TECHNICAL NOTES AND MANUALS

Resolution Funding: Who Pays When Financial Institutions Fail?

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This technical note and manual (TNM) addresses the following issues:

- Explains the guidance pertaining to resolution funding provided by international standards.
- Discusses the conditions under which deposit insurance funds may be used for resolution purposes.
- Provides a comparison of the relative advantages and disadvantages of different resolution funding arrangements.
- Discusses evolving country experience in adopting resolution funds.

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GLOSSARY

AMV . . . . Asset Management Vehicle

BRRD . . . . . . Bank Recovery and Resolution Directive

DIS . . . . Deposit Insurance Scheme

DIF . . . . Deposit Insurance Fund

DFA . . . . Dodd-Frank Act

ELA . . . . Emergency Liquidity Assistance

FDIC . . . . . . Federal Deposit Insurance Corporation

G-SIB . . . . . . Global Systemically Important Bank

KA . . . . Key Attributes of Effective Resolution Regimes for Financial Institutions (of the Financial Stability Board)

OLF . . . . Orderly Liquidation Fund

SIFI . . . . Systemically Important Financial Institution

SRF . . . . Single Resolution Fund

I. INTRODUCTION

A key element of the international reform agenda since the Global Financial Crisis has been to strengthen resolution regimes and make government bailouts the last, not first, resort. A new international standard prescribes a range of tools, powers, and funding arrangements needed to resolve “any financial institution that could be systemically significant or critical if it fails.” It recommends having resolution funding arrangements set up in advance, “so that authorities are not constrained to rely on public ownership or bail-out funds as a means of resolving firms.” It leaves open significant flexibility with respect to the arrangements that would provide the resources authorities will need to carry out effective resolution. This paper offers a framework for weighing the relative advantages of different resolution funding options that could meet the standard. It presents the main developments to date and discusses the advantages and disadvantages of different options.

II. RESOLUTION FUNDING—DEFINITION AND OBJECTIVES

Effective resolution regimes need effective funding arrangements. Resolution refers to the exercise of the powers and tools under the legal framework that applies to failing systemic financial institutions (SIFIs)[1] by a public resolution authority tasked with preserving financial stability.[2] The international resolution standard (FSB 2011)—the Key Attributes of Effective Resolution Regimes for Financial Institutions (KA)—sets out a range of tools that should be available to resolution authorities to resolve failing SIFIs. Key Attribute 3 (KA3) requires powers to effect a transfer of assets and liabilities to establish a temporary bridge institution to run critical functions, and, among others, to bail in creditors. The exercise of resolution powers may include the application of procedures under insolvency law—for example, to wind up parts of an entity in resolution. However, resolution powers should be exercisable by the resolution authority quickly, and without requiring shareholder or creditor consent, and, as such, resolution regimes are distinct from ordinary corporate insolvency regimes.[3] Resolution tools require readily available and sufficient funding to work effectively. At the point at which an SIFI fails, its buffers of liquidity and capital typically will have been eroded. To be effective when deployed, resolution tools may need additional funding to buttress the internal resources of the failed SIFI; replace illiquid, encumbered, or impaired assets; and "grease the wheels" of resolution. Additional funds may be needed, for example, to back a transfer of deposits to another bank or bridge bank, to purchase impaired assets, or to inject liquidity after a bail-in of creditors.

Resolution funding should be understood in the context of a well-designed financial safety net. Resolution funding refers to financing that can be used to support the use of resolution powers and achieve the resolution objectives. Safety net refers to "the functions of the resolution authority, the lender of last resort and the authorities responsible for prudential regulation and supervision and for financial sector policy, and relevant insurance schemes and arrangements for the protection of depositors and other protected clients" (FSB, 2016b). A sound financial safety net entails a comprehensive legal, institutional, and operational framework for maintaining financial stability while mitigating the risk of government bailouts. The safety net mechanisms are operationally independent, but their objectives and uses are intertwined. The supervisor, the central bank, the deposit insurance authority, the resolution authority, and the ministry of finance are expected to take measures that are consistent with their own mandates, but coordinated and commensurate to the financial stability concerns. When problems in a bank are detected early enough, corrective measures required by supervisors may be financed through the bank's internal resources (capital and liquidity). When confronted with temporary liquidity problems, viable banks may seek emergency liquidity assistance (ELA) from the central bank. If a bank's viability is jeopardized, resolution may be required to ensure orderly market exit and/or continuity of critical functions.

The resources required to fund resolution vary significantly, depending, inter alia, on the systemic risk of the potential failure. Resolutions can take a variety of forms from simple deposit transfers to bridge banks and bail-ins; and from small banks to systemic central clearing counterparties. Resolution funding may be required in each of these instances to preserve

[1] More than one regime may apply to different financial institutions e.g., banks, insurers, etc.

[2] Adapted from FSB (2016b).

[3] Among other statutory objectives and functions set out in KA2.3.

financial stability, e.g., because the assets of the failed entity are illiquid or impaired, and inadequate to repay creditors deemed systemic at the point of failure. In the case of an isolated (idiosyncratic) failure of one (or a few) non-systemic bank(s), it will normally be possible to meet the goal of preserving financial stability by just protecting insured deposits, either through their transfer to a viable institution (known in the United States as a purchase and assumption transaction), or in a liquidation, through their prompt reimbursement by the deposit insurance scheme (DIS).[4] In the case of systemically important banks or other financial institutions, additional resources to fund the resolution may be needed to meet capital and/or liquidity needs, ensure continuity of critical functions, and protect creditors deemed systemic. System-wide crises may require exceptional measures as a last resort, e.g., guarantees of assets or liabilities or capital injections by the government (including to institutions outside of resolution). It is important to underscore that preserving critical functions—necessary for the functioning of the financial system and preservation of financial stability—does not imply that all creditors of a failing institution must be fully or partially protected.

