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CHAPTER 1

Introduction to bank bailouts, bail-ins and related topics covered in the book

Bank bailouts occur when governments, central banks, or other public national or international organizations supported by governments—such as the International Monetary Fund (IMF), the European Commission, and the European Stability Mechanism (ESM)—provide assistance to banks during times of financial distress beyond the support given in normal circumstances. The assistance may be broadly distributed during financial crises or narrowly focused during other times to banks that are in significant financial distress or in danger of failing. As discussed in more detail below, these bailouts may take many different forms. Bank bail-ins differ from bailouts in that private-sector agents, such as shareholders, creditors, or other banking organizations, provide the aid. The agents providing this bail-in aid mostly agree to give support in advance, whereas bailouts are more often arranged on an ad hoc basis shortly before the support is provided.

Many of the bailouts and bail-ins, including the Troubled Asset Relief Program (TARP) prominently featured in this book, are primarily of the BHCs that own banks, rather than the banks themselves. For expositional convenience, we generally use the term “bank” to mean either a bank or a BHC, except in circumstances for which this would create confusion or misrepresent the facts. Importantly, this book is only about bailouts, bail-ins, and other resolutions of banks, and not the rescue methods of other financial institutions and markets that took place during recent financial crises, such as the Global Financial Crisis and the European Sovereign Debt Crisis.

1.1 The focus of the book

There are many different types of bank bailouts and bail-ins. For the purposes of this book, we take the broadest possible view of what
constitutes a bailout or bail-in in order to ensure that we leave no stone unturned. Bailouts may take the form of capital injections as in the TARP case, as well as liquidity provisions, guarantees of bank liabilities, government takeovers of banks or other institutions that are interconnected to banks, asset relief programs such as purchases of securities for which banks have large inventories, and public certifications of the safety of the banks. As shown below, all of these types of bank bailouts occurred in the United States (US) in response to the Global Financial Crisis of the late 2000s that started in the US and its aftermath. Many of these types of bailouts also took place in Europe and other places around the world in response to the spread of the Global Financial Crisis from the United States to other countries, as well as the European Sovereign Debt Crisis that followed.

Bank bail-ins often take the form of converting one or more different debt instruments to equity. These instruments include, but are not limited to subordinated debt, senior unsecured debt, contingent convertible bonds (CoCos), and uninsured deposits. Other forms of bail-ins include requiring equity holders to provide extra capital (e.g., double liability), whole or partial sale of a distressed or about-to-fail bank to another institution to provide capital, and capital provision by other nongovernment organizations. Bail-ins may also include good bank–bad bank separations. These can involve the formation of a bridge institution that holds the “good” or relatively safe assets of a distressed organization temporarily until sale to recover value, while “bad” or relatively risky assets are isolated or transferred to an asset management vehicle for orderly winding down.

Many of these types of bank bail-ins were implemented in the US and Europe during and after the financial crises of the late 2000s and early 2010s. Two very broad bail-in mechanisms deserve special attention. In the US, the Orderly Liquidation Authority (OLA) bail-in regime was put into effect for some large banking organizations in the US by the Dodd–Frank Act of 2010. OLA converts subordinated debt and possibly some other uninsured credits into equity in the event of distress and impending failure of one or more of these organizations. In the European Union (EU), the Bank Recovery and Resolution Directive (BRRD) and the Single Resolution Mechanism (SRM) were introduced in 2014 and formally implemented in 2016. Under the BRRD, equity holders and a number of uninsured creditors must suffer losses and contribute to the recapitalization of the bank similar to OLA. A number of other resolution tools, such as sale of business tool, are also put into place to deal with the resolution of failing institutions.\footnote{Under BRRD Article 2(1) (57), bail-in is defined as “the mechanism for effecting the exercise by a resolution authority of the write-down and conversion powers in relation to liabilities of an institution under resolution.”} After the full BRRD implementation, the
first resolution carried out was Banco Popular in June 2017, which entailed the write-down of the institution’s own funds, bail-in of subordinated debtholders, as well as the sale of the institution to Banco Santander. However, a number of bail-in cases occurred in EU prior to the full implementation of the BRRD bail-in provisions, including the resolution of two Cypriot large banks in 2013, resolution of four Greek banks in 2014, and the resolution of four small Italian banks in 2015. Please see Box 1.5 below for brief summaries of these cases.

All of these types of bailouts and bail-ins are discussed in this book, and real-world examples of them are provided. Bank bailouts and bail-ins usually, but not always, occur in response to financial crises, or are undertaken to prevent idiosyncratic events from evolving into such crises. Bailouts and bail-ins in response to financial crises are designed to temporarily stabilize the financial system and mitigate the real economic consequences of these systemic problems, including recessions that may stem from widespread bank distress and failures. In some cases, bailouts and bail-ins are also used in nonfinancial crisis times for individual distressed banks that are considered too-big-to-fail (TBTF) or too-interconnected-to-fail (TITF), or groups of banks in similar conditions that are considered too-many-to-fail (TMTF). The goals of these latter sets of bailouts and bail-ins are to prevent the emergence of financial crises and their consequences and/or to avoid the large economic losses associated with the failures of these banks.

1.1.1 Descriptions of bailouts

Prior to and during the Global Financial Crisis and European Sovereign Debt Crisis, bank bailouts were the most frequent responses by governments to financial crises, as well as to TBTF, TITF, or TMTF problems. Boxes 1.1 and 1.2 provide lists of bank bailouts during these financial crises in the US and EU, respectively. We are unable to discuss the actions taken during the global Coronavirus financial crisis, which was beginning as this book was going to press.

As shown in Box 1.1, there were many large programs to aid the banks in the US during and after the Global Financial Crisis. Many consider the Capital Purchase Program (CPP) component of TARP as “the” bank bailout in the US. Under the CPP, the US Treasury Department injected $204.9 billion of preferred equity into 709 banking organizations. Another $40 billion was distributed to two large banking organizations through the Targeted Investment Program (TIP), and $0.57 billion was disbursed to 84 institutions under the Community Development Capital Initiative.

In contrast to OLA, bail-in provisions under BRRD allow access to external financial support after writing down and conversion of shares and eligible liabilities up to a minimum of 8% of the bank’s total liabilities.
### BOX 1.1

**SELECTED BAILOUT PROGRAMS IN THE U.S. FOR BANKING ORGANIZATIONS DURING THE GLOBAL FINANCIAL CRISIS**

| Bailout Program | Time Period | Amount ($Bill) | Purpose |
|-----------------|-------------|----------------|---------|
| TARP Capital Purchase Program (CPP), the main component of the U.S. Treasury Troubled Asset Relief Program. | Oct. 28, 2008–Dec. 29, 2009 | $204.9 billion in 709 depository institutions | The largest program under Treasury’s Troubled Asset Relief Program, which provided capital to eligible depository institutions by purchasing preferred shares and in some cases also subordinated debt. |
| TARP Targeted Investment Program (TIP) Assistance to Bank of America Corporation and Citigroup, Inc. | Dec. 2008 | $40 billion in additional capital ($20 billion for each institution) | Capital injection and agreements with regulators to protect institutions against larger-than-expected losses on asset portfolios. |
| TARP Community Development Capital Initiative (CDCI) Assistance | Feb. – Sep. 2010 | $0.57 billion into 84 institutions | To help viable certified community development institutions and their underserved communities to cope with the financial crisis. |
| Term Discount Window Program (TDW) | Aug. 17, 2007-Mar. 18, 2010 | Dollar amounts of borrowing during the program period were not made publicly available. | TDW provided discount window funds with maturities beyond overnight, funds being initially made available for up to 30 days, and later extended to 90 days. |
| Federal Reserve System Term Auction Facilities (TAF) | Dec. 12, 2007–Mar. 8, 2010 | $493 billion at the height of the program, and about $3,818 billion in total over the period | Auctioned 1- and 3-month discount window loans to depository institutions to address strains in term interbank lending markets. |

