host country operation (notably in the case of a branch) – for instance, if the global bank is facing liquidity shortages also in other jurisdictions.
- Delay in the provision of LA if the home country central bank is not aware that the host central bank is not entitled to provide LA.

Addressing these issues requires that central banks are aware of eligibility criteria in foreign jurisdictions in which financial intermediaries active domestically are located. A deeper understanding of foreign eligibility criteria is likely to require that central banks explain to each other the factors that might influence their assessment

LA to a broker-dealer subsidiary of a global banking group Graph 2



of eligibility. This would be particularly useful for qualitative criteria such as an institution's systemic importance. Understanding where eligibility criteria could impede the timely provision of LA would also help central banks to consider alternative plans to provide support to the relevant intermediaries (see Principle 1).

In addition, as illustrated by the third bullet point above, eligibility for LA abroad may not imply that the funds obtained abroad are available for use by the financial intermediary in its home jurisdiction. Again, an exchange of information about potential factors that might shape the restrictions on the use of LA, perhaps with the help of scenarios, is likely to help provide LA effectively when required.

4.3 Principle

Central banks should seek to identify constraints on the eligibility of internationally active financial intermediaries for LA in relevant jurisdictions and, where necessary, consider bilaterally how to manage such constraints when allocating responsibilities in accordance with Principle 1.

5. Solvency

The basic idea behind granting LA is to facilitate the efforts of a financial firm deemed to be solvent as a going concern to overcome temporary illiquidity problems.[7] In fact, many central banks may only lend to solvent institutions. There are several motives for this. First, lending to insolvent firms entails higher financial risks for the central bank and, indirectly, for the taxpayers.[8] Second, it could encourage moral hazard, as firms may pursue riskier business strategies if they, and their investors, believe that they will be rescued from insolvency. Third, there are significant reputational risks associated with lending to insolvent institutions, especially if such lending is not explicitly permitted by the central bank's mandate.

Assessing the solvency of a financial firm with certainty is a complex task even in the best circumstances, due to balance sheet opacity and leverage. It becomes particularly challenging in the situations surrounding the decision to grant LA not least because of time pressure. Moreover, solvency can change over time for reasons that include the conditions under which LA is offered. Finally, the exact definition of what constitutes solvency may differ considerably across jurisdictions, and this may complicate the coordination of LA to internationally active financial intermediaries. The following section explores these issues while the last section in this chapter deals with the specific challenges that may arise in a cross-border context.

7 In this report, a firm's being "illiquid" (or "cash flow-insolvent") is taken to mean that it is unable to repay its liabilities as they fall due. The report refers to a firm as being "balance sheet-insolvent" (or just "insolvent" for short) if the value of its external liabilities exceeds that of its assets. For some jurisdictions, regulatory measures of solvency also feed into solvency assessments or are used directly as criteria for eligibility for LA.

8 In most jurisdictions, LA to insolvent institutions is considered to be a task for the government because of the likely fiscal implications (see Praet (2016) for the case of the euro area). There might also be jurisdiction-specific legal risks from granting LA to an insolvent institution, such as challenges to the seniority of the central bank's claim on the recipient of LA over those of other debt holders.

5.1 Assessing solvency and coping with insolvency risk

A robust solvency assessment matters not only because it helps the central bank that grants LA to judge the counterparty risk it incurs but also because it can facilitate cooperation with other authorities while LA is granted. However, the task of assessing the solvency of a financial firm is complex and often requires a degree of judgment even in normal conditions. Decision making becomes more complicated when information about the firm's balance sheet is not comprehensive, reliable or up to date, and when the assessment is done under time pressure.

The key difficulty in assessing solvency is to distinguish insolvent from merely illiquid firms in real time. In some cases, illiquidity is the first step down a path that leads to insolvency. In other cases, solvency may itself depend on whether LA is available and the terms on which it is offered. The assessment of solvency therefore always entails a degree of uncertainty, which can be even greater in times of stress. Hence the provider of LA is exposed to some credit risk and may have to consider the prospect of the recipient institution failing before it exits LA.[9]

In addition to its assessment being subject to considerable uncertainty, solvency is also not a static concept. Even if the institution's solvency status can be determined at the point LA is requested, it may change over time. The institution's solvency in the immediate future will depend on its own actions (eg whether or not it succeeds in addressing balance sheet vulnerabilities), on actions of the authorities (eg whether the supervisor might restrict the dividend payments or require stricter adherence to prudential requirements) and on factors beyond the control of either (eg developments in the macro-financial environment).

This dynamic nature of solvency poses challenges to the provider of LA that go beyond the initial assessment of creditworthiness. If the solvency of the recipient deteriorates after the receipt of LA, termination of assistance or measures to reduce counterparty risk (eg by shortening the duration of LA or demanding additional collateral) can be problematic. They can precipitate the failure of the firm or hinder the process of dealing with its failure, unless other authorities have the ability to provide funding in a timely manner.

Some central banks have introduced the concept of *viability* when deciding whether to grant LA to a firm. While there is no formal definition of viability, the concept requires the assessor to look beyond the current valuation of the firm's assets and liabilities and to consider the firm's and/or relevant authorities' ability to re-establish the firm as a going concern, possibly with the help of LA and after adjustments in its business model.[10] For instance, a bank whose solvency may be very difficult to ascertain at the point when LA is requested can still be viable if credible corrective actions ensure that it will be able to fund itself in private markets within a reasonably short time frame. Conversely, a bank that may have lost a key licence required for it to engage in a business that generates a substantial share of its revenues may be technically balance sheet-solvent but its business model may be

9 A robust bank resolution regime can mitigate the adverse consequences for financial stability from the firm's failure. This report does not cover LA to a firm in resolution. See FSB (2016b) for this issue.

10 There is no uniform definition of "viability". When assessing "non-viability", supervisors in practice might consider: whether the firm depends on financial assistance; whether it has lost the confidence of its depositors; or whether its capital is about to fall or has fallen below regulatory minima.

non-viable going forward. In this case, if credible corrective actions cannot ensure viability of the institution, the central bank might decide against granting LA.

A number of central banks have departed from a strict point-in-time solvency requirement for granting LA. Some central banks, including European central banks, consider a credit institution to be solvent if it complies with minimum regulatory capital ratios or when there is a credible prospect of recapitalisation whereby compliance would be restored. In Brazil, there is no explicit requirement for the recipient of LA to be solvent.

The Bank of Canada in its emergency lending assistance framework, published in 2015, has replaced the solvency requirement with a requirement for a credible recovery and resolution framework (RRF). A credible RRF is one that gives authorities a high degree of confidence that a troubled institution can be returned to long-term viability, including to a well-capitalised level, or be resolved in an orderly manner, without systemic disruption. This shift reflected the view that it may be necessary to provide LA temporarily to balance sheet-insolvent institutions in order to provide a bridge to a more permanent solution achieved through resolution.[11]

In contrast, US regulators are required to close insolvent banks quickly, and the Federal Reserve is limited in its ability to provide LA to banks in weak financial condition. Moreover, for any emergency lending to non-banks, the Federal Reserve must, among other requirements, ensure that all borrowers are solvent. The United States has a mechanism in place for the resolution authority (the Federal Deposit Insurance Corporation) to provide liquidity to a deteriorating institution as needed to promote an orderly resolution or recovery of the firm.