Building firm-specific, loss-absorbing capacity is crucial; but the internal resources of a failing financial institution may prove insufficient at the point of failure. A key element of the international reform agenda has been to build firm-specific, loss-absorbing capacity at systemic banks. As part of resolution planning and resolvability assessment, country authorities should require financial institutions to build sufficient loss absorbency to be used in the first instance to facilitate resolution. For example, global systemically important banks (G-SIB) are required to build total loss-absorbing capacity (TLAC)—essentially, regulatory capital, subordinated debt, and long-term debt liabilities that would facilitate their orderly resolution.[5] But the precise calibration (in terms of quantity and quality) of the resources needed for sufficient loss absorbency for orderly resolution is difficult to determine in advance, as it will depend upon the exact conditions at the time of entry into resolution, including how quickly intervention occurs once the institution faces stress, and the resolution strategy adopted. Liquid assets may have been sold or encumbered, financial assets may need to be revalued, using significantly lower "gone-concern" rather than "going-concern"[6] valuation methodologies, and contagion risks may impair the loss absorbency of liabilities. For example, using up the loss-absorbing capacity through a bail-in may increase the risks of a run of wholesale creditors on the wider financial system. Whether TLAC proves loss absorbing at times of severe stress is yet to be tested and will depend upon its quality, including contractual terms and investor base. For example, if banks face extended periods of stress, long-term debt could roll off (after a year), and TLAC sold to other financial institutions could trigger cross contagion, etc.

For these reasons, the resolution authority of a country should be able to access or promptly mobilize additional resources—necessary for orderly resolution. As noted, the international standard recommends having resolution funding arrangements set up in advance, "so that authorities are not constrained to rely on public ownership or bail-out funds as a means of resolving firms" (KA 6.1). The KAs recognize the diversity of the institutional and operational

[4] An exception would be a scenario in which the failure of many small deposit takers presented a systemic risk (such as the savings and loans crisis of the 1980s and 1990s in the United States).

[5] For final TLAC standard see: *http://www.fsb.org/2015/11/tlac-press-release/*. TLAC implementation is ongoing; GSIBs in key jurisdictions are working toward complying with the requirements by 2019.

[6] Going-concern valuations estimate the value that can reasonably be expected to be received from continuing business operations, and gone-concern valuations estimate the value of the assets of a firm sold in liquidation.

frameworks that exist across countries and acknowledge that three broad types of arrangements can be consistent with and conducive to efficient resolution: (a) privately (industry)-financed deposit insurance funds, (b) privately funded resolution funds, or (c) temporary access to government funds within a system/mechanism that allows ex post recovery from the industry of the costs incurred by the government in the resolution (KA 6.2).[7] The three options have in common their recourse to industry funding and would be readily available for use in resolution, but they have important differences as well. Moreover, the KA afford countries significant flexibility on key aspects of resolution funding arrangements, including whether they should be funded ex ante or ex post and their "optimal" size.

[7] These three options are referred to collectively as "resolution funding arrangements" in this note. The third option of temporary public funding is categorized as an "ex-post resolution fund" following deposit insurance nomenclature.

III. USING CENTRAL BANK FUNDS IN RESOLUTION

As lenders of last resort, central banks should be able to provide liquidity support to a bank in resolution, subject to adequate safeguards. A bank in resolution may need liquidity to ensure the continuation of critical functions (FSB 2016a); for example, while plans to create a bridge bank with adequate capital are put into effect by the resolution authority. Also, when financial stability considerations warrant it, a central bank may need to provide liquidity to one or more entities in resolution where solvency may be in doubt, but they are considered systemic and viable in the context of a realistic, time-bound recapitalization or resolution plan.[8] The assessment of the viability of a bank in resolution depends largely on the resolution measures being implemented by the resolution authority, their feasibility, funding, and timeliness. A close dialogue between the central bank and the resolution and supervisory authorities will therefore be crucial, as they must cooperate in deciding upon a resolution strategy that may require ELA. In terms of sequence, the resolution and/or supervisory authority should first make a positive determination of viability. Once this decision is made, it should be up to the central bank to decide on the provision of ELA, including any safeguards that it may seek from the government. ELA to a bank in resolution may need to be backed by an indemnity or a guarantee from the government to protect the central bank balance sheet if, for example, there is significant uncertainty over the (new) bank's ability to repay. The central bank balance sheet should not be used for purposes other than for providing liquidity on a prudently collateralized basis, i.e., the central bank should not provide capital or unsecured loans to a bank in resolution. Because such wider support may be needed to effect resolution, ELA can complement but not be a substitute for a resolution funding arrangement envisaged in KA6.

[8] Dobler et al (2016).

IV. USING DEPOSIT INSURANCE FUNDS IN RESOLUTION

There are arguments in favor of using deposit insurance funds to support bank resolutions (subject to safeguards) and not just for paying out depositors in liquidation. The closely aligned roles of deposit insurance and resolution in preserving financial stability and reducing the risk of deposit runs, along with potential economies of scale, suggest that the funds collected and available to pay out deposit insurance in bank liquidations should be available also to support a bank resolution, which obviates the need for a liquidation and payout. In addition to preserving depositor confidence and the continuity of depositor services, a resolution which, for example, transfers retail deposits from a resolved entity to a healthy bank, may realize efficiency gains through maximizing value and reducing disruption. For example, a transfer of deposits and good assets might secure higher "going-concern" values for the assets of a failed bank than liquidation, and a premium for the deposit book (as banks incur costs to attract retail deposits). The use of the deposit insurance funds in resolution can occur only if the legal framework governing deposit insurance allows it. This may be the case where the DIS has a dual mandate for deposit insurance and resolution (defined as a "risk or loss minimizer mandate" by the IADI) or where its funds are available to fund resolution by a separate authority (a "pay box plus" mandate). Essential criteria 8 of core principle 9 of the Core Principles for Effective Deposit Insurance Systems (IADI, 2014) states (Box 1) that a deposit insurer, which is not a resolution authority, should have "the option, within its legal framework, to authorize the use of its funds for resolution of member institutions other than liquidation," up to the net cost it would have incurred if the bank had instead been liquidated (Box 2). In addition to a least-cost test, other safeguards may be applied to the use of DIS funds in resolution, e.g., that depositors of the resolved entities have continued access to their insured deposits and potential caps.