*Continued*
| Bailout Program | Time Period | Amount ($Bill) | Purpose |
|-----------------|-------------|----------------|---------|
| FDIC Temporary Liquidity Guarantee Program (TLGP)  • Temporary Debt Guarantee Program (TDGP)  • Transaction Account Guarantee Program (TAGP) | Oct. 14, 2008 - Dec. 31, 2012 for TDGP and Oct. 14, 2008 - Dec. 31, 2010 for TAGP | Approximately $346 billion debt and approximately $835 billion deposits | TDGP guaranteed certain newly-issued unsecured senior debt of eligible institutions to improve liquidity in term funding markets. TAGP temporarily extended an unlimited deposit guarantee to domestic noninterest-bearing transaction accounts at participating insured depository institutions to limit further outflows of these deposits. |
| U.S. Treasury Small Business Lending Fund (SBLF) | Established by the Small Business Jobs Act of 2010. | Over $4 billion in 332 institutions | SBLF provided preferred capital injections to qualified community banks (assets < $10 billion) in order to encourage small business lending. |
| Federal Home Loan Bank (FHLB) System | In effect before, during, and after the financial crisis. | Approximately 80% of U.S. lending institutions rely on the FHLB banks | FHLB system provided loans to member banks to support mortgage lending and related community investment. |
| American International Group, Inc. (AIG) Loan and Equity Injection by US Treasury and Federal Reserve System | Sep. 16, 2008 | $182 billion peak commitment by US Treasury and Federal Reserve Bank of New York (FRBNY) | Combination of loans and stock investments in AIG. |

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Quantitative Easing (QE) Programs

| Bailout Program | Time Period | Amount ($Bill) | Purpose |
|-----------------|-------------|----------------|---------|
| Policy pursued by the Federal Reserve Board between 2008 and 2014. QE1: announced in Nov. 2008, and took place between December 2008 to June 2010. QE2 was implemented from Nov. 2010 to June 2011. Operation Twist, similar to QE2 occurred between September 2011 to December 2012 to support the sluggish housing market by buying long-term notes and stepping up purchases of MBS. QE3 was largely unanticipated, and took place between September 2012 and December 2012. Finally, QE4, occurred between January 2013 and October 2014. On June 14, 2017, FOMC announced its beginning efforts to reduce the QE holdings. | QE1: $800 billion in bank debt, MBS, and Treasuries from member banks. It bought $175 billion in MBS originated by Fannie and Freddie and the Federal Home Loan Banks and also bought $1.25 trillion MBS guaranteed by the mortgage giants and $300 billion long-term Treasuries. QE2: $600 billion of Treasury securities. Operation Twist: $400 billion in long-term Treasuries and new MBSs. QE3: $40 billion in MBS and continue Operation Twist. QE4: $85 billion in MBS and long-term Treasuries and ended Operation Twist. | In QE1, QE3, QE4, and Operation Twist, the Federal Reserve bought MBS and Treasuries. In QE2, it bought primarily Treasuries. |

Notes: Dollar amounts for the programs are sourced from GAO Report (2013), GAO-14-18 available at: https://www.gao.gov/assets/660/659004.pdf U.S. Treasury website https://www.treasury.gov/resource-center/sb-programs/Pages/Small-Business-Lending-Fund.aspx, and other sources https://www.thebalance.com/what-is-quantitative-easing-definition-and-explanation-3305881; https://www.thebalance.com/federal-reserve-s-operation-twist-3305529.
### EU Bank Bailouts Initiatives (28 Member States)

| European Commission Aid Instrument (Approved) | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | Max or Total |
|-----------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|
| 1. Recapitalizations                           | 269.9 | 110.0 | 184.0 | 37.5  | 150.8 | 29.6  | 20.3  | 18.8  | 8.5   | 829.4       |
| 2. Impaired Asset Measures                     | 4.8   | 338.5 | 78.0  | 6.3   | 157.5 | 14.7  | 3.5   | 1.0   | 0.0   | 604.3       |
| 3. Guarantees                                  | 3097.3| 87.6  | 54.8  | 179.7 | 266.8 | 37.9  | 0.4   | 156.4 | 303.3 | 3381.6      |
| 4. Other Liquidity Measures                    | 85.5  | 5.5   | 66.8  | 50.2  | 37.5  | 9.7   | 1.7   | 0.0   | 0.0   | 229.7       |
| Total                                         | 3457.5| 541.6 | 383.6 | 273.7 | 612.6 | 91.8  | 26.0  | 176.2 | 311.8 | 5045.0      |

| European Commission Aid Instrument (Used)      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | Max or Total |
|-----------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|
| 1. Recapitalizations                           | 115.2 | 90.7  | 93.5  | 35.0  | 90.8  | 20.5  | 7.6   | 11.3  | 0.0   | 464.6       |
| 2. Impaired Asset Measures                     | 9.8   | 79.5  | 54.0  | 0.0   | 35.4  | 9.5   | 0.3   | 0.3   | 0.5   | 189.2       |
| 3. Guarantees                                  | 400.4 | 835.8 | 799.8 | 589.0 | 492.1 | 352.3 | 204.5 | 167.8 | 121.9 | 1188.1      |
| 4. Other Liquidity Measures                    | 22.2  | 70.1  | 62.6  | 60.6  | 44.3  | 34.6  | 31.6  | 4.6   | 1.4   | 105.0       |
| Total                                         | 547.6 | 1076.2| 1009.9| 684.5 | 662.6 | 416.9 | 244.0 | 183.9 | 123.7 | 1946.9      |

Source: European Commission
(CDCI) of TARP. The original plan for TARP was to purchase “toxic” mortgage-backed securities (MBS), but this role later fell to Federal Reserve in its Quantitative Easing (QE) programs, as discussed below. Also shown in Box 1.1, the Federal Reserve greatly expanded its Discount Window program to provide funds with maturities beyond overnight, which we refer to as the Term Discount Window (TDW) program. The Federal Reserve also created the Term Auction Facilities (TAF) to address the potential stigma associated with borrowing from the lender of last resort through the discount window, encourage bank participation, and provide additional liquidity to the banks. The Federal Deposit Insurance Corporation (FDIC) enacted the Temporary Liquidity Guarantee Program (TLGP), which guaranteed some otherwise uninsured bank creditors through the Transaction Account Guarantee Program (TAGP) and the Debt Guarantee Program (DGP), preventing possible liquidity drains from the banks. The Federal Home Loan Bank (FHLB) system provided low-cost funding to local banks to support mortgage lending.

The Federal Reserve additionally engaged in unconventional monetary policy, including massive purchases of MBS, well beyond the $700 billion originally planned for TARP, as well as trillions of dollars more of long-term treasuries under the QE programs. QE was implemented in four phases, QE1, QE2, QE3, and QE4, with pauses in between them. The US Treasury and Federal Reserve also bailed out an insurance company, American International Group (AIG), using a combination of loans and capital injections. Although AIG is not a bank, we consider this as a type of bank bailout because the company owed significant amount of funds to a number of large banks and this helped avoid large losses for these banks.