In some jurisdictions, the LA framework includes exceptions to the solvency requirement in specific circumstances and with the explicit involvement of the government. In these cases, special arrangements define the respective responsibilities of the government and the central bank. For example, the Bank of Japan can decide to provide funds to any institution at the request of the Prime Minister and the Minister of Finance.[12] A key criterion that the Bank of Japan applies when deciding whether to provide funds is that its own financial soundness should not be impaired by the operation.[13] For example, in 1997 the Bank of Japan provided funds on an uncollateralised basis to Hokkaido Takushoku Bank, at the time active internationally, until the bank's sound assets and liabilities were transferred to a sound assuming bank, assisted by financial support from the resolution authority. The Bank of Japan was repaid the loan in full after the resolution was completed. Similarly, in the United Kingdom the Bank of England and the Treasury concluded an MoU according to which the Chancellor can direct the Bank to provide LA "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".[14] Such operations will be indemnified by the Treasury.

[11] Graham et al (forthcoming). In fact, the Canadian framework discusses LA explicitly as part of the resolution of a firm, something that is not typical of other frameworks.

[12] Article 38 of the Bank of Japan Act.

[13] This is one of the Four Principles in Conducting Business Necessary to Maintain Financial Stability (14 May 1999) that the Bank of Japan takes into account in its decision.

[14] "Memorandum of Understanding between the Bank, including the PRA, and HM Treasury re: Financial Crisis Management", 1 April 2013.

5.2 Issues for cross-border coordination

The central role that solvency and related concepts play in all LA frameworks, and the considerable challenges in assessing it, raise a number of issues in situations involving the provision of LA to internationally active financial intermediaries. Those issues are related to the differences in the requirements and constraints embedded in national LA frameworks, and to the judgmental element in the assessment of solvency.

Solvency assessments by two central banks for the same internationally active financial intermediary can differ either because the concepts of solvency differ in the two jurisdictions, or because of differences in the judgmental component of two central banks' assessments. These differences may affect which central bank is able or willing to provide LA. In that sense, the resulting challenges are similar to those that arise from different eligibility and collateral requirements. One major difference, however, is that a financial intermediary's solvency depends very much on the specific circumstances in place at the time it requires LA.

Central banks and other relevant authorities may therefore consider how to exchange information pertaining to the provisions of their respective frameworks regarding the solvency or viability of the recipient. This information can be exchanged in advance so as to prepare the ground for the eventual exchange of assessments in the event of an actual operation. In addition, information about whether a given firm meets the national solvency criteria needs to be exchanged on a case by case basis in real time when LA is requested. The exchange of such information would help to facilitate the coordination and allocation of responsibilities envisaged by Principle 1.

Given that solvency may change particularly quickly during stress, central banks and other authorities should keep each other informed if their solvency assessment, or their strategy for providing LA, changes. For illustration, assume that a branch of an internationally active bank participates in a market-wide facility for LA offered in a host jurisdiction and that the host central bank intends to wind down this facility on the grounds of receding risks to domestic financial stability. The bank might find itself under renewed stress if, at this stage, the parent firm still depends on LA from this facility (via the branch) because its own liquidity condition has not improved, and if the home authorities are unable or unwilling to take over the provision of LA. The host central bank may face tensions between fostering financial stability by avoiding an abrupt cessation of LA and its desire to mitigate its exposure through the specific facility. Developing ex ante mutually agreed and understood frameworks for a handover of LA could facilitate the coordination of LA in these circumstances.

5.3 Principle

Most central banks require LA recipients to be fundamentally solvent on an ongoing basis, albeit temporarily illiquid. Assessing solvency involves judgment, and central banks may formulate their formal requirements and criteria around assessing solvency (and/or viability) in a range of ways. Recognising the degree of judgment involved, central banks should seek to communicate with each other both ex ante on solvency requirements and, in a crisis situation, on solvency assessments.

6. Collateral

Most facilities for LA offer liquidity in the form of secured loans or repurchase agreements in order to minimise the financial risk for the central bank. In this case, the amount of collateral (after haircuts) that a financial intermediary requiring LA can offer sets an upper bound to the amount of LA the central bank can provide.

During the GFC, many central banks widened the set of collateral they were willing to accept for the purpose of providing LA.[15] A significant number continue to accept a wider range of collateral for some or all of their facilities, recognising that a core function of central banks is to provide liquidity to solvent financial intermediaries facing temporary liquidity stress, and that the financial risks associated with accepting lower-grade collateral can be mitigated via exposure limits and appropriate haircuts. Accepting a wider set of collateral does, however, require central banks to have more heavily developed operational and risk management systems and staff.

This chapter first presents a few general trade-offs that appear relevant for a central bank deciding what assets constitute eligible collateral before focusing on specific issues relevant for cross-border collateral.

6.1 Relevant trade-offs when deciding on the eligible pool of collateral

The central bank can significantly reduce the financial risk it incurs in the course of LA provision by restricting collateral to assets that can be easily valued, and/or can be relatively easily disposed of, and also by applying haircuts and concentration limits. However, while these measures reduce the central bank's financial risks on LA provided, they may also limit the amount of LA it can provide, impairing its ability to respond effectively to severe liquidity shortages.

Operational and legal challenges arise in particular when a wide range of collateral needs to be transferred and valued at short notice, and if the central bank needs to service the collateral for a prolonged period should the recipient of LA default. Operational challenges are likely to be higher for non-standardised assets, those that are not stored and settled in central securities depositories (CSDs) or securities settlement systems, and for assets with idiosyncratic characteristics, such as individual loans. Ensuring that no other party, such as another creditor or a bankruptcy trustee, will be able to claim the same collateral as the central bank can be an important legal challenge.

Accepting a wider pool of collateral requires the central bank to address these challenges (see Box 5 for a discussion of the Bank of England's approach). Whether additional tools need to be developed for that purpose depends on the extent to which such collateral is already accepted in monetary policy operations. For example, the Eurosystem accepts individual bank loans as collateral in its monetary policy operations. If collateral requirements are disclosed to institutions that might be eligible to participate in the facilities for LA, operational and financial risks can be further mitigated by regularly testing the facilities, by pre-pledging assets with the central bank, or by allowing the central bank to evaluate such assets before pledging them to obtain LA.

[15] Indeed, many also widened the set of collateral eligible in monetary policy operations.

6.2 Cross-border collateral

Financial intermediaries that operate across jurisdictions may have a significant amount of assets that, from the perspective of the central bank providing LA, are denominated in foreign currency or are issued or located abroad.

A central bank providing LA secured against these assets, referred to as "cross-border collateral", may encounter additional legal and operational issues.[16]

Denomination in foreign currency exposes the central bank to currency risk if the recipient of LA fails and LA is provided in a different currency. Collateral issued abroad gives rise notably to legal issues (eg establishing the legal claim on the collateral and tax compliance). It may become more difficult to compile information required to assess the quality of the collateral. If the collateral is located abroad, it needs to be transferred to the central bank. Depending on the operational approach used to transfer the collateral, this may be time-consuming and require additional legal agreements, for example with the foreign CSD that would house the collateral.