Deposit insurance schemes are typically insufficient to meet resolution funding needs in systemic circumstances. The primary objective of a DIS is to cover insured deposits (whether in a payout or in a resolution). Like all insurance schemes, DIFs are normally calibrated to cover losses in a fraction of the insured pool and not to deal with the failure of a large systemic bank or a generalized banking crisis. These events would typically require significantly more resources than those available in a paid-in DIF. To protect the DIF from those events, safeguards should be put in place, including a net least-cost test and a back-up line of credit from the government.[9] Consideration could also be given to introducing a cap, so that paid-in deposit insurance funds do not drop below a certain level e.g., 50 percent of the target ratio. These safeguards would seek to ensure that the reliance on the DIF is not excessive which, in turn, could erode depositor confidence in the scheme. Allocating deposit insurance funds in a way that would expose the DIS to significant uncertainty and risk—e.g., providing solvency or liquidity support to an open bank outside of resolution (so-called "open bank assistance") should be avoided.[10] As noted earlier, the provision of ELA to an open bank is a matter for the central bank. Liquidity support from a DIS may circumvent the safeguards typically attached to ELA and should not be recommended. These considerations, plus the fact that funding would also be necessary for the resolution of nonbank financial entities (which are increasingly important in many countries), provide policy rationales for establishing a separate resolution fund.[11]

[9] See Appendix I for the U.S. experience in the recent crisis, when the credit line from the U.S. Treasury to the DIF had to be increased.

[10] See Parker (2011).

[11] While there are differences among jurisdictions, the legal framework governing most DIS typically do not allow the use of DIF resources to fund the resolution of financial entities that do not take deposits or contribute to the scheme.

BOX 1. IADI Core Principles on the Use of Deposit Insurance Funds in Resolution

Essential criteria 8 of core principle 9: "Where the deposit insurer is not the resolution authority, it has the option, within its legal framework, to authorize the use of its funds for resolution of member institutions other than liquidation.[12] In such situations the following conditions are met:

a. the deposit insurer is informed and involved in the resolution decision-making process;
b. the use of the deposit insurer's funds is transparent and documented, and is clearly and formally specified;
c. where a bank is resolved through a resolution process other than liquidation, the resolution results in a viable, solvent, and restructured bank, which limits the exposure of the deposit insurer to contributing additional funding in respect of the same obligation;
d. contributions are restricted to the costs the deposit insurer would otherwise have incurred in a payout of insured depositors in a liquidation, net of expected recoveries;
e. contributions are not used for the recapitalization of resolved institutions unless shareholder's interests are reduced to zero and uninsured, unsecured creditors are subject to pari passu losses in accordance with the legal claim priority;
f. the use of the deposit insurer's funds is subject to an independent audit; and
g. all resolution actions and decisions using deposit insurance funds are subject to ex post review.

BOX 2. Least-Cost Test and Systemic Risk Exemptions

Net least-cost test: A net least-cost test ensures that costs to the deposit insurance fund (DIF) of contributing to a resolution event are no higher than the costs the DIF would otherwise have incurred in a payout of insured depositors of the entities being resolved, net of expected recoveries. The test can be made operational simply by adopting/mandating a cap that prevents the DIF from contributing more than the estimated net cost it would have incurred if the troubled entity had been liquidated. A resolution can prove less costly if it delivers higher than liquidation value for the bank's assets and liabilities. Such a cap would help limit the DIF's contribution to the resolution of a bank where not only insured deposits but also other creditors are protected. In countries where insured deposits are preferred to other senior unsecured creditors, the net cost to the DIF in a liquidation might be zero, depending on losses. This should not prevent a DIF from supporting other types of resolution (e.g., a purchase and assumption) however, if it would also incur zero net cost to the DIS and deliver better policy outcomes, such as continuity of depositor services. As with a deposit insurance payout, an upfront cash or 'gross' contribution may be required to effect the resolution, and the formulation of the net least-cost test should ***not*** prevent this. In fact, such formulation should allow a ***gross contribution*** up to the value of the insured deposits; i.e., the amount the scheme would have paid out upfront in cash in a liquidation.

[12] Such use may be compulsory under national law.

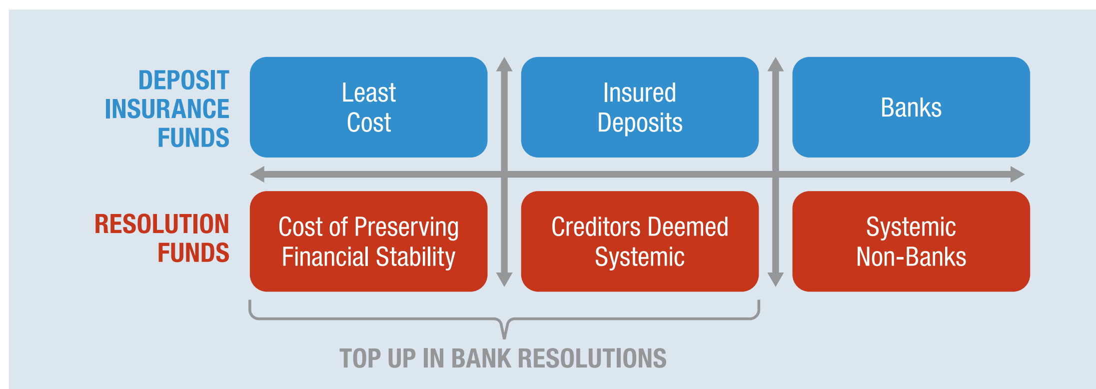
Systemic risk exemption: Some countries (e.g., Canada, Japan, and the United States) allow DIFs to depart from least-cost principles where adherence to them could have a severe adverse impact on financial stability. Any exception should be subject to strict governance safeguards to minimize moral hazard and to ensure it is only deployed *in extremis* in a way that would not undermine confidence in the scheme or propagate contagion. If a separate resolution fund is available for systemic cases, it may reduce the need for such an exemption.