The reader needs not agree with our characterization of all of these US government, Federal Reserve, and other agency actions as bank bailouts to gain something from this book. Whether the reader (1) thinks of TARP or CPP as “the” US bank bailout, (2) agrees that all of the actions described above are bailouts, or (3) lands somewhere in between, there should be plenty of information to inform the reader.

Bailouts in Europe were originally initiated by individual country governments or small groups of governments as large banks in their countries were affected by the financial crises. For example, in August 2008, Northern Rock Bank was bailed out by the Bank of England and was later nationalized. Shortly thereafter, Fortis, and later Dexia, both of which operated in multiple nations, were bailed out by the governments of Belgium, Luxembourg, and Netherlands. The government of Ireland announced its decision to guarantee all deposits and debts of six Irish banks and all their subsidiaries abroad. Many other banks in other EU countries were bailed out by their own governments or nationalized.
As the financial crises became aggravated, an EU-level bailout approach was considered necessary to handle the situation, as shown in Box 1.2. Between 2008 and 2016, the European Commission approved a total of about €5.0 trillion of state aid to be granted to 28 EU countries, of which about €1.9 trillion was effectively implemented.\(^3\) The total implemented measures accounted for about 13.1% of 2016 EU Gross Domestic Product (GDP), with considerable variation across countries. Four different types of bailout support were used: guarantees on bank liabilities (61% of the total support), capital injections or recapitalizations (24% of the total support), asset relief interventions (10% of the total support), and bank liquidity support (5% of the total support) (Fig. 1.1 below). In all, EU states made extensive use of various forms of government support to stabilize the banking sector. Guarantees, rather than capital injections, were the most frequently used bailout instrument.

1.1.2 Consequences of bailouts

Bailouts are often very attractive to government officials because they can usually be put together relatively quickly and do not require the advance cooperation of private-sector agents that bail-ins often do. Bailouts help avoid or mitigate short-term financial system problems, increase stability, reduce systemic risk, and reduce the likelihood and severity of recessions which are often the consequences of banks’ financial distress and failures. As discussed in later chapters, bailouts are also generally found to increase credit supply and improve economic

![FIGURE 1.1 Different government aid measures in the European Union (EU). Source: Compiled based on data from the European Commission.](http://ec.europa.eu/competition/state_aid/scoreboard/index_en.html)
conditions by increasing employment and reducing firm and consumer bankruptcies.

However, bailouts also come with social costs. They may create long-run moral hazard incentives for banks to take on excessive risks because bailouts may raise expectations of future bailouts that may weaken market discipline. Bailouts may also impose costs on taxpayers that may not be adequately compensated for the risks taken. Bailouts of some banks and not others could create distortions in bank competition as well. Bailouts may additionally distort funds allocation to the extent that they may be distributed partially according to the banks’ political and regulatory connections. Thus, bailouts have a multitude of effects, and as discussed further below, the theory does not provide a clear answer \textit{ex ante} as to whether the net effect of bailouts are considered beneficial.

The bank bailouts during the Global Financial Crisis and European Sovereign Debt Crisis were largely unpopular. Fig. 1.2, the \textit{Chicago Booth / Kellogg School Financial Trust Index Survey}, demonstrates some of this disapproval for US. It suggests that US respondents have the least trust in bailed-out banks over the period 2009-2015. Similarly, a poll by Gallup about confidence in banks for selected EU countries with bailouts, shows that confidence in these banks has been very slow to return to pre-crisis levels\textsuperscript{4}. Some major reasons behind this unpopularity are the perceived unfairness of bailing out wealthy banks and that bailouts are often quite

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{chart.png}
\caption{Financial trust survey. Source: Financial Trust Index, Wave 24 (University of Chicago Booth School of Business/Northwestern University Kellogg School of Management).}
\end{figure}

\textsuperscript{4} https://news.gallup.com/poll/175700/confidence-banks-slow-return-bailout-countries.aspx
expensive for governments and taxpayers, and sometimes led to sovereign debt problems (e.g., Spain).

1.1.3 Descriptions of bail-ins

In part as a result of the general dissatisfaction with the bailouts implemented during the Global Financial Crisis and European Sovereign Debt Crisis, governments established bail-in regimes, in which private stakeholders provide much of the capital, liquidity, guarantees, or other support. Boxes 1.3 and 1.4 show the bail-in programs in the US and the EU, respectively, after these financial crises. Currently, large banks in both

| Emergency Program | Time Period | Purpose |
|-------------------|-------------|---------|
| **Orderly Liquidation Authority (OLA)** | Became effective after the implementation of the Dodd Frank Act in 2010:Q3. | Bail-in is applied to large systemically important institutions in default or danger of default whose failure would have adverse effects on the financial system and the real economy. |

| Emergency Program | Time Period | Purpose |
|-------------------|-------------|---------|
| **The Bank Recovery and Resolution Directive (BRRD) and the Single Resolution Mechanism (SRM)** | Became mandatory on Jan. 1, 2016. | Bail-in applied to 8% of banks’ liabilities and own funds before any state aid can be used for distressed institutions. |
the US and the EU are under bail-in regimes via the OLA and the BRRD, respectively.

OLA was established by the Dodd–Frank Act of 2010. An OLA event is triggered when a very large BHC is in default or danger of default, and its failure would have serious adverse financial stability consequences. The FDIC temporarily takes over the BHC and fires its management, while the banks and other holding company subsidiaries it owns continue to operate. Existing shareholders are wiped out and subordinated debt-holders and possibly other uninsured creditors have part of their debt claims turned into equity capital, so that the BHC becomes well capitalized. The BHC is then returned to private hands with new management.

Importantly, while no OLA bail-in event has been triggered for any BHC as of this writing, this does not mean that OLA has not had an impact on BHC behavior or the stability of the financial system. To the contrary, we review some research below that suggests that the incentives created by the OLA regime have already had significant effects in terms of encouraging banks to hold higher capital ratios and respond to distress by increasing these ratios more quickly. Of course, more evidence will be revealed about the effectiveness of OLA if and when it is triggered in the future, possibly during forthcoming financial crises.

In the EU, the BRRD and the SRM became effective in January 2016. The goal was to create a common framework for bank resolution across all EU member states to deal with resolving potential failure of large financial institutions. The BRRD is the set of rules for bail-ins, while the SRM is the organization that implements these rules. Once an institution reaches the point of nonviability and is declared as “failing or likely to fail,” a bail-in tool allows regulators to conduct a fast recapitalization of a troubled institution prior to default by either writing-off or converting liabilities to equity and requiring creditors to take losses on holdings according to a certain hierarchy. Particularly, BRRD establishes the hierarchy such that the bail-in will affect equity holders first, followed by subordinated debt holders, senior unsecured debt holders, and uninsured depositors. This is intended to minimize the costs for taxpayers and real economy. There is some experience with and research on these bail-in regimes as shown by the individual EU country bail-in examples in Box 1.5. Similar to OLA, more evidence about the effectiveness of BRRD will be revealed if and when the system is more thoroughly tested during future financial crises.

As shown in Box 1.6 and discussed below, bail-in regimes may have advantages over bailout regimes in terms of better safeguarding taxpayer funds and lessening unfair competitive advantages that bailouts may provide to the recipient banks. They may also induce more prudent bank management behavior in terms of holding preemptively adequate capital to avoid bail-ins. In addition, the market participants provision of increased market discipline from bail-ins may be nimbler than
supervisory authorities exerting supervisory discipline in reducing long-term moral hazard incentives for banks to allow capital to fall too low or shift into riskier portfolios.