There are a range of approaches to deal with these issues. Central banks accepting cross-border collateral typically mitigate currency risk with haircuts and concentration limits. Legal risk can be reduced by arrangements with foreign central banks for legal assistance (eg national central banks within the European System of Central Banks give each other legal advice and operational assistance with

Box 5

The Bank of England's collateral framework

The range of collateral accepted by the Bank of England has widened significantly following the financial crisis.① Prior to the crisis, the Bank accepted only a relatively narrow set of government and supranational bonds. The crisis demonstrated that accepting only a narrow collateral set could constrain the Bank's ability to offer LA. As a result, the Bank reviewed its collateral eligibility criteria and the Bank's current collateral set extends, in principle, to any asset that the Bank judges itself able to effectively and efficiently risk-manage, subject to appropriate haircuts. In widening its collateral set, the Bank of England has undertaken significant work to overcome the operational and legal challenges posed – for example, to overcome the challenge of transferring and valuing collateral at short notice, the Bank encourages counterparties to pre-position collateral.

The Bank of England has established three broad sets of collateral that are eligible in its operations. The purpose of the operation determines the types of collateral that are eligible. In its intraday and short-term monetary policy operations, the Bank only lends against Level A collateral, comprising certain high-quality sovereign securities that are liquid in all but the most extreme circumstances. In its liquidity insurance operations, which provide an effective liquidity insurance mechanism to the financial system, the Bank also lends against Level B collateral, comprising high-quality liquid collateral, including private sector securities that normally trade in liquid markets, and Level C collateral, comprising less liquid securities and portfolios of loans. The price at which the Bank provides liquidity depends on which collateral set is delivered by the counterparty, reflecting the extent of the "liquidity upgrade".

By the end of February 2016, counterparties had pre-positioned £375 billion worth of collateral at the Bank of England, £285 billion of which was residential loans.②

① For more information on changes to the Bank of England's collateral policies during the GFC, see Fisher (2011). For current policies, see Bank of England (2015). ② Bank of England (2016).

[16] See BCBS (2006).

establishing security on credit claims). In addition, both operational and legal risk can be mitigated by a range of other models. BCBS (2006) distinguished five such models.[17] Out of the two that rely on central banks providing services for each other, only the correspondent central bank model (CCBM) is used in practice. Here the foreign central bank serves as a custodian for the home central bank (and, possibly, provides valuation services on a best efforts basis). It leaves the counterparty risk associated with granting LA with the central bank extending LA.

A number of central banks use the CCBM. For example, the Bank of Japan is able to act as a custodian for the Monetary Authority of Singapore (MAS) for yen cash and Japanese government bonds when MAS is providing overnight Singapore dollar-denominated LA against yen-denominated collateral at its Standing Facility. For monetary policy transactions, the Eurosystem has introduced a CCBM model to allow its counterparties to generate liquidity using marketable and non-marketable assets regardless of their location within the euro area.[18]

6.3 Issues for cross-border coordination

Should a central bank wish to accept cross-border collateral, cooperation between central banks and other relevant authorities can help smooth the process of transferring assets located abroad to the central bank considering LA.

The benefits of cooperation depend on the type of collateral as well as the availability of operational arrangements at the time the collateral needs to be posted. For marketable collateral, there is usually a range of models to transfer ownership of the asset. There is no inherent reason why private sector models (eg links between national security settlement systems) should be more or less resilient than any of the models relying on central bank cooperation. In contrast, cooperation between central banks along the lines of the two models outlined above can be highly beneficial in the case of collateral that is not marketable. For these models to be available at short notice, it is important that technical and legal preparatory work has been concluded ex ante.

Collateral requirements can also impact which central bank might be best positioned to provide LA to an internationally active financial intermediary. There might be situations where an internationally active financial intermediary requiring LA has collateral that is eligible only at one of the central banks that would potentially be willing to consider LA. It would be easier to coordinate LA across borders in this situation if central banks were already aware of the constraints that their respective collateral frameworks impose before the need to consider LA arises.[19]

Finally, central banks may also wish to understand the consequences of ring-fencing and, working with supervisors, identify ex ante potential obstacles to the flow of funds within a financial group in order to be in a position to provide LA as effectively as possible. Ring-fencing refers to supervisors in one jurisdiction

17 The five models are: links between security settlement systems (SSS); remote access to foreign SSSs; collateral management systems; the correspondent central bank model; and a guarantee model in which the foreign central bank takes ownership of the collateral, values it and issues a guarantee of corresponding size to the home central bank.

18 See eg ECB (2014a).

19 See eg CGFS (2015).

constraining the transfer of assets to another jurisdiction, for example because they wish to ensure that the operations of the internationally active financial intermediary in their jurisdiction retain a sufficiently large buffer of liquid assets.[20] This might deepen stress in other jurisdictions where the intermediary faces an acute liquidity shortage. It is important, but likely to be also very difficult, to bridge those different perspectives between authorities when they arise.

6.4 Principle

LA would generally be secured against collateral acceptable to the lending central bank. In a cross-border situation, such collateral may sometimes be located in another jurisdiction. Central banks may therefore wish to consider developing arrangements for lending against such collateral, taking into account possible operational, legal and other impediments. Central banks, together with other relevant authorities as appropriate, may wish to: understand the consequences of ring-fencing for the use of collateral located in another jurisdiction for the provision of LA; and identify obstacles to the flow of liquidity within a financial group.

7. Provision of foreign currency

One lesson from the GFC is that the provision of LA in domestic currency will often not suffice to mitigate the extraordinary liquidity shortages of internationally active financial intermediaries that raise funds in one currency and convert them to finance assets in another currency. While foreign exchange markets supporting these funding strategies are highly liquid in normal times, the GFC illustrated that even those markets are vulnerable to stress. For example, a number of global banks found it difficult to roll over their funding of US dollar assets by exchanging foreign currency into US dollars.

The following sections first discuss how the need for LA in foreign currency arises before turning to the question of how the central bank may source this foreign currency itself either by purchasing foreign against domestic currency when needed, or by using FX reserves, or by establishing and drawing on swap lines with other central banks where feasible.

7.1 How does the need for LA in foreign currency arise?

Financial institutions do not generally take large open foreign currency positions. However, the maturity of their foreign currency assets may be longer than that of their foreign currency liabilities. This played a role in the GFC, when banks were unable to roll over foreign currency liabilities.

In response to funding shortages in foreign currency, an internationally active financial intermediary may be able to borrow from the central bank issuing the foreign currency and stream the funds to the entity requiring them. If such an option

[20] BCBS (2010) discusses this in detail; for example, it mentions the challenges that can arise for exchanging information when the division of supervisory responsibilities across jurisdictions does not coincide with the division of responsibilities for crisis management and resolution.

is unavailable, the intermediary may still be able to close funding gaps in foreign currency by converting domestic into foreign currency. In this case, the domestic central bank could mitigate the firm's liquidity shortage by providing LA in domestic currency. Even in cases of idiosyncratic stress, a firm may find it difficult to access foreign exchange markets. First, potential suppliers of foreign currency may be concerned about the risk incurred when providing foreign currency – for example, whether the firm would be able to honour the return leg of a currency swap agreement. Second, counterparties may be unable or unwilling to supply large amounts of foreign currency at short notice – for example, if such a transaction would raise their leverage because they need to borrow the currency from third parties.