V. SEPARATE RESOLUTION FUNDS

A separate resolution fund could be useful for dealing with systemic risks, including those arising from nonbanks (Figure 1 and Box 3). Such a fund could be used to 'top up' the funding available from the DIF, to protect uninsured creditors as needed, and to prevent contagion and preserve financial stability in a bank resolution. By insulating the DIS from the sizeable contingent liabilities that typically arise when a systemic bank fails, a resolution fund could help buttress depositor confidence in the DIS. It could also be used as part of a broader stabilization plan to preserve financial stability. In principle, separate resolution funds could:

- make capital contributions to a bridge or bailed-in institution, or asset management vehicle (AMV);
- make loans to systemic financial institution(s) in resolution, including subsidiaries, a bridge institution, or AMV;[13]
- support other measures deemed necessary to preserve critical functions and maintain financial stability; and
- as a last resort, and for the overarching purpose of maintaining financial stability, guarantee the assets or liabilities of, or provide capital for, systemic institution(s) outside of resolution ("open bank assistance").

FIGURE 1. Illustrative Boundaries Between Deposit Insurance and Resolution Funds



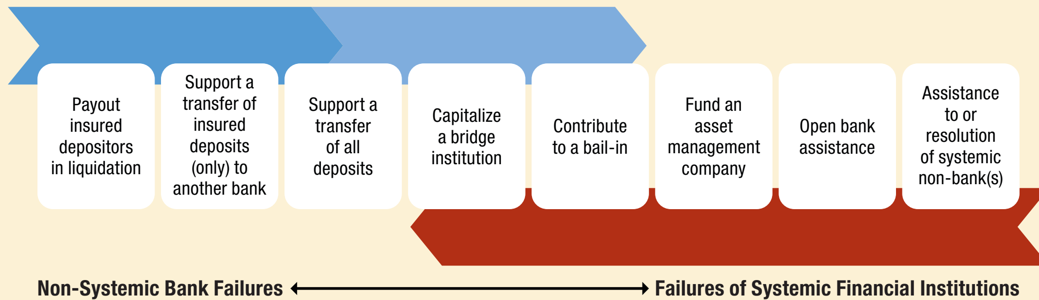
Separate resolution funds are a relatively new addition to resolution frameworks. While there is abundant international experience with DIS and a fair degree of convergence on their appropriate funding arrangements,[14] experiences with resolution funds are too few from which to draw lessons or to generalize. Only a few countries have adopted separate resolution funds, and those that have done so, have followed different approaches regarding their funding (i.e., ex ante or ex post), governance, and safeguards (see Appendix II). Funding demands in systemic failures or in a generalized crisis could be very large, which raises complex questions about the "optimal" size, opportunity costs (if ex ante funded), and moral hazard impact.

[13] This could, for example, pertain to systemic financial institutions that do not have access to central bank facilities or ELA, or circumstances in which the collateral requirements of the central bank cannot be met.

[14] Essential criteria 1 of CP9 requires that "funding for the deposit insurance system is provided on an ex ante basis."

BOX 3. Possible Overlaps Between Deposit Insurance and Resolution Funds

Deposit insurance (blue arrow) and resolution funds (red) can be different components of a framework for resolution funding.



The blue and red arrows illustrate the possible uses of deposit insurance and resolution funds in different scenarios. The treatment of a deposit customer in a resolution where insured deposits are transferred from a failed bank to a healthy bank is very similar to a deposit insurance payout—it is simply another way for the DIS to make insured deposit balances readily available to their owners. Insured deposits are protected in the resolution, and the deposit insurance fund should be able to contribute funding, incurring net costs up to those it would have incurred in a liquidation and payout. How much further along the spectrum the DIF can go in funding resolution will vary depending on its mandate and statutes. The advisability of relying on a DIF to fund resolutions of systemic entities or in a generalized crisis will be limited in countries with underfunded schemes and limited state capacity to back the DIF. Depending on the complexity of the financial system and on the framework governing the use of the DIF, there can be a rationale for establishing a separate resolution fund to fill resolution funding gaps.

Ex post versus ex ante resolution funds

An ex post resolution fund enables the authorities to allocate public funds to resolution and triggers a mechanism to recover those funds from the industry at a later stage.[15] For this approach to work, a few conditions must be met. First, a procedure to determine that failing financial institutions are systemic, and that temporary public funds are needed to preserve financial stability, would have to be established in advance. Second, the mechanism to ensure that public funding becomes available at short notice also would have to be established. And third, there would have to be a mechanism linking the temporary support provided by the authorities to the recoveries from the firms' stakeholders and creditors and, if necessary, from the wider industry via levies (KA 6.2), phased in as appropriate to mitigate procyclicality. In all cases, the appropriate authority to provide the temporary public funding would be the government, not the central bank.