There are also some potential disadvantages of bail-ins. These include possibly more delays and high financial costs in implementation compared to bailouts; credibility problems that the governments may bail

| Country       | Bailout                                                                 | Period | Details                                                                 |
|---------------|-------------------------------------------------------------------------|--------|-------------------------------------------------------------------------|
| Cyprus        | Bank of Cyprus (the largest bank) and Cyprus Popular Bank (also known as Laiki Bank, the second largest bank) | 2013   | Uninsured depositors lost everything in Cyprus Popular Bank while about 48% of uninsured depositors suffered losses in Bank of Cyprus. |
| Greece        | Panellinia Bank, Cooperative Bank of Peloponnese, National Bank of Greece, and Piraeus Bank | 2015   | Panellinia Bank was resolved by transferring selected assets and liabilities to Piraeus Bank, through a tender process. The common and preferred shares remained in the entity in liquidation and were bailed-in. Cooperative Bank of Peloponnese was put in resolution, deposits were transferred to National Bank of Greece following a tender process, while all other assets and remaining liabilities, as well as shareholders, were bailed-in. Two of the four main Greek banks (National Bank of Greece and Piraeus Bank) were partially recapitalized but most bondholders and shareholders were bailed-in and did incur losses. |
| Italy         | Four small banks (Banca Marche, Banca Popolare dell’Etruria, Cassa di Risparmio di Ferrara, and Cassa di Risparmio della Provincia di Chieti) and 3 large banks (Banca Monte dei Paschi di Siena SpA (BMPS) (4th largest), Vicenza (10th largest) and Veneto Banca (11th largest)) | 2015   | Four small Italian banks (Banca Marche, Banca Popolare dell’Etruria, Cassa di Risparmio di Ferrara, and Cassa di Risparmio della Provincia di Chieti, with aggregate total assets of €47 billion) were bailed-in and all assets and liabilities were transferred to bridge banks, and senior bondholders were spared, but equity holders and subordinated debtholders incurred losses. Banca Popolare di Vicenza (10th largest) and Veneto Banca (11th largest) are two banks that were declared by the European Central Bank (ECB) as “failing or likely to fail” and their good assets were sold to Intesa Sanpaolo, Italy’s 2nd largest bank by assets for €1, and their bad assets were put into a “bad bank”. Banca Monte dei Paschi di Siena SpA (BMPS) - Italy’s 4th largest bank, faced a precautionary recapitalization with bail-in. The Italian government received approval from the EU to bail out the bank, injecting €5.4 billion (giving it a 70% stake) into the bank, while bank’s shareholders and junior creditors took losses first for an estimated €4.3 billion to minimize the bill for the government. |

Continued
out the banks instead; difficulties in handling systemic events that may include distress of many large institutions at the same time; contagion and run-off by creditors; potentially transferring risks to private-sector agents that do not understand these risks; and transmitting financial problems to other parts of the financial system which may also be fragile at the same time as banks. Last but not least, bail-ins may also lead to worse outcomes in credit supply and economic conditions for the connected borrowers of the bailed-in institutions compared to bailouts. We refer the reader to Chapter 27 for a more in-depth analysis of the benefits and costs of bailouts, bail-ins, and other approaches for dealing with the financial distress of important financial institutions.

As discussed below, some theoretical research finds similar social welfare values for bailouts and bail-ins, measured by the expected value of the recipient bank minus the expected external costs on society from its default. However, the research also shows a key advantage of bail-ins over bailouts in that bail-ins provide superior *ex ante* incentives for banks to rebuild capital preemptively during financial distress. This advantage is confirmed by empirical analysis. Bail-ins may also be

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### Selected Country-Level Bank Bail-Ins

| Country | Bailout | Period | Details |
|---------|---------|--------|---------|
| Portugal | Banco Espirito Santo (BES) and Banco Internacional do Funchal (BANIF, 7th largest bank) | 2014-2015 | Banco Espirito Santo (BES) was resolved via a bail-in. Portuguese authorities used a bridge bank strategy to put the bank’s good assets and liabilities, together with an equity injection from the Portugal resolution fund. Equity holders and subordinated debtholders were left in the legacy bank and faced severe losses. Banco Internacional do Funchal (BANIF, 7th largest bank) was resolved using the same good bank/bad bank split, where the good assets were sold to Santander with state aid help, while another entity was created to house some of the bad assets. Equity holders and subordinated bondholders were left behind in the legacy bank, incurring losses. |
| Spain | Banco Popular (6th largest bank) | 2017 | ECB declared the bank as “failing or likely to fail” and immediately after Banco Santander (Spain’s largest bank) announced that it would buy Popular for a nominal €1 and carry out a capital increase of €7 billion to cover the capital and provisions required to boost Banco Popular’s finances. The deal caused shareholders and some bondholders to be wiped out (including owners of contingent convertible debt which had their debt turned into equity). |

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I. Introductory materials
| Pros                                      | Cons                                                                 |
|-------------------------------------------|----------------------------------------------------------------------|
| Easy to put together to capitalize banks  | Increase costs to taxpayers                                         |
| Increase financial stability/reduce systemic risk in the short-term | Provide banks with an implicit bailout protection: increase the perception that banks can be too big to fail (TBTF), too-important-to-fail (TITF), or too-many-to-fail (TMTF) |
| Increase credit supply                    | Increase moral hazard incentives of banks                           |
| Can improve economic conditions           | Uncertain effects on market discipline                              |
| Increase market returns for the treated banks and their connected customers | Cause competitive distortions                                       |
| Reduce costs to taxpayers                 | Slow and expensive to reestablish market confidence in the bailed-in institution |
| Reduce moral hazard incentives of banks   | Likely increase contagious effects and cause run of creditors on affiliated entities/subsidiaries |
| Improve market discipline                 | Likely worsen credit supply for connected borrowers                 |
| Effective to resolve idiosyncratic failure | Likely worsen economic conditions for connected borrowers           |
| Reduce competitive advantages for TBTF    | Not so effective to resolve systemic failures                       |
| Improve bank capital structure incentives | Level of international cooperation required is unprecedented in some cases |
|                                            | Can lead to severe social costs for unsophisticated creditors        |
|                                            | Transfer risks to other parts of the financial system that may also be fragile |
superior to bailouts in terms of reducing banks’ moral hazard incentives to shift into riskier portfolios.

1.1.4 Descriptions of bank resolution approaches other than bailouts and bail-ins

1.1.4.1 Bankruptcy/Failure

An alternative response to financial crises and/or the distress of TBTF, TITF, or TMTF banks is what we refer to as bankruptcy/failure. This is one case in which we must distinguish between banks and BHCs. By bankruptcy/failure, we mean that the BHC declares bankruptcy and bank or banks it owns are allowed to fail.

This approach may have social advantages in terms of reduced long-term moral hazard incentives and improved market discipline. That is, reduced expectations of government interventions may encourage banks and BHCs to hold higher capital ratios to protect themselves against this outcome and may increase debtholders’ incentives to monitor and react to risks to preserve the value of their claims. As discussed below, some theoretical research supports the notion that bankruptcy/failure would result in higher capital ratios.

However, bankruptcy/failure may also pose very substantial short-term risks to the financial system and real economy. The bankruptcy of the BHC results in its stock market value being wiped out and losses imposed on all of its creditor financial institutions, which may greatly harm the financial system. These creditor institutions may, in turn, become distressed, which further weakens the financial system and may result in reduced credit to the public, also harming the real economy. The failure of the bank itself results in a cutoff of credit to all of its borrowers, which may also have a first-order effect in damaging the real economy.