In situations of widespread stress, when multiple financial institutions face funding shortages in foreign currency, supply constraints are more likely to bind. This is partly because funding shortages are likely to be concentrated in a small number of currencies. Reflecting financial institutions' global funding profiles, shortages emerged during the GFC, particularly in US dollars, but also in euros. Another reason is that institutions in a position to supply foreign currency became more risk averse, increasing their precautionary holdings of liquidity and requiring collateral of far higher quality than in normal conditions. Investors were also less willing to sell protection against changes in exchange rates.

In situations of widespread stress, liquidity injections by the central bank issuing the foreign currency may help to reduce those supply constraints but may not be able to remove them entirely. First, not all financial intermediaries with foreign currency shortages may have access to the foreign central bank's LA facilities, and those with access may prefer not to recycle it. And, second, as noted in Box 4, time zone differences can hinder the reallocation of foreign currency to those who need it. For example, before the establishment of central bank swap lines, the cost of funding in the euro/dollar market spiked during the European day at the height of the GFC because US-based financial intermediaries were reluctant to lend when their own liquidity positions for the day were not yet known. Rates fell when the Federal Reserve provided additional liquidity later during the US day. However, after the closure of the New York market, the funding pressure in US dollars built up again in the Asian and European days, as the central banks in these regions had no means to provide US dollars.[21]

The crisis experiences therefore suggest that there are situations where a central bank would need to consider providing LA in foreign currency to the parent or the subsidiary/branch of an internationally active financial intermediary in its jurisdiction. The vulnerability of a jurisdiction to foreign currency liquidity shortages depends on, for example, the extent of the foreign currency (maturity) mismatches of institutions active in that jurisdiction and the depth of the foreign exchange market in the home currency. The type of institution active in the jurisdiction may also play a role. For example, for non-bank financial institutions without a stable deposit base, funding needs may be very large and immediate, while for banks they might be more spread out over time, reflecting the longer duration of their liabilities.

Such differences in the structure of financial markets can be relevant for assessing the nature and size of potential demand for LA in foreign currency that a central bank may face and, by consequence, for what options would be suited to source the required currency. The following section compares those arrangements according to the amount of foreign currency the central bank could source ("size"),

[21] See eg CGFS (2010).

how quickly it would be able to do so ("speed") and the possible impact that sourcing FX via such an arrangement could have on financial market sentiment should it become public ("signalling").

7.2 Sourcing foreign currency for LA

A central bank has three basic options for obtaining foreign currency for LA. It can purchase foreign currency in the FX market when there is an acute need to provide LA and/or build a stock of FX reserves in calm times that can be used for LA. Alternatively, it can obtain foreign currency directly from the central bank issuing that currency, through a swap line. These options are not mutually exclusive. The following paragraphs discuss them in detail. Having sourced the foreign liquidity, the central bank needs to have the right tools in place to distribute it to borrowers. As with other aspects of LA, central banks need to be operationally prepared to ensure that these facilities work smoothly together with the method chosen to source liquidity.

Real-time acquisition of foreign currency. Central banks are generally not subject to the same credit pressures that may prevent a bank from obtaining foreign currency in the market, and are thus well positioned to obtain foreign currency liquidity (typically via swaps) to lend to an institution that has lost market access. That said, some of the supply constraints discussed above may also be relevant for central banks and may limit the speed with which they can source foreign currency in private markets and the amounts thereof. In addition, such transactions could have undesired signalling effects if they deviate from the central bank's typical activity. For example, market participants may speculate that the funds will be used to provide LA, or may mistake such purchases for foreign exchange intervention. That said, there are arrangements that aim to reduce or eliminate undesired signalling effects – in particular, making use of the reserve management services provided by the issuing central bank or international organisations.[22] All in all, real-time purchases appear relatively more suitable in the case of less urgent, smaller liquidity needs when there is no intention to delay the disclosure of LA.

Authorities could also **build up foreign exchange reserves** in calm times as a store of liquidity for future LA in foreign currency, to be liquidated as needed.[23] The feasibility of this approach appears to vary among central banks, in part reflecting variation in the governance of FX reserves (which often spans the central bank and the finance ministry). Some central banks have an expressly stated mandate to use their foreign reserves in the service of financial stability concerns; others are much more limited in how they may use their FX reserves, and would not be able to draw upon them for the purpose of providing LA.

Often, authorities aim to balance the liquidity with the financial return of their foreign currency reserves. Investments in less liquid assets denominated in foreign currency are likely to yield a higher return, but the central bank would have to liquidate them in private markets. (There might instead be a possibility for the central

22 Specifically, such reserve management services could entail the issuing central bank entering the FX market on behalf of the central bank sourcing foreign currency. For example, a number of euro area central banks offer such services.

23 For example, the Bank of Japan can use its foreign reserve holdings to provide foreign currency LA to Japanese financial institutions facing severe liquidity problems when certain conditions are met. See Bank of Japan (2012).

bank to pledge such assets with the central bank of issuance against foreign currency.) Liquidation in private markets could be difficult and give rise to undesired signalling effects, in particular when the amounts are large and foreign currency is needed immediately. Instead, reserves invested in highly liquid (but lower-yielding) securities could be directly repoed to the liquidity-short institution.

An advantage of using reserves, relative to drawing a swap line with the central bank of issuance, is that the central bank does not need the issuing central bank's approval to obtain foreign currency. That said, large investments by several jurisdictions into liquid assets denominated in the same currency could unintentionally contribute to a shortage of such assets in private markets.

Finally, the central bank could obtain foreign currency via a **swap line** with the issuing central bank, if such arrangements are available and if a drawing on them is approved by the liquidity-supplying central bank. These agreements typically involve a requirement for both parties to agree on the specifics of the swap at the time a central bank requests to draw it. Currently, a network of swap arrangements exists between the Federal Reserve, the Bank of Canada, the Bank of England, the Bank of Japan, the Swiss National Bank and the ECB, which issue major reserve currencies. There are also various bilateral arrangements between reserve currency-issuing central banks and those whose currencies play a less central role in global financial markets, but this network primarily exists to promote trade and investment rather than to facilitate LA in foreign currency.

While such agreements typically offer each participating central bank conditional access to the other central bank's currency, in practice a small number of reserve currencies are more likely to be in demand for LA purposes, reflecting the currency composition of global banks' funding patterns. The following paragraphs therefore discuss the merits of swap lines from the perspective of the central bank providing the currency required for LA (the "liquidity supplier") and of the central bank requiring the currency to provide LA (the "liquidity receiver").

Unless swap agreements require a drawing on the swap line to be disclosed, one advantage of swap lines for the liquidity receiver is the ability to gain access to large amounts of foreign currency without risking the above-mentioned unintended signalling effects.[24] This may be particularly useful when LA is to be provided to a single institution with large liquidity needs. Another advantage is that this method does not rely on markets being available to supply foreign currency in real time, or to liquidate foreign currency-denominated assets. This makes swap arrangements particularly useful in times of widespread stress. However, the ease and speed with which the swap can be utilised depend on the specific design of the swap arrangement and on market conditions. Finally, swap line agreements may be financially cheaper for the liquidity receiver relative to maintaining low-yielding foreign currency reserves (a material issue for those central banks subject to fiscal remittance targets).