Both ex post and ex ante resolution funds have advantages and disadvantages. Both approaches carry moral hazard risk, as they would be available to potentially provide funding to preserve critical functions and protect uninsured creditors deemed systemic. With an ex post

[15] Expedited procedures may be needed to obtain approval for fiscal outlays for resolution funding and for their recovery.

fund, a failed financial institution would not bear the costs of its resolution because it would not have contributed in advance to the fund. In addition, recovering the public funds through levies on the industry, if applied shortly after a period of stress, may exacerbate the downturn phase of the credit cycle. Prefunded schemes reduce the procyclicality of levies and can mitigate their moral hazard risks if risk-based contributions are used to penalize institutions that benefit most from the implicit subsidy. The operational features of ex ante resolution funds—including perimeter, base, and rate of the levy—are important and should be clear from the outset (Box 4). Even if there is clarity on these, however, deciding on the fund's appropriate size and assessing the opportunity costs of the earmarked resources will always be difficult (Table 1). Furthermore, the arguments for ex ante resolution funds are less clear-cut than those for a DIF. The use of resources from a resolution fund is always discretionary—unlike a DIS, which is bound to make payments under pre-specified conditions—and the demand for resources in a systemic crisis could be very high. All in all, whether an ex ante resolution fund would help reduce the risk of creditor runs remains an open question

Resolution funds have to be supported by measures and mechanisms to enhance their credibility and mitigate moral hazard risk. For a start, a government backstop to the fund, triggered by clearly stipulated conditions and subject to subsequent recovery from the industry, is necessary to enhance credibility. In the case of financial systems with large systemic financial institutions, an ex ante fund that could provide a credible resolution backstop for one or more systemically important financial institutions may take a long time to build up, or may not be feasible altogether. In such cases, clear procedures should be established to enable the quick provision of temporary funding by the authorities (e.g., standing budgetary authorization for contingency purposes up to a cap), and the legal and operational framework for recovering the costs through ex post mechanisms. The institution authorized to manage the resolution funding arrangements (typically, the resolution authority) should be well governed and operationally independent, with arrangements for information sharing with other relevant authorities, and for accountability. It should be regularly assessed on the extent to which it meets its mandate, and subject to audit and ex post review of resolution actions, decisions, and use of funds. To minimize moral hazard, resolution funds should be supported by:

- Effective resolution regimes that promote timely resolution of failing financial institutions;
- Imposing losses on the shareholders, subordinated creditors, and potentially senior unsecured creditors of the failed firm, as well as removing the management of the failed firm;
- Differentiated premiums (for ex ante funds); and
- Price incentives to exit from the use of public backstops and return to market financing as early as feasible.

BOX 4. Establishing Ex Ante Resolution Funds[16]

Perimeter of the levy: The perimeter (i.e., the institutions that pay the levy) should include as a minimum all systemic financial institutions covered by the resolution regime. A broader perimeter (e.g., all financial institutions) could address concerns related to the migration of systemic risk (e.g., institutions that become systemic at their point of failure) and recognize that all institutions benefit from enhanced financial stability.

Base of the levy: The definition of base will differ by institution type and funding model, and should take a broad and risk-based approach (e.g., including off-balance sheet items). Using a simple balance sheet metric could be distortionary, as the risk presented by a bank, insurer, or asset manager of equal size may vary significantly.

Target level: There is no international consensus on the adequate level of funding. The calibration of a target level could consider past experience of resolution costs and structural features of the financial system. Experience (including in other countries) with the costs of resolving systemic entities and crises might offer a benchmark to be adjusted for the size, structure, and riskiness of institutions in the financial system. Resolvability considerations, including resolution powers and progress on institution-specific resolution plans and resolvability assessments as well, and the amount and distribution of loss absorbing capacity (LAC) should also be considered. TLAC applies only to G-SIBs, and other financial institutions may prove systemic at the point of failure. In addition, adequate TLAC is not yet fully in place and remains to be tested in practice (see paragraph 5). The opportunity cost of holding national savings in earmarked funds (typically invested in low-risk liquid instruments) is likely to weigh against countries building up ex ante funding to the levels that may be needed in a systemic crisis. Laeven and Valencia (2012) estimate the median fiscal cost (the direct fiscal outlays due to financial sector rescue packages) of 147 banking crises between 1970 and 2011 at 7 percent of GDP for all countries, and 10 percent for emerging market economies and developing countries. In many cases, fiscal costs were significantly larger; for example, seven countries incurred fiscal costs above 40 percent of GDP in resolving their crises.

Rate of the levy: The rate should not be uniform but variable, depending on the institutions' specific risks and their contribution to systemic risk. The rate for non-systemic and less risky financial institutions could be substantially lower. As risks vary over the cycle, the rate could be adjusted to help make the financial system less procyclical.

Investments: An ex ante funding scheme should invest in highly liquid and safe assets (e.g., funds should not be placed in domestic financial institutions that may need to be resolved).

Contingency line: As gross financing needs may well be large, revenues raised through the levy may be less than the upfront financing needs in resolution. The resolution authority should have access to a credit line provided by the government to complement ex ante funding.

[16] Adapted from IMF (2010).

The United States established a mechanism for the provision of temporary public funding to support the resolution of a failed covered financial company. The Dodd-Frank Act (DFA) in place since 2010, established the Orderly Liquidation Fund (OLF)—an ex post resolution fund with a fiscal backstop—to serve as a temporary source of liquidity if private-sector funding cannot be obtained for the resolution of financial entities.[17] The DFA authorizes the FDIC to obtain temporary funding for resolution of systemically important nonbank financial institutions (including bank holding companies) by borrowing from the U.S. Treasury via the OLF, subject to certain limits (including caps relating to the size of the entity in resolution). Any funding from the Treasury must be repaid with proceeds from sale of the failed company's operations. If such proceeds are insufficient to fully repay all borrowing from the Treasury, assessments will be made on certain creditors of the failed firm and, if necessary, on financial companies (including bank holding companies) that have US$50 billion or more in total assets (Appendix II).