These dangers to the financial system and the real economy may be exacerbated by two factors. First, these financial and economic problems may be exacerbated during a financial crisis, when many BHCs may become bankrupt and many banks may fail. Second, the judicial system for handling the bankruptcy process may have difficulties in terms of the financial expertise and speed needed to resolve complex financial institutions, particularly during a financial crisis.

The theoretical research discussed below suggests that at least under some assumptions, bankruptcy/failure is strictly dominated by bailouts and bail-ins in terms of both social welfare and the private welfare of shareholders. It is also dominated by bail-ins in terms of providing incentives for banks to recapitalize to avoid financial distress.
During the Global Financial Crisis, very few large financial institutions were allowed to fail. In the US, one large, very interconnected investment bank, Lehman Brothers, and two large, relatively unconnected thrift institutions, Washington Mutual and IndyMac Bank, failed. There is virtual consensus that the Lehman Brothers failure caused significant harm to both the financial system and the real economy, although it is difficult to determine how much of the trillions of dollars of costs to the US economy of the crisis can be attributed to the effects of this one failure.

Strategies such as allowing significant numbers of failures during financial crises or letting TBTF, TITF, or TMTF banks fail have not been widely implemented in developed economies since the Great Depression. Bernanke (1983) suggests that the widespread bank failures during the Great Depression reduced lending, which made the economy much worse. Friedman and Schwartz (1963) find that the reduction of money supply caused by these bank failures also significantly harmed the economy.

Nonetheless, widespread implementation of bankruptcy/failure is important to address because it is a future possibility. It was advocated in the Financial CHOICE Act, which passed the US House of Representatives in 2017, although it was not enacted. The Act would expand the role of bankruptcy for large banking organizations and allow failures of large banks by repealing OLA and establishing a new section of the US bankruptcy code (Chapter 14) to resolve failed complex financial institutions. Resolutions would be conducted under the auspices of a bankruptcy court and would not include regulatory intervention.

1.1.4.2 Reorganizing large, complex banking organizations using living wills

An alternative way to resolve the distress and impending failure of large, complex banking organizations is to reorganize them using living wills, or resolution plans that are designed ex ante by these organizations to restore financial strength and viability. In the US, Section 165(d) of the Dodd–Frank Act requires banking organizations with total assets of $50 billion or more to report annually to the Federal Reserve and the FDIC their plans for rapid and orderly resolution under the US Bankruptcy Code in the event of material distress or failure. The G20 countries have also requested living wills from the top 24 global banks and six insurance companies (Claessens, Herring, Schoenmaker, and Summe, 2010). For example, under the living will, the banks may develop scenarios under which certain, less important parts can be sold, or put into liquidation while the systemically important parts may then be rescued (e.g., Avgouleas, Goodhart, and Schoenmaker, 2013). Chapter 4 gives more details about these resolution tools, provides excerpts from two actual living wills posted by large US BHCs, and discusses implications of these plans for complex domestic and international organizations.
From a theoretical viewpoint, living wills are much like the bankruptcy/failure option discussed above, except that they are designed to be more orderly and preserve more of the financially viable parts of the organization. It is also noteworthy that in the US, OLA bail-in resolution method and living wills are both products of the Dodd-Frank Act, despite the fact that they appear to be substitute resolution approaches that may not be executed simultaneously on the same banking organization.

1.1.4.3 Regulatory forbearance

Another alternative response to bank financial distress, known as either “regulatory forbearance” or “capital forbearance,” involves allowing banks with very low or negative capital ratios to continue operating without significant regulatory intervention or failure. This approach is sometimes used to save on closure costs, postpone dealing with problems until another regulator is in charge, or in the hope that the problems will be reversed on their own. However, it may create more losses in the long run.

As discussed below in Part III of the book, allowing significant numbers of problematic financial institutions to go unresolved was applied widely in the 1980s to savings and loans (S&Ls) and to a lesser extent to banks at that time. Many S&Ls suffered significant interest rate risk losses that devastated their equity capital as all of their mortgages were required to be fixed-rate, while short-term interest rates rose as a result of very restrictive monetary policy. They borrowed at high rates in the short-term and were locked in low rates on their loans in the long-term and as a consequence, they lost most or all of their market values.

Regulators largely let these “zombie thrifts” with low or negative capital stay open, and Congress actually expanded their investment powers in the 1980 Depository Institutions Deregulation and Monetary Control Act (DIDMCA) and 1982 Garn-St. Germain Act. In some cases, moral hazard incentives from the lack of capital resulted in additional credit risk and other problems. The results of these problems were massive losses to taxpayers in the long run until the situation was somewhat resolved by the passage of the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) in 1989.

1.2 Other introductory materials

1.2.1 Conditions that generally bring about bailouts, bail-ins, and other resolution methods

Chapter 2 discusses the conditions that typically result in bailouts, bail-ins, and other resolutions. These conditions are usually financial crises.
and/or the distress of TBTF, TITF, or TMTF banks. We also discuss some research on what tends to bring about financial crises and bank distress. In particular, we focus on excessive lending booms and liquidity buildups as determinants of financial crises. We also review the literature on bank performance and failure to inform the reader about what brings about the distress and potential failure of TBTF, TITF, and TMTF banks.

1.2.2 Descriptions of TARP and other bank bailouts, bail-ins, and other resolutions in the US and around the world

Chapter 3 describes bailouts and bail-ins around the world, as well as alternatives such as bankruptcy/failure, living wills, regulatory forbearance, and breaking up large complex banking organizations according to size or activities. We pay particular attention to TARP and the other bailouts during the Global Financial Crisis and European Sovereign Debt Crisis. We also focus on OLA and BRRD and other bail-in programs that were implemented following these crises.

1.2.3 Theoretical background on bank bailouts, bail-ins, and other resolution approaches

Chapter 4 reviews the theories of bank bailouts, bail-ins, and other resolution approaches, including bankruptcy/failure, reorganization using living wills, and regulatory forbearance. In doing so, we discuss the advantages and disadvantages of the different resolution approaches.

Most of the chapter follows the theoretical pathways through which bailouts and bail-ins may or may not achieve their ultimate goals or outcomes of reducing systemic risk and improving the real economy. To succeed in these ultimate goals, bailouts and bail-ins must first achieve certain intermediate financial and economic outcomes by affecting the behavior of the banks, markets, and stakeholders. These intermediate outcomes may then affect the ultimate outcomes for systemic risk and the real economy. Finally, the interactions between systemic risk and the real economy must be taken into account. Thus, the effects of bailouts and bail-ins on systemic risk and the real economy are traced through the direct channels that affect the intermediate financial and economic outcomes to the effects on these ultimate outcomes and their interactions.

The chapter also reviews further theoretical research covering bailouts, bail-ins, and other resolution approaches, and comparisons among these methods.
1.3 Empirical research on TARP

Part II contains 11 chapters that review the empirical research on the determinants and effects of the TARP bailout, which took place in the US during the Global Financial Crisis. TARP was mainly designed to reduce risks to the financial system due to the crisis and to improve the real economy relative to what its condition would otherwise be in the absence of the bailout.