For the liquidity supplier, an advantage of providing LA through swaps rather than directly to a foreign banking organisation is that the central bank is exposed only to the credit of the foreign central bank, not that of a private institution, and is only required to manage foreign currency cash, rather than foreign assets not within its collateral framework, as collateral. Additionally, if currency lent to the receiving

[24] The Federal Reserve Bank of New York publishes the amount of US dollars drawn, the term of the drawing and the rate that is the basis for the fee, by counterparty. See https://apps.newyorkfed.org/markets/autorates/fxswap.

central bank is lent on to entities that are systemically important in the liquidity supplier's jurisdiction, this is another way to support financial stability at home.

7.3 Principle

Central banks should consider the need to assess the nature and size of potential demands for foreign currency and how they would deal with the foreign currency needs of internationally active financial intermediaries in situations of liquidity stress.

Central banks should also assess their own options for meeting these demands, including obtaining foreign currency directly in the market, as well as drawing on FX reserves and on foreign currency swap lines. It may be appropriate for more than one of these options to be used in any given circumstance. Their effectiveness will depend on the size of foreign currency needs, the speed with which such needs have to be met, and the potential impact on financial stability, including through signalling effects (ie possible impact on financial market sentiment).

8. Transparency

A significant practical challenge in the provision of LA is striking an appropriate balance between transparency and flexibility as regards communication. On the one hand, transparency is desirable because it boosts central bank accountability but, on the other hand, the central bank may wish to retain a sufficient degree of flexibility to adapt LA to specific circumstances and to maintain the confidentiality of LA operations for an appropriate time if this is judged to support financial stability.

It is useful to distinguish three (closely related) types of transparency:

- **ex ante transparency** in relation to the framework within which the central bank provides LA (ie a public statement of the form "We would provide LA subject to the following set of conditions");
- **real-time transparency** in relation to decisions to grant LA to specific institutions and/or to activate facilities ("We are providing LA to institution X"); and
- **ex post transparency** in relation to specific LA operations, some time after LA has been initiated or repaid ("We have provided LA to a number of institutions last year").

The rest of this section discusses each in turn before turning to a discussion of implications for cross-border LA.

8.1 Ex ante transparency

Ex ante transparency of the LA framework has two main advantages. First, it improves market participants' understanding of any available backstop facilities and facilitates firms' contingency planning. For instance, central banks can enter into a dialogue with institutions, managing expectations regarding the extension of LA and clarifying what could be suitable preparations to deal with episodes of extreme liquidity shortages. This could include the pre-positioning of assets with the central bank. Second, it anchors the public's understanding of a central bank's role in the context of LA. If the public is aware of a central bank's objectives and powers ex ante, including its framework for ex post transparency, it is less likely that there will be a perception ex post that it has acted beyond its remit.

However, there are also some potential disadvantages to ex ante transparency. First, as with other aspects of the safety net, there is the risk of moral hazard. While this risk can be mitigated by effective supervision and by designing facilities to incentivise use of private markets wherever possible, excessive reliance on official LA remains a policy concern of the first order. Second, ex ante transparency may reduce the flexibility a central bank has to tailor LA to specific circumstances, or may create an expectation that the central bank will act even when it judges that it would not be appropriate to do so. Historically, these risks have provided the rationale for maintaining a degree of discretion around elements of the LA framework.

The general trend, post-GFC, has been for central banks to provide greater levels of ex ante transparency about their LA frameworks, to cement public understanding of their scope for action and to enhance central bank accountability.[25] For example, the United Kingdom has chosen to formalise much of its LA toolkit in its public Sterling Monetary Framework.[26] But the approach of central banks is not uniform, as decisions on the appropriate level of transparency for different central banks are influenced by a wide range of factors such as the scope of their individual mandates and the range of facilities via which they provide LA. Central banks may find it easier to disclose details of those parts of their LA frameworks which are ordinary facilities that can also be used in times of stress, whereas they may be more cautious about disclosing details of extraordinary facilities, where they may feel that the risks associated with moral hazard are greater.

8.2 Real-time transparency: under what conditions?

Transparency about LA operations while they are taking place (ie in real time) may raise particular challenges. Often, especially in the case of LA to a single firm, the public announcement or the revelation (sometimes unintended) that a firm is receiving LA may create, or exacerbate, uncertainty about the true health of the firm, undermining market and depositor confidence. This could, in turn, worsen or accelerate any liquidity stress at the firm, and potentially tip it from illiquidity into insolvency/default (see Box 6 for a discussion of the Bank of England's experience with Northern Rock).[27] In such circumstances, real-time transparency about LA could end up undermining the objective of providing LA in the first place. Similar risks can arise when LA is provided in response to a system-wide shock and/or to multiple firms simultaneously, although in such cases there are more likely to be situations where

[25] For example, the ECB published the procedural rules for the provision of LA by euro area national central banks (NCBs) with a view to enhance the general understanding of the ECB Governing Council's role in the provision of LA by NCBs. See ECB (2014b).

[26] Bank of England (2015).

[27] There have been cases where speculation that a firm was receiving LA had potentially serious implications for financial stability. For example, a depositor run on the branches of Citibank in Hong Kong in 1991 was triggered by the reporting in a local newspaper of comments made by a US Congressman who said that Citibank was "technically insolvent".

real-time transparency may reassure markets and the public by signalling that the central bank is providing LA and that the firms remain fundamentally solvent.[28]

The timing of LA disclosure may significantly affect financial stability outcomes. Hence, when deciding whether to announce immediately that a specific LA operation is taking place or to disclose it with a lag (within the limits prescribed by prevailing legislation), the central bank needs to make two judgments. First, whether disclosure would increase or decrease confidence in the firm in question or in financial stability more widely. Second, if LA is not disclosed, how to minimise any costs associated with a temporary reduction in transparency. These judgments will always be heavily dependent on the circumstances at the time, and it is difficult to specify in advance the circumstances in which LA would benefit from immediate disclosure.

The same considerations about the potential impact of real-time transparency are at play in determining the appetite for LA of firms experiencing liquidity stress. Some firms, wary of intensified scrutiny by investors or the media, might be hesitant to access LA facilities and sometimes may even postpone corrective action. Such a delay could ultimately damage financial stability. In fact, central banks have used suasion to induce a wider group of institutions to accept LA in order to reduce the potential stigma associated with only some institutions accessing liquidity facilities. On the other hand, other firms may actively seek real-time transparency believing it would reassure their investors.

Box 6

Northern Rock①

Northern Rock was a mid-sized UK bank whose business model was focused on the provision of residential mortgages funded by the securitisation of those mortgages. Following the dislocation in global financial markets that occurred in August 2007, Northern Rock began to face severe funding problems, which continued into September 2007 as markets remained closed to the firm. Northern Rock pursued a number of options to alleviate those problems, including exploring a potential sale, but by 10 September 2007 the firm concluded that none of those options was achievable and agreed to what was intended to be a backstop funding facility provided by the Bank of England.

The UK authorities had initially planned to delay the disclosure of the facility to ensure that Northern Rock had time to put in place contingency plans. But at 8.30 pm on the evening of Thursday 13 September 2007, the BBC reported that Northern Rock had asked for and been granted liquidity assistance from the Bank of England. The unauthorised disclosure of liquidity assistance had immediate adverse consequences for financial stability, with queues forming outside some of Northern Rock's branches the following morning; later, its website collapsed and its phone lines were reported to be jammed. The run was finally stemmed on Monday 17 September 2007 following the announcement by the UK government that it would guarantee all deposits in Northern Rock.