TABLE 1. Ex Ante and Ex Post Resolution Funds Pros and Cons

	ADVANTAGES	DISADVANTAGES
Ex ante resolution funds	• Readily available for use, if sufficient resources can be collected. • Reduces the need for upfront public funding. • Less procyclical (costs more evenly distributed over time). • The failed entity contributes in advance to the costs of its own resolution, and risk-based levies (if applied) can mitigate moral hazard. • Can be used to fund the administrative cost of the resolution authority.	• Opportunity costs through lower bank profits (potentially reducing capital or dividends, and lending) with resources invested in low return safe assets. • May need to be large to cover systemic risks—earmarking a large pool of (scarce) national savings. • A paid-in fund may fuel the perception that uninsured creditors will be bailed out, increasing moral hazard (more than an ex post fund).
Ex post resolution funds	• No burden on the industry during stable times/lower opportunity costs. • Requires less administration.	• Larger upfront borrowing by public sector at time of stress. • Stronger bank-sovereign links. • Less fair, as firms benefiting from fund would not have contributed to it. • More procyclical, potential for higher burden on the industry in stressed times.

Ex ante resolution funds are becoming more common in Europe. The European Union requires national resolution funds to be established in all member states to facilitate the orderly resolution of banks, with a view to gradually pooling such funds into a Single Resolution Fund (SRF) for countries participating in the Banking Union.[18] Contributions are being raised annually from all credit institutions (primarily banks) and investment firms authorized in the European Union, while extraordinary ex post contributions can also be levied on those institutions when the available financial means are insufficient to cover the losses, costs, or other expenses incurred in the use of the resolution funds (Appendix II).

[17] Under section 210 of the DFA, commercial financing or debtor in possession financing should first be sought before recourse to the OLF.

[18] Agreement on pooling risk across national deposit insurance schemes, e.g., via a consolidated European deposit insurance scheme, remains elusive.

VI. CONCLUSIONS

Resolution funding arrangements should reflect the broader institutional market and policy context. In developing their resolution funding arrangements, country authorities should weigh the following:

- *Characteristics of the financial system:* How the size, concentration, structure, and risk appetite of the financial system influence risk and moral hazard. Also, the capacity of the financial industry to contribute to resolution funding and the relative importance of bank versus nonbank financial institutions for systemic risk.
- *Legal and institutional architecture of the safety net*: Institutional efficiencies within the resolution regime should be taken into account. Synergies in the policy objectives of protecting depositors and effective resolution, support allowing the DIF to be used for funding bank resolutions subject to adequate safeguards.
- *Capacity:* The institutional capacity of the authorities to carry through the actions required in resolution.
- *Regional considerations:* In the context of harmonized frameworks across economic or monetary unions, resolution funds may be used as a way of pooling risk across borders.

Adequate ex ante funding of a DIS is advisable. When supporting arrangements are in place (i.e., sound financial sector structure; effective prudential regulation, supervision, and bank resolution; and strong legal and judicial frameworks, and accounting and disclosure systems),[19] jurisdictions should establish a DIS with an ex ante fund, with an adequate level of funding (see IADI 2009a and 2009b), and with the capacity to contribute to bank resolutions (e.g., a pay-box plus mandate).

The case for establishing a separate resolution fund is not strong. In countries where deposit insurance is ex post or under-funded, priority should be given to increasing the DIF's resources and making it available to fund bank resolution, subject to safeguards. In countries where there is a preference for establishing a separate resolution fund, it may be advisable to set up an ex post resolution fund, especially when scarce national savings would be better deployed elsewhere.

If separate resolution funds are established, they should have clear legal and operational frameworks and safeguards to minimize moral hazard. Resolution decisions in systemic circumstances may need to be taken and implemented quickly in order to preempt market distress and deposit runs. The authority designated to mobilize and allocate resolution funding—and the principles governing the mobilization and allocation of resolution funding—should be clearly legislated and regulated, including safeguards to minimize moral hazard. In particular, resources from resolution funds should be deployed only in systemic cases after the losses of the resolved entities have been recognized, in order to ensure burden sharing with shareholders and other creditors (where possible), and would be subject to strict conditions.[20] Clear procedures should be established to enable the quick allocation of resolution funding (e.g., standing budgetary authorization for contingency purposes up to a cap), providing for necessary coordination and information sharing among the various authorities involved.