As indicated above, there is more research on TARP than on any bailout or bail-in program. Notably, the empirical methods employed in most of the TARP studies are quite good because TARP may be considered a rare quasi-natural experiment in the research literature that is reasonably exogenous because it was largely unexpected. Most of the studies use the difference-in-difference (DID) methods with relatively clean instrumental variables for identification.

There are several reasons for our extra emphasis on TARP. First, TARP was a key response to the biggest financial crisis in modern times. The costs to the US economy alone of the Global Financial Crisis are estimated to be in the range of $12 trillion—$22 trillion in terms of lost output and destruction of financial assets (e.g., Atkinson, Luttrell, and Rosenblum, 2013; U.S. Government Accountability Office Report, 2013; Garcia, 2015).

Second, TARP was a very large and widespread bailout. The US Treasury injected over $200 billion in preferred equity capital into over 700 banks and other depository financial institutions in a relatively short time period.

Third, TARP has by far had the most public and media attention, and it likely sparked many of the regulatory changes that followed the subprime crisis, including the Dodd–Frank Act that substantially increased bank regulation and created the OLA bail-in regime discussed above. As noted above, it is often considered to be “the” bank bailout in the press, with much less recognition of the other bailouts or even disagreement that the liquidity injections, guarantees, and the other actions discussed above are bank bailouts. Currently, there is much disagreement over the short-run and long-run effectiveness of TARP, with most of the initial advocates and opponents of the program sticking to their original positions in spite of the substantial research on TARP, discussed next.

Fourth, there is much more research on TARP than any other bank bailout or bail-in program. Researchers have studied the determinants of which banks were bailed out and repaid the funds early; the effects of TARP on the market valuations of the bailed-out banks; its impacts on bank market discipline, leverage risk, competition, credit supply, and portfolio risk, as well as the bearing of the program on bank credit customers. Importantly, there is also research conducted to determine
whether TARP was effective in achieving its two main goals of boosting the real economy and reducing systemic risk.

Part II of the book has chapters devoted to each of these topics. We acknowledge in Part II that these topics are highly interrelated, although the individual research papers do not necessarily draw out all of the implications of TARP. For example, the papers that focus on the direct impact of TARP on bank credit supply do not always discuss fully the indirect effects of this credit on bank portfolio risks, the welfare of credit customers, the real economy, and systemic risk. To the best of our abilities, we try to tie together the results of the papers on seemingly different TARP research topics. To keep things manageable and avoid repetition, we discuss each direct research result only in the chapter on that topic, leaving the indirect effects for later chapters.

1.3.1 Methodologies used in most of the TARP empirical studies

Chapter 5 discusses the main empirical methodologies employed in the empirical TARP studies to help with the understanding of the research. The chapter describes difference-in-difference (DID), instrumental variables (IV), propensity score matching (PSM), Heckman sample selection models, and placebo tests.

1.3.2 Determinants of applying for and receiving TARP funds and exiting early from the program

Chapter 6 discusses research on which banks received the TARP injections and the determinants of early exit from TARP. As discussed there, larger and healthier banks were more likely to receive the funds and to repay early. Political and regulatory influence also played important roles for some of the banks’ funds allocations. Banks that were constrained by the executive pay restrictions tended to choose to exit early.

1.3.3 Effects of TARP on recipient banks’ valuations

Chapter 7 explains the research on the effects of TARP on recipient banks’ valuations. The research appears to suggest that TARP led to different effects on bank valuations depending on the events analyzed. Bank valuations generally increased around TARP program announcements, but valuations around individual capital injections were mostly either insignificant or significantly negative, consistent with various concerns about program or bank condition. Bank valuations around repayments were unanimously positive, consistent with the recognition of repaying TARP
banks being healthy and viable, and other reasons including removal of compensation restrictions associated with the bailouts.

1.3.4 Effects of TARP on market discipline

Chapter 8 discusses research findings on the effects of TARP on market discipline by bank shareholders, creditors other than depositors, and depositors. Theoretically, bailouts such as TARP may either decrease or increase the extent to which these market participants act against banks that are taking more risks. For example, TARP could signal an increase in the likelihood of future bailouts for TARP banks, reducing market discipline. Alternatively, TARP could signal bank weakness and increase market discipline. The empirical research on discipline by the different groups of market stakeholders is mixed.

1.3.5 Effects of TARP on bank leverage risk

Chapter 9 describes research findings on the impacts of TARP on leverage risk. As discussed above, the TARP capital injections were in the form of preferred equity, which counts toward capital ratios based on Tier 1 capital. Although it is found that Tier 1 capital rose relative to assets for TARP banks, such ratios are mechanically affected by TARP, even if no further actions are taken by the TARP banks or market participants. There is no mechanical effect of TARP on standard accounting-based or market-based leverage ratios, which are based on common equity, measured using either accounting or market data.

As discussed in more detail in Chapter 9, leverage risk measured using either accounting or market data may either be decreased or increased by TARP preferred equity injections. For example, common equity may be increased because of boosted confidence in the bank, which may make it easier to raise common equity or increase the market value of existing equity. In contrast, to the extent that TARP stigmatizes the bank, the opposite effects may occur.

The relatively small amount of empirical research on this topic suggests that leverage risk is reduced. One paper finds that the common equity to assets accounting ratio is increased, implying a decrease in accounting-based leverage, and one paper finds that market leverage is also decreased.

1.3.6 Effects of TARP on bank competition

Chapter 10 discusses research findings on the competitive effects of TARP. Two empirical studies using the DID methodology suggest that TARP banks very significantly increased both their market shares and
market power relative to non-TARP banks and are able to identify some of the channels through which this occurs. A third empirical study of the competitive effects of TARP also finds competitive distortions for sound non-TARP peers that did not receive bailout funds.

The results of the last study suggest that the competitive distortions implied by the first two studies may be understated. The DID methodology of the first two studies only measures the effects of TARP on TARP banks relative to non-TARP banks, and the third study suggests that some of these non-TARP banks also achieved higher market power from TARP, so the competitive distortions created by the program may be very large. Further research to clarify this is obviously needed.

1.3.7 Effects of TARP on bank credit supply

Chapter 11 gives a summary of the research findings about the effects of the program on the credit supply of the recipient banks relative to others, generally using the DID framework. Most, but not all of the studies find increased credit supply at the extensive margin—more dollars of loans and loan commitments—for TARP banks relative to non-TARP banks. There is also evidence of improved credit supply to large firms at the intensive margin—lower interest rate spreads, larger amounts, longer maturities, less frequency of collateral, and less restrictive covenants.

Importantly, as discussed in Chapter 11, this evidence is not fully conclusive on whether TARP increased total bank credit supply because the DID framework measures only the change in credit supply of TARP banks relative to non-TARP banks. The total change in lending would include the effects of TARP on the lending by non-TARP banks, which may have also been affected by the program. As discussed in Chapter 11, non-TARP banks may have either decreased or increased their credit supplies as results of TARP.

1.3.8 Effects of TARP on recipient bank portfolio risk

Chapter 12 reviews research on the effects of TARP on the individual recipient banks’ portfolio risk. It is documented that TARP banks seem to have increased the portfolio risk of TARP banks in at least three ways—shifting into riskier assets, easing the terms of issued loans, and easing these terms relatively more for riskier borrowers. The results in Chapter 11 suggesting that lending increased also contributes to additional portfolio risk.

Similar to the arguments above about lending, this evidence on increased portfolio risk is not conclusive on the effects of TARP on the risk of the financial system. The DID framework measures only the change in the portfolio risk of TARP banks relative to non-TARP banks and excludes
the effects of TARP on the risk of non-TARP banks. It also neglects other factors that affect systemic risk, including individual banks’ size and capital or leverage risk, as well as interconnections among the banks.