Despite this, Northern Rock was unable to continue as an independent entity. It was nationalised in early 2008 before eventually being split into two separate entities, a new savings and mortgage bank, which was returned to private ownership in 2011, and an asset management vehicle under public sector ownership, which continues to manage the outstanding mortgage loans made by Northern Rock.

① For background on the events that led to the problems at Northern Rock, see House of Commons Treasury Committee (2008).

[28] Such a situation arose in 2015 when the Eurosystem announced that national central banks have the option (depending on the financial stability benefits) to publically announce the provision of emergency liquidity assistance (ELA) to firms where the ELA is provided in response to systemic issues. See ECB (2015).

Flexibility in managing the timing of disclosures about LA operations may have implications for the appropriate regime for central bank accountability. For example, in order to avoid unintended revelation when LA is not disclosed immediately, the number of individuals aware of the operation is kept small, rendering more challenging the external oversight of the central bank during this time. A number of countries responding to the challenges have put alternative arrangements in place to enable effective external oversight of LA operations still to take place. This response is particularly important if a central bank is lending outside its published framework.[29]

8.3 Ex post transparency and accountability

In order to enhance their accountability, many central banks make public, after a pre-determined lag or when financial stability concerns have receded, any LA that has not been disclosed in real time. For example, the United States, the euro area and the United Kingdom have specific arrangements in place to reveal usage of market-wide facilities after a lag.

Central banks often include summaries of their financial operations in their annual reports and periodic testimony to legislative bodies. There are also various examples of ex post reviews of LA operations having taken place, conducted either by the central bank itself or by an outside body.[30] These may sometimes be an appropriate way of holding the central bank (and other authorities) to account.

By adopting measures to ensure ex ante transparency, external oversight during an LA operation and ex post transparency, central banks ought to be able to ensure sufficient accountability to leave scope for a temporary reduction in real-time transparency where financial stability would otherwise be threatened.

8.4 Issues for cross-border coordination

In cross-border LA operations, the choices regarding communication by one of the involved central banks can influence the options available to another central bank to manage the information flow to the market. The disclosure by the parent institution of an internationally active financial intermediary that the subsidiary is in receipt of LA may have the same effect.

In recent years, there have been more channels through which information about an LA operation may find its way into the public domain (intentionally or not) even in

[29] For example, in the United States any future emergency lending facility authorised under Section 13(3) of the Federal Reserve Act would need to be approved by the Secretary of the Treasury. In the United Kingdom, any lending outside the Sterling Monetary Framework requires the approval of Her Majesty's Treasury, and there are arrangements to inform the chairs of relevant Parliamentary Committees of LA that is not disclosed at the time it is provided where the LA is backed by a government indemnity. Similar arrangements are in place in the United States to inform Congressional committees about individual transactions under any future emergency lending facilities authorised under Section 13(3) of the Federal Reserve Act. In addition, the Bank of England has made a public commitment to undertake a quarterly review of whether and when to disclose any LA outside the Sterling Monetary Framework.

[30] Examples of such reviews include reviews in the United Kingdom of the provision of ELA to Northern Rock in 2007 (House of Commons Treasury Committee (2008)) and to Royal Bank of Scotland and HBOS in 2008 (Plenderleith (2012)). In the United States, there were extensive reviews of the Federal Reserve's lending operations during the crisis (see eg United States Government Accountability Office (2011)) as well as various hearings before Congress (eg Bernanke (2009)). In Germany, a review of the LA granted to Hypo Real Estate AG was published in 2009 (Deutsche Bundesbank (2009)).

situations where the central bank may judge this to be harmful to financial stability. This is in part due to an ongoing trend towards enhanced transparency of central bank operations themselves. Another reason relates to the practical implications of domestic and international initiatives aiming to increase market transparency, which oblige a firm to disclose more detailed and more frequent balance sheet information or the extent of its asset encumbrance that may reveal the existence of an LA operation (see Box 7 for a summary).

LA operations may also be inferred by market observers in real time from unusual trading patterns, either by the recipient firm (eg converting government bonds provided as LA into cash in repo markets) or by the central bank (eg sourcing foreign currency in FX markets). In addition, LA operations may leak to the press, while market analysts may speculate on the basis of rumours and communications by the firm or central bank that may be suggestive of LA.

The scope for central banks to address these challenges varies. For example, a central bank may have some control over its own disclosures that may reveal an LA operation (for example, its own periodic reporting regime). It is less likely to have control over disclosures required by firms pursuant to market transparency legislation. In this respect, it would be useful for international market transparency initiatives to take into account the possible financial stability implications of disclosure requirements that may lead to an inadvertently premature revelation of an LA operation and trigger market disruptions, alongside the clear transparency benefits

Box 7

Disclosure requirements potentially relevant to LA

Disclosure by recipient of LA

- Market transparency legislation which requires firms to:
    - immediately announce price-sensitive information (which may include the receipt by a firm of LA);
    - include details of any LA received in any prospectus or in annual or periodic reports.
- International transparency initiatives which require the periodic reporting of items that are affected by an LA operation, such as levels of asset encumbrance.

Disclosure by central bank

- Depending on prevailing regimes, central banks' own regular (eg weekly, monthly and/or annual) reporting of positions in their balance sheets that can be affected by LA operations.
- In some countries, central banks may have legal obligations (or it may be established convention) to announce the provision of LA at the time it is provided.
- Where a swap line with another central bank is used as a source of foreign currency for a LA operation, the other central bank may itself have obligations to report its use.
- Statements by central bank officials in response to direct questions during parliamentary hearings.

Disclosure by third parties

- Statistical disclosures by supranational bodies such as the IMF and (for European national central banks) the European authorities.

of disclosure. Similarly, central banks might emphasise to securities regulators and other relevant authorities the desirability of domestic arrangements that provide some flexibility about the timing of a firm's disclosure of having received LA.[31]

Firms are subject to regular financial reporting requirements. A firm receiving LA is not likely to be able simply to stop making such disclosures that can potentially reveal an LA operation. It would be preferable instead to ensure *ex ante* that these regular disclosures are made in a format which does not put financial stability at risk through premature revelation of LA.

Central banks may consider taking one or more of the following steps to mitigate the risk of premature disclosure of LA undermining the effectiveness of LA:

- review their own periodic disclosures with a view to assessing and mitigating the risk that they could inadvertently reveal LA operations;
- discuss the risks of premature disclosure of LA with relevant authorities and work with them to develop arrangements for delayed disclosure in appropriate circumstances, consistent with prevailing legislation and with achieving fuller disclosure once the financial stability rationale for discretion has passed;
- be aware of the benefits of disclosure requirements for accountability and their potential costs for financial stability when negotiating international initiatives for market transparency.

8.5 Principle

Central banks recognise that there can be important benefits to both ex ante transparency in relation to their powers to provide LA and ex post transparency in relation to specific LA operations. Transparency also fosters accountability.