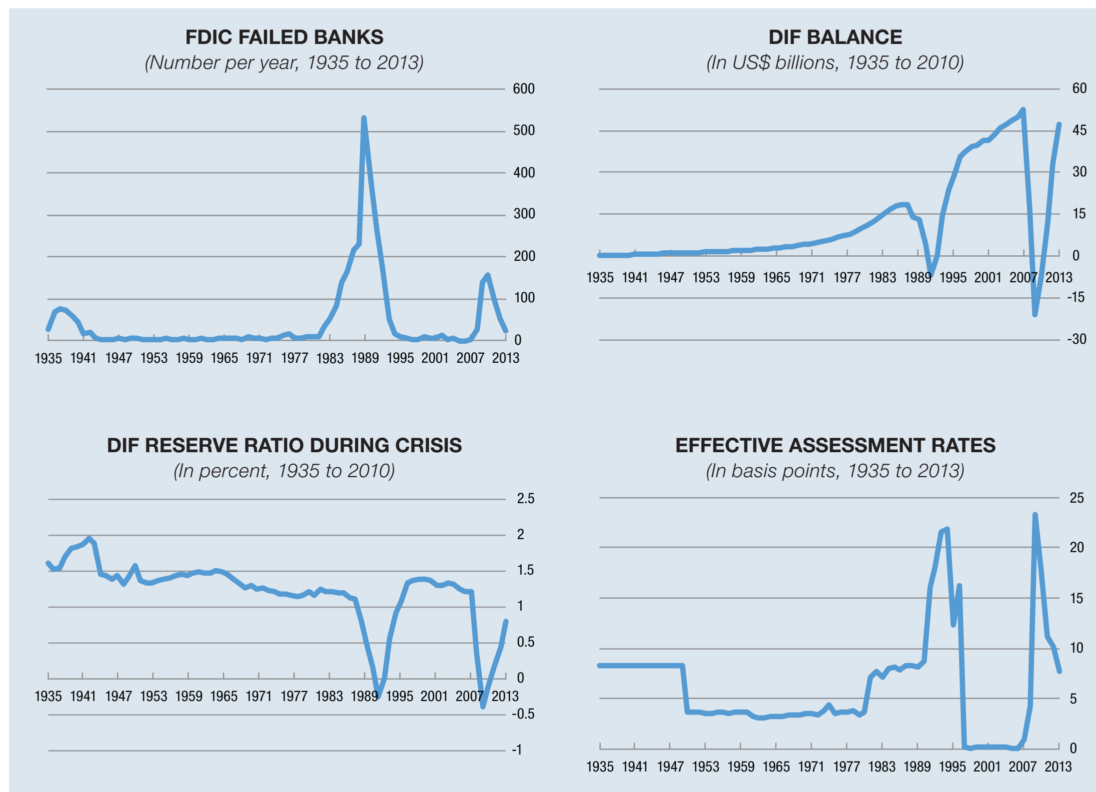
[19] BCBS and IADI (2009).

[20] Dell Ariccia et al. (2018), Box 5.

APPENDIX I. U.S. DEPOSIT INSURANCE FUNDING IN THE GLOBAL FINANCIAL CRISIS

The Deposit Insurance Fund (DIF) of the U.S. FDIC was more than fully depleted during the global financial crisis. While it stood at US$52.4 billion or 1.22 percent of insured deposits prior to the crisis, it went into deficit as the number of banks closed or supported by the FDIC increased substantially. While the largest cases by asset size (Bank of America, Citibank, and Washington Mutual) ultimately did not incur losses for the DIF, the number and cost of failures of small- and medium-sized banks were sufficient to exhaust the fund's resources. Between January 2008 and September 2009, 120 U.S. banks failed, with the most costly for the DIF being Indymac (US$13.1 billion), Bank United (US$5.7 billion), and Colonial Bank (US$4.5 billion). The DIF deficit reached US$8.2 billion by end-September 2009, and the FDIC was forced to substantially increase assessments on the industry in a procyclical way—i.e., raising levies at a time of financial stress. The FDIC adopted several measures to restore the DIF under a Restoration Plan in 2009, including applying a one-off mid-year assessment and mandating banks to pay an estimated three years of deposit insurance premiums in advance. The costs were dwarfed, however, by the broader support provided by the U.S. authorities to the financial sector during the crisis, including $434 billion of cumulative disbursals under the Troubled Asset Relief Program. The FDIC's line of credit from the U.S. Treasury was increased from US$30 billion to US$100 billion during the crisis, and public confidence in deposit insurance remained high throughout.

FIGURE 2. The U.S. DIF in Historical Context



Data source: FDIC Annual Report 2013. Prior to 1989, data are for the Bank Insurance Fund (BIF) and exclude insured branches of foreign banks. For 1989 to 2005, data are for the BIF and the Savings Association Insurance Fund; for 2006 to 2013, figures are for the DIF. DIF reserve ratio is the amount of funds held by the DIF as a percentage of insured deposits. The effective assessment rate is the assessment rate as a percentage of the assessment base (prior to 2010 this was total domestic deposits and subsequently average consolidated total assets minus average tangible equity).

APPENDIX II. EXAMPLES OF RESOLUTION FUNDS

A. Resolution Funds in the European Union[21]

The overarching resolution framework in the European Union is set in the Bank Recovery and Resolution Directive (BRRD), which came into force on January 1, 2015. The BRRD aims to ensure that financial institutions can be resolved without taxpayers' money, and introduces rules based on which shareholders and creditors of the banks pay their share of the costs through a "bailin" mechanism.[22] If that is not sufficient for the orderly resolution of a failing institution, ***the SRF*** or, where applicable, ***national resolution funds*** can provide the resources needed to ensure that a bank can continue operating while being restructured. Resolution funds are not bail-out funds to rescue failing banks.

Objective: Facilitate the orderly resolution of a bank.

Use: The resolution funds can be used:

- to guarantee the assets or liabilities of the institution under resolution, its subsidiaries, a bridge institution, or an AMV;
- to make loans to the institution under resolution, its subsidiaries, a bridge institution, or an AMV;
- to purchase assets of the institution under resolution;
- to make contributions to a bridge institution or an AMV;
- to pay compensation to shareholders or creditors;
- to lend to resolution funds of other member states on a voluntary basis; and
- in exceptional circumstances, the BRRD also permits resolution authorities to, wholly or partially, exclude a liability from bail-in and, if this is the case, the resolution fund may be used in lieu of the write-down or conversion of the excluded liability.

Perimeter: All institutions (credit institutions and investment firms) authorized in the European Union, including branches of third-country financial institutions.

Base: Annual contributions based on the bank's size and risk-profile approach, which is considered proportionate and nondiscriminatory:

- The size is the main factor determining how much each institution will pay; the contribution of each institution will be pro rata to the amount of its liabilities, excluding own funds and insured deposits.
- The amount will then be adjusted in accordance with the risk profile of each institution (so that the total, risk-adjusted contribution of each institution may not be lower than 80 percent of the basic risk contribution or higher than 150 percent of it). The resolution authorities will determine the risk profile of institutions on the basis of the following four risk pillars, each of which contains a number of specific indicators: (1) risk exposure; (2) stability and variety of sources of funding; (3) the importance of an institution to the stability of the financial system or economy; and (4) additional risk indicators to be determined by the resolution authority.