1.3.9 Effects of TARP on recipient banks’ credit customers

The research on the effects of TARP on bank competition in Chapter 10 and bank credit supply in Chapter 11 suggests that TARP affected bank borrowers as well. As discussed in Chapter 13, the greater market power for TARP banks may help or hurt their credit customers, depending on whether these borrowers are primarily served using transactional versus relationship lending technologies, and which of different theories dominates. The greater credit supply of TARP banks—to the extent that it is not offset by any reduced lending of non-TARP banks—would generally benefit borrowers.

The additional research discussed in Chapter 13 is about the measurement of the net effects. Two studies of the effects of TARP on the market values of TARP banks’ relationship corporate borrowers have opposing results, but a third study finds that corporate borrowers of TARP banks increased their supplies of trade credit, while non-TARP banks did not. Thus, most of the limited evidence suggests that corporate borrowers were better off.

We are not aware of any direct evidence for unlisted small business borrowers, but some evidence summarized in Chapter 14 on the real economic effects of TARP is suggestive that small businesses may have been helped by TARP. That evidence suggests that TARP increased net job creation and net hiring establishments and decreased business and personal bankruptcies. Given that most job creation, hiring establishments, and bankruptcies are related to small businesses, it seems likely that small businesses were positively affected.

1.3.10 Effects of TARP on the real economy

Chapter 14 focuses on the research findings about the effects of TARP on the real economy. The findings of research in Chapter 11 that TARP likely increased credit supply and in Chapter 13 that corporate borrowers were likely better off are suggestive of benefits to the real economy.

However, these findings are not fully conclusive because they do not take the final step of showing that the lending increases or borrower benefits had beneficial effects on the real economy. Any increase in lending might not have resulted in increased spending (such as investment, hiring, or purchases of homes or other consumption goods) by borrowers that would boost the real economy. Instead, the borrowed
funds might have been saved or replaced other sources of funding. Determination of the effects on the real economy requires study of the real effects.

We are able to find only two such studies of real economic effects. The research study alluded to above shows significant positive real economic benefits of TARP in terms of increased net job creation, increased net hiring establishments and decreased business and personal bankruptcies in the states with more TARP recipients. The second study examines the negative impacts of bank failures on business formation and net job creation at the local level, and finds that TARP is effective in reducing these negative consequences. Importantly, the benefits in these studies may be understated because they exclude the favorable effects of TARP of potentially saving the financial system from a bigger collapse. For the complete picture, we also need to know the effects of TARP on systemic risk. If TARP saved the financial system, even only partially, then the real economic effects may be much larger than the measured state-level effects. In other words, TARP may have helped both TARP and non-TARP banks, so the differences between them may understate the total effects on the real economy.

1.3.11 Effects of TARP on systemic risk

Chapter 15 completes the research on the empirical effects of TARP by examining the research findings on the direct measurement of the effects of TARP on systemic risk. The one research paper of which we are aware on this topic applies the DID approach to the latest indicators of systemic risk contributions. The study finds that TARP banks contributed significantly less to systemic risk after receiving TARP funds than non-TARP banks. This seems to happen almost exclusively by increasing the common equity values of TARP banks through share price increases, reducing the market leverage measure, $\text{LVG}$. As indicated above, this is not a mechanical effect, given that the common equity values are distinctly different from the preferred equity that was injected by the US Treasury under TARP.

Analogous to the arguments above, the DID framework measures only reduced contributions to systemic risk of the TARP banks relative to non-TARP banks. This may understate the overall reduction in systemic risk because the non-TARP banks were almost surely made safer as well.

Importantly, reducing contributions to systemic risk undoubtedly have strong, but difficult to measure, positive effects on the real economy by keeping business and consumer confidence and bank credit higher than it otherwise would be. Historically, financial crises imperil the real economy as financing for real investments and hiring are withdrawn and recessions
often result. Thus, had TARP not reduced contributions to systemic risk, the Global Financial Crisis would likely been worse, and an even greater recession would likely have ensued.

1.4 Empirical research on bank bailouts other than TARP, bail-ins, and other resolution approaches

Part III of the book has three chapters on empirical research. One is on bank bailouts other than TARP, some of which are summarized in Box 1.1, the second discusses bail-ins, some of which are summarized in Boxes 1.3–1.5, and the third covers the other resolution approaches of bankruptcy/failure, reorganization using living wills, regulatory forbearance, and breakups of large complex financial institutions either into smaller institutions that are less systemically important or into institutions with different activities, which are summarized in Box 1.7 below.

1.4.1 Empirical research on bank bailouts other than TARP

Chapter 16 focuses on bailouts other than TARP, primarily those in the US and Europe during and after the Global Financial Crisis and European Sovereign Debt Crisis. As noted earlier and shown in Box 1.1 above, bailouts other than TARP in the US during the Global Financial Crisis include other actions by the Federal Reserve, FDIC, Treasury, and Federal Home Loan Bank (FHLB) System discussed above.

European bailouts include some country-level and several countries’ collective responses in the early times of the Global Financial Crisis. These include the bailouts of Fortis and Dexia by the Benelux nations, Belgium, the Netherlands, and Luxembourg; the bailouts of six large banks in Ireland; the bailout of Northern Rock by the UK government, and among many others.

Later on, it was agreed that the economic situation was rather dire, so the European Commission executed a coordinated response at the EU level by authorizing national governments to provide state aid and guarantees to financial institutions in several forms ranging from guarantees on bank liabilities to capital injections, and from asset relief interventions to bank liquidity support, summarized in Box 1.2 above. A number of EU countries, including Greece, Portugal, Ireland, Spain, and Cyprus, increased their government debt to significant ratios, which in turn led to the sovereign crisis that would require assistance from the other EU countries, ECB, and the IMF. More details on the crises in Europe are given in Chapter 2, and additional information on the aid measures is covered in Chapter 3.
The bailout research in nations other than US covered in Chapter 16 discusses political determinants, as well as effects of these bailouts on competition, credit supply, bank risk, real economy, and systemic risk.

While a large number of research papers are summarized in Chapter 16, the empirical research regarding non-TARP bailouts in this chapter is much less comprehensive than the empirical research on TARP discussed in the 11 chapters of Part II. The research on these other bailouts have a number of results in common with the TARP research, including that

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**BOX 1.7**

**ALTERNATIVE RESOLUTION METHODS**

| No. | First Line of Defense | Description |
|-----|-----------------------|-------------|
| 1   | Bankruptcy/Failure    | Allowing institutions to fail under a U.S. Bankruptcy Code for BHCs and/or be closed by a federal or state banking regulatory agency for commercial banks |
| 2   | Living Wills (Reorganizing Large Banking Organizations) | Resolution plans that are designed *ex ante* by the organizations to restore financial strength and viability in cases of material distress and failure. |
| 3   | Regulatory Forbearance | Allowing undercapitalized banks to continue operations without significant regulatory intervention or failure. |
| 4   | Breaking Up TBTF Banking Organizations | Breaking up large institutions into smaller non-systemically important ones that can be easier to manage when they pose “grave” systemic threats. |
| 5   | Breaking Up Types of Activities | Breaking up different types of activities of banks or repealing the Gramm-Leach-Bliley Act of 1999 and going back to Glass Steagall Act restrictions on combining commercial and investment banks. |

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I. Introductory materials
most of the bailouts appear to have increased bank lending, to have increased bank portfolio risks in response to moral hazard incentives, and to have distorted bank competition in favor of the bailed-out banks. Some of the findings also suggest stigma effects on the recipient banks, and awarding of bailouts based on political connections. The findings with regard to the two ultimate goals of bailouts of improving the real economy and reducing systemic risk are considerably less favorable than the TARP research results. For the non-TARP U.S. bailouts, there is little research on these issues and the systemic risk results are mixed. For the European bailouts, the long-run effects on the real economy and financial system may be negative according to some of the research. The increased lending in some cases was socially-unproductive negative net present value “zombie” credits. In some cases, the bank bailouts burdened the national governments and led to distressed sovereign debt.