Central banks also recognise that premature disclosure of specific cases of LA may give rise to financial stability concerns. Accordingly, it would be desirable for disclosure policies to be mindful of the trade-offs between transparency, which strengthens accountability, and the need for flexibility in the timing of disclosures, within the boundaries of prevailing legislation, on account of promoting financial stability. To ensure accountability, LA should be revealed at an appropriate time, in a way consistent with legal reporting requirements and with financial stability.

Central banks involved in cross-border provision of LA, and those whose jurisdictions are exposed to contagion risks, should, where possible and desirable, seek to coordinate their communication strategies.

[31] The recent European Market Abuse Regulation (no 596/2014) presents an example of legislation that acknowledges the trade-off between boosting financial stability ex ante through appropriate transparency and protecting financial stability ex post through appropriate safeguards. In Article 17(6), it introduces a provision permitting the delayed disclosure of inside information (specifically including information relating to the receipt of temporary LA) where disclosure would threaten financial stability, provided that certain conditions are met, and requires coordination between the competent national authority and the central bank.

9. LA to a market

Market-based channels of intermediation play a big and increasingly important role in financial stability. Consequently, illiquidity in a systemically important market may present the case for providing LA to the market along the same lines of argument that motivate the provision of LA to an individual financial institution. One reason may be that the market is critical for the funding of financial or non-financial sectors: illiquidity would create funding strains if firms are unable to roll over liabilities, or do so only at much higher costs. Another reason could be that an asset serves as collateral in a wide range of financial transactions: in this case, illiquidity would depress collateral values. In both cases, the consequence could be forced deleveraging and disruptions in lending.

A common operational objective of many forms of LA to a market is to contain liquidity premia. The central bank can pursue this objective in different ways. Depending on its framework, it may be able to provide liquidity directly by engaging in outright transactions in the market, or indirectly by providing LA to financial institutions, thus strengthening their market-making capacity.[32]

This chapter discusses issues related to the provision of LA through these mechanisms and explores possible cross-border aspects associated with LA to a market.[33] Sections 9.1 and 9.2 examine how LA can support corporate and bank debt funding markets. In that context, it discusses the use of facilities for the purpose of LA to a market that are also used to implement monetary policy (the use of these facilities for monetary policy purposes is outside the scope of this report). Section 9.3 describes issues relevant for cross-border coordination.

9.1 LA to a credit market

LA to a market for credit instruments (eg commercial paper, corporate bonds) is typically intended to be catalytic: to kick-start an illiquid market rather than to replace it. Hence LA to a market would usually seek to assure potential buyers of the illiquid asset that they would be able to re-sell the asset in a timely manner without incurring large losses, thereby supporting the market-making capacity of financial institutions.

One backstop mechanism is for the central bank to accept the credit instrument as collateral in liquidity-providing operations. By giving its counterparties access to central bank reserves against an illiquid asset, the central bank would support demand for the asset. In this case, some central banks may use their haircut policy as a parameter of their LA policy, but other central banks view haircuts solely as a means to protect their balance sheets from financial risk.

Another backstop mechanism is for the central bank to post bids at preannounced prices. These bids can be set, for example, at a minimum spread over risk-free rates, but clearly above the prices prevailing in distressed market conditions.

32 This is typically against a pledge of collateral. In the case of the US Term Asset-Backed Securities Lending Facility, LA was provided in the form of a non-recourse loan, where the central bank has recourse only to the collateral and margin, not to other assets of the borrower.

33 For example, non-US banks were active in US commercial paper markets when the Federal Reserve created the Commercial Paper Funding Facility in 2008 to provide a liquidity backstop to CP issuers. See eg Adrian et al (2011).

This way, the central bank's bids are no longer attractive once the market is again functioning more normally. For this mechanism to function well, the underlying asset should be relatively homogeneous (eg commercial paper of a certain credit grade).

Alternatively, in the case of asset classes where individual securities may have many idiosyncratic features (eg corporate bonds), the central bank can announce its intention to engage in the purchase (or sale) of the credit instrument without preannouncing the price but with the same intention of making its intervention attractive only as long as the market remains dysfunctional. This can be operationalised through periodic auctions. Both methods were used during the GFC.

Both backstop bids and outright purchases expose the central bank to greater financial risks than accepting the illiquid asset as collateral.

Incentive problems that are present in the provision of LA to an institution apply also to announcements that a specific market would be supported if the need arises. However, while in the case of financial institutions eligibility for LA is typically combined with prudential supervision, it is unlikely that there will be corresponding arrangements for all potential participants in that market. The case for ex ante transparency is therefore somewhat weaker than in the case of bilateral LA.

9.2 LA to a core bank funding market

The goal of providing LA to a core bank funding market is to ensure that banks and other financial intermediaries continue to act as market-makers and key participants in systemically important markets. The potential intervention mechanisms include those discussed above: providing LA collateralised by the asset, or outright purchases.

In practice, some central banks have used existing market-wide facilities that were also used to implement monetary policy to provide LA to bank funding markets.[34] On occasion, these facilities required some modifications (eg concerning the allotment policy, the term of repo operations, or collateral requirements) to fit the expanded purpose.

There are advantages to using for LA those facilities that are routinely used for other purposes. One such advantage is that they may be relatively free of stigma for those accessing them. The list of participants encompasses all institutions, not just those with extraordinary liquidity needs. Another advantage that some countries have found is that market participants are more familiar with those facilities and that there are no additional development or maintenance costs. Compared with a dedicated facility that is not always "on", making use of existing market-wide facilities also avoids the risk of the activation of the facility being interpreted as a signal that the central bank is concerned about the ability of financial institutions to act as market-makers.

That said, facilities dedicated to LA may also be able to operate relatively free of stigma. One way is to actively encourage healthier institutions to draw on the bespoke bilateral facilities alongside those perceived to be in greater need of LA. For example, in 2008 the Bank of England did so with its Special Liquidity Scheme (SLS).[35] Another

34 Specific examples include the Federal Reserve's single-tranche repo operations in 2008, the ECB's long-term refinancing operations under fixed rate full-allotment operations, and the Bank of Japan's same day fund-supplying operations (T+0 operations).

35 See Winters (2012).

way is to design the financial terms of the facility in a way that it is attractive to diverse types of institutions (as, for example, the Bank of England does with its Index-Linked Term Repo facility).

A dedicated facility offers the possibility to apply different terms and conditions (eligibility, price, collateral, governance) for LA than for regular monetary policy operations. It may be possible to reach a wider, or more targeted, set of counterparties than those eligible to participate in monetary policy operations, depending on the type of funding stress as well as the restrictions arising from the legal and regulatory frameworks on LA. At the cost of additional complexity, they can extract information from the market about the nature of the liquidity shortages. For example, the Bank of England's standing Indexed Long-Term Repo Facility, in which the funds offered for different pools of collateral may clear at different prices, generates information about the wider market conditions for these types of collateral. Finally, activating a dedicated facility can also have positive signalling effects if its availability reduces concerns about the liquidity of the targeted financial market.

The exit from market-wide LA facilities aimed at enhancing the market-making capacity of financial institutions raises similar issues to those arising in the context of bilateral LA. One way to encourage exit is to set its terms such that it is attractive only during times of stress. For example, most market-wide facilities introduced during the GFC (eg LA operations in US dollars that were introduced in Europe during the GFC) became financially unattractive for institutions once financial conditions normalised and, where they continued to be offered, demand dropped off steeply. Another is to limit the period over which the facility is offered. An example is the Bank of England's SLS. The end of such programmes needs to be managed carefully to ensure that the market can absorb the increase in demand for funds when the facility ends. For example, the Bank of England encouraged institutions to consider raising at least some funding in private markets earlier than they might otherwise have done in order to avoid issuance congestion at the end of the SLS.