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[21] See: European Commission documents: *http://europa.eu/rapid/press-release_MEMO-14-597_en.htm?locale=en*.

[22] The BRRD excludes insured deposits from the scope of the bail-in power, but Article 109 provides for the DIS to contribute "the amount by which deposits would have been written down" if they had absorbed losses to the same degree as creditors of the same priority (in national insolvency law).

Treatment of small institutions: All institutions, regardless of size, contribute to a resolution fund. The annual contribution of a small institution will consist of a lump-sum that depends on its size. In some cases, if a small bank has a particularly high-risk profile and poses more substantial risks to financial stability, the resolution authority may decide that it be subject to risk-adjusted contributions rather than benefit from the simplified lump-sum regime.

Target level: Each member state has to establish a national, prefunded resolution fund that reaches a level of at least 1 percent of covered deposits of all the institutions authorized in their territory by end-2024. In the Banking Union, in addition to the national resolution funds set up under the BRRD as of January 1, 2015, the SRF entered into force on January 1, 2016, with national compartments becoming pooled over time. The SRF will reach the target level of EUR 55 billion (1 percent of the covered deposits in the financial institutions of the Banking Union) by end-2023. Once this target level is reached, in principle, the banks will have to contribute only if the resources of the resolution funds are used up. The SRF is currently lacking a fiscal backstop.

U.K. bank levy: The BRRD ex ante funding requirements are met in the United Kingdom through contributions to a bank levy. The U.K. bank levy is an annual balance sheet charge based upon the chargeable equities and some of the liabilities of all U.K. banks. Exemptions include deposits covered by the U.K.'s DIS and borrowing backed by the U.K. government; some banks' taxable debts, and long-term liabilities are subject to a lower rate than short term liabilities. The U.K. resolution authority is entitled to an amount raised by the bank levy toward ex ante funding and amounts up to this level are made immediately available to the resolution authority as necessary (on the resolution authority's request) in order to support the exercise of the resolution powers. The U.K. bank levy does not explicitly link the amounts collected from the banks to the costs incurred by the government interventions.

B. The Orderly Liquidation Fund in the United States

The DFA provides the U.S. authorities with a robust framework for facilitating the resolution of most financial institutions that have the potential to cause severe systemic disruption and/or expose taxpayers to loss in the event of their failure. The DFA authorizes the FDIC, which is the resolution authority for all insured depository institutions, including systemically important ones, to borrow from the U.S. Treasury through the OLF.

The FDIC, as receiver, is bound by the statutory objectives of the FDIC's resolution authority under Title II to resolve failing financial companies that pose a significant risk to the financial stability of the United States in a manner that mitigates such risk and minimizes moral hazard.

Determining the need to provide temporary public funding

The DFA requires that in taking action under Title II, including the provision of temporary public funding, the FDIC—as receiver—must determine that such action is necessary for purposes of the financial stability of the United States and not for the purpose of preserving the financial company.

The FDIC intends to maximize the use of private sector sources of funding. Only if such sources are unavailable would the FDIC utilize the OLF provided for under Title II as a temporary back-up source of liquidity.

Mechanism for providing necessary public funding

Under the DFA, the following borrowing limits will apply to the FDIC's borrowing in connection with the liquidation of a covered financial company: (i) an amount equal to 10 percent of the total consolidated assets of the company during the first 30 days of the receivership; followed by (ii) an amount equal to 90 percent of the fair value of the total consolidated assets of the company that are available for repayment, once this has been calculated by the FDIC (DFA Section 210(n)).

- The FDIC and U.S. Treasury issued a joint rule in 2012 regarding the calculation of the maximum obligation limitation, which sets out a broad interpretation of total consolidated assets available for repayment that, for example, includes secured assets. The Treasury Secretary may not purchase any obligations, unless there is an agreement between him/her and the FDIC that provides a specific plan for repayment of such borrowing, and which demonstrates that the FDIC's income from the assets of the covered financial company and assessments on eligible financial companies will be sufficient to amortize the borrowings within a specified time period.

Conditionality for limiting moral hazard

As per the DFA, the following conditions will be applied to OLF support:

- creditors and shareholders will bear the losses of the financial company;
- management responsible for the condition of the financial company will not be retained; and
- the FDIC and other appropriate agencies will take all necessary and appropriate steps to assure that all parties, including management, directors, and third parties having responsibility for the condition of the financial company, bear losses consistent with their responsibility, including actions for damages, restitution, and recoupment of compensation and other gains that are not compatible with such responsibility.

Mechanism for activating recoveries from the industry

The DFA provides that any borrowings from the OLF—treated as administrative expenses of the FDIC as receiver or as amounts owed to the United States under the statutory creditor hierarchy—are to first be repaid from recoveries on the assets of the failed financial company, which would reduce the recoveries of junior classes of claimants in accordance with the statutory hierarchy of claims.

If recoveries are insufficient to repay funds borrowed from the OLF, the FDIC must impose assessments on any claimant that received additional sums, except for payments necessary to initiate and continue operations essential to the implementation of the receivership or any bridge financial company than what they would have received in liquidation. However, such payments seem unlikely to be made in practice by the FDIC, unless in error.

By law, taxpayers shall bear no losses from the exercise of any authority under Title II of the DFA. To the extent that recoveries are insufficient to repay borrowers from the OLF, the FDIC would impose risk-based assessments on bank holding companies with total consolidated assets equal to or greater than US$50 billion; financial companies with total consolidated assets equal to or greater than US$50 billion; and nonbank financial companies supervised by the Federal Reserve Board. Title II requires the FSOC to issue a recommendation on the calibration of the assessments and for the FDIC to issue implementing regulations in consultation with the Treasury Secretary.

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