9.3 Issues for cross-border coordination

Cross-border coordination in the context of LA to a market raises challenges that are conceptually similar, but in practice potentially as challenging as when providing LA to an individual institution.

First and foremost, while the general case for LA to a market (to backstop financial intermediation) is appreciated, the specific externalities that LA would address, especially the risk of runs, are less clear and perhaps less well understood than in the case of banks and other financial institutions. Moreover, the case for intervention may depend on the cause of the market's illiquidity (eg one-sided bets that have gone wrong, widespread liquidity shortages among participants in these markets).

There may also be technical obstacles similar to those discussed in the previous sections. Some central banks may either not be permitted to trade in the market in question or their collateral frameworks may not allow them to accept the illiquid asset as collateral.

That said, if a market that is systemically important in several jurisdictions becomes dysfunctional, the benefits of cooperation among central banks can be large. The reason is that confidence in the market is more easily re-established the larger central banks' "fire power" – that is, the greater their ability to purchase the asset. Tactical considerations would have to take into account aspects like trading in different time zones. If the asset is, from the perspective of one central bank, denominated in foreign currency, this might require facilities to be in place that enable the central bank to source that currency, such as central bank swap lines. Coordinating communication strategies could help restore investor confidence, and strengthen the character of LA to a market as backstop.

Finally, domestic and foreign authorities may need to cooperate to manage the exit from market-wide LA programmes in which foreign financial institutions participate. When domestic financial stability improves, the primary motivation for keeping the facility open may fall away. However, weaker foreign institutions may still depend on the facility. Box 8 describes such cross-border aspects in the context of ending the Federal Reserve's Term Auction Facility.

9.4 Principle

Building upon the experiences during the GFC, central banks should seek to better understand the implications of the evolution of market-based forms of financial intermediation. Information exchange on aspects such as market conditions, funding behaviour of market participants and intentions regarding possible policy actions would be useful in enhancing the efficacy of such central bank cooperation.

Box 8

Cross-border aspects of ending the Federal Reserve's Term Auction Facility

The Board of Governors of the Federal Reserve System established the Term Auction Facility (TAF) as a backstop for the interbank funding market in late 2007.① The facility was structured as an auction of a fixed quantity of discount window funding provided for a one-month term.② The programme was open to depository institutions and branches or agencies of foreign banks ('branches') that were eligible for primary credit at the discount window.③ Banks and branches that successfully bid for funds at or above the minimum bid rate received the funding several days later, at the rate determined by the auction, and against a pledge of discount window-eligible collateral. The TAF was designed to overcome the stigma associated with normal discount window lending, to ensure that banks could and would use the backstop to keep operating in an environment in which interbank market functioning was impaired due to acute stress. The TAF proved to be a successful tool to get liquidity where it was needed and mitigate the risk that a disruption to funding market access could impair the health of otherwise solvent institutions.

In the period prior to the failure of Lehman, TAF funds were awarded at a premium over the primary credit rate, reflecting strong demand for term funding. Following Lehman's demise, the Federal Reserve sharply increased the amount of funds available in the auctions in order to mitigate market stress, and loans were all awarded at the minimum bid rate since the auctions were not fully subscribed. As financial conditions normalised, the quantity, and ultimately also the term, of the facility were gradually reduced, due to improving market conditions and in order to incentivise banks to stop using the TAF. Domestic and large foreign banks exited the programme as markets normalised, but a few of the weakest foreign banks' US branches continued to seek term funding at the facility, given the higher costs they faced in the markets due to their financial condition.

In these cases, the Fed worked with the borrowers and home country authorities, including central banks, to foster the transition of these entities to alternative funding sources.

① The Eurosystem central banks also started to conduct US dollar operations with European banks, also known as TAF operations, for which they made use of a swap line with the Fed. ② The facility was expanded to also offer three-month funding in August 2008. ③ Primary credit is available to depository institutions deemed by their primary bank supervisor to be generally sound.

10. Summary

The body of this report discussed issues related to the provision of liquidity assistance that have been highlighted by the experiences of central banks during the GFC. The issues are not all new but have acquired new dimensions as a result of trends that have reshaped the characteristics of the financial system. One such trend has been the continued internationalisation of finance: the financial system has become more interconnected internationally, with institutions' operations spanning across borders and currencies. Other trends relate to more stringent requirements for transparency and disclosure in markets and the conduct of policy, as well as to the growing reliance of financial intermediation on market-based channels.

Some of the lessons and challenges for central banks in the context of LA remain unchanged. These include the need to provide liquidity only when there is a clearly identifiable liquidity risk and when other tools are not available, as well as the need to do so in ways that minimise moral hazard. A well calibrated regulatory framework and probing, diligent supervisory oversight remain critical in this respect.

The general lesson that emerges from the review of recent central bank experiences is the need to be prepared for new situations where LA might be required. In particular, central banks need to consider how the interaction of national LA frameworks might affect the cross-border coordination and provision of LA. The report offers a set of principles that articulate this general lesson in the context of specific challenges.

The first six principles relate to the fact that central banks may be called to work closely with each other when providing LA to an internationally active financial intermediary. They need to understand the requirements and limitations of each other's frameworks in that context. To that end, they should consider engaging in bilateral discussions on possible steps that could facilitate the timely execution of an operation when the need arises. Each central bank's responsibilities are likely to depend on a number of factors, ranging from those that can (and should) be assessed in advance to those largely dependent on circumstances prevailing at the time LA is considered. At one end of this spectrum lie the respective frameworks of LA: in particular, the eligibility of the parent and its foreign establishments for LA, the role their solvency plays as a condition for LA, and the set of assets eligible as collateral. At the other end is the institution's actual financial health at the time it requires LA, including its ability to use assets located in one jurisdiction to collateralise LA in another jurisdiction. In between lie the ease with which a central bank can access supervisory information about the institution requesting LA; the extent to which the recipient's use of the funds obtained can be monitored and controlled; the financial markets in which the institution is systemically important; and a central bank's ability to source a sufficient amount of foreign currency if this is required for the provision of LA.

In terms of transparency, central banks should monitor and, where appropriate, promote disclosure policies that mitigate the unintended adverse financial stability consequences arising from premature revelation of LA operations. In doing so, they should bear in mind the trade-offs between transparency, which strengthens accountability, and the need for flexibility in the timing of disclosures, within the boundaries of prevailing legislation, on account of promoting financial stability. Central banks involved in cross-border provision of LA, and those whose jurisdictions are exposed to contagion risks, should, where possible and desirable, seek to coordinate their communication strategies.

Finally, central banks should seek to better understand the implications of the evolution of market-based forms of financial intermediation, as these channels are likely to play a key role in future episodes of systemic stress. The illiquidity of a systemically important market may create a case for providing LA to this market rather than to an individual financial institution. Exchanging information on aspects such as market conditions, funding behaviour of market participants and intentions regarding possible policy actions would be useful in enhancing the efficacy of central bank cooperation.

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