1.4.2 Empirical research on the consequences of bail-ins

Chapter 17 summarizes the empirical research findings on bail-ins, including OLA in the US and BRRD in Europe. We also elaborate on research on contingent convertibles (Cocos), a form of bail-in that is used in some European nations. The chapter also discusses briefly other historical bail-in-like tools or episodes such as the double liability on shareholders, used by the regulators prior to the Great Depression. This caused shareholders of failing institutions to lose their initial investments and required them to come up with additional equity to compensate depositors.

We also briefly discuss one significant earlier episode of the US government dealing with a large, distressed financial institution. The case of the hedge fund Long-Term Capital Management (LTCM) in 1998 was a combination of a bailout and bail-in in which the Federal Reserve Bank of New York helped arrange financing by a group of private-sector financial institutions.

The bail-in research is significantly underdeveloped relative to the bailout literature because most of the bail-in programs, events, and instruments are relatively recent, yielding few observations to study. Nonetheless, the research strongly suggests that bail-ins appear to promote market discipline by stakeholders including depositors, bondholders, stockholders, and CDS holders. Bail-in regimes may also provide much better incentives for banks to build capital than bailouts. The research yields no strong conclusions about the efficacy of bail-ins on individual institution risk or systemic risk, and the findings are quite limited on the effects of bail-ins on the real economy.
1.4.3 Empirical research on the consequences of other resolution approaches

Chapter 18 reviews empirical research findings on several resolution approaches other than bailouts and bail-ins. These are: 1) Bankruptcy/failure (the BHC goes bankrupt and the systemically important bank fails); 2) Reorganization using living wills as directed by the Dodd-Frank Act; 3) Regulatory forbearance (keeping the banks operating with little or no capital); 4) Breakups of large complex financial organizations in small institutions; and 5) Breakups of bank activities into specialized commercial banks and investment banks.

The research reviewed in Chapter 18 does not provide significant support for any of these alternatives to bailouts and bail-ins. The findings often suggest that bankruptcy/failure, regulatory forbearance, and breaking up large institutions may more often cause more harm than good. Bankruptcy/failure may drag down other financial institutions and exacerbate systemic risk. Regulatory forbearance may exacerbate moral hazard incentives for banks to take on excess risk. Breaking up large banks into smaller institutions can create bank inefficiencies that increase financial distress and failures in future crises. Separating investment banks from commercial banks may create institutions that cannot easily survive severe liquidity crises. The existing findings are more favorable for living wills, but the research is too thin to draw strong conclusions.

1.5 First lines of defense to help avoid bailouts, bail-ins, and other resolution methods

Part IV contains eight chapters on “first lines of defense,” tools that governments use to help reduce the likelihood of banks’ financial distress that might otherwise result in bailouts, bail-ins, or other resolution methods. Chapter 19 explains the three mechanisms through which the first lines of defense may operate—the Prudential, Certification, and Subsidy Mechanisms. Chapters 20 to 26 describe the seven individual first lines of defense, capital requirements (Chapter 20), liquidity requirements (Chapter 21), stress tests (Chapter 22), regulatory activity restrictions (Chapter 23), prudential supervision (Chapter 24), deposit insurance (Chapter 25), and government ownership of banks (Chapter 26). Each of these chapters also gives details on which of the three mechanisms through which the respective first line of defense operates, how that first line is implemented in different countries, and discusses empirical research on how well it works through the mechanisms. Box 1.8 shows each of the seven first lines of defense. As discussed in these chapters, the theory often provides conflicting predictions about whether the first lines...
### BOX 1.8

#### FIRST LINES OF DEFENSE

| First Line of Defense | Description |
|-----------------------|-------------|
| 1 Capital Requirements | Capital requirements prescribe the amount of capital a bank or other financial institution has to hold as required by its financial regulator. Basel Accord minimum capital requirements are key regulatory tools for ensuring resilience of banks in many nations. |
| 2 Liquidity Requirements | Liquidity requirements were introduced as part of Basel III and are designed to ensure banks maintain an adequate level of high-quality liquid assets to meet their liquidity needs. Liquidity Coverage Ratio (LCR) is designed to improve the short-term resilience of banks against liquidity shocks, while net stable funding ratio (NSFR) requires banks to fund illiquid assets with a minimum amount of stable liabilities over a horizon of one year. |
| 3 Stress Tests | Stress tests applied to banking organizations estimate the degree to which they would be able to lend and perform other normal banking functions in simulated adverse scenarios that emulate possible future financial crises or difficult periods. Stress tests are essentially forward-looking capital requirements that require large banks to hold sufficient capital during hypothetical future adverse scenarios. |
| 4 Prudential Regulatory Activity Restrictions | Regulatory activity restrictions include limits on how much banks may engage in some activities, such as lending limits on credit exposures to a single counterparty and the 2010 Dodd-Frank Act’s Volcker Rule limits on BHC investments in private equity and hedge funds, outright bans on some activities considered to be too risky for banks such as proprietary trading under the Volcker Rule, and prohibitions on investment banking and nonfinancial activities in commercial banks. |

*Continued*
of defense are effective through the three mechanisms, but the empirical research is often clearer on their efficacy.

1.5.1 The three mechanisms through which the first lines of defense operate

As discussed in Chapter 19, the *Prudential Mechanism* prudential mechanism involves mitigating risks that are primarily under the bank’s control, such as leverage risk, credit risk, or liquidity risk. As a result, banks are less likely to experience financial distress. An example of a line of defense that may operate through the *Prudential Mechanism* is capital requirements, which directly decrease leverage risk and may also reduce other types of risk by mitigating moral hazard incentives to take on excessive risks. As discussed in Chapter 20, while some theories yield opposing predictions, the empirical research is strongly consistent with the *Prudential Mechanism* for capital requirements.

The *Certification Mechanism* assures the public about the safety of their investments in the banks. This reduces banks’ risks from runs by depositors or other liability holders that might create liquidity problems or
make it difficult for banks to raise funds. The assurances of safety may also reduce the likelihood of rapid sales by shareholders or short sales by others that might reduce the market values of the banks and/or make it difficult for them to raise equity capital during distress. To illustrate, a line of defense that may operate through the certification mechanism is stress tests—a passing grade on a stress test may raise the public’s perception of the safety of the bank, although a failing grade may have the opposite effect.

The *Subsidy Mechanism* involves providing banks with subsidies that may prop up the bank, increase its capital, and reduce its leverage risk to make it less likely to experience financial distress. One of the lines of defense that operates through the *Subsidy Mechanism* is deposit insurance, which enriches the banks by allowing them to borrow at close to the risk-free rate due to the government protection.

### 1.5.2 Using capital requirements as a first line of defense

Chapter 20 discusses capital requirements, which are employed by regulators around the world to keep banks from falling into financial distress that might otherwise result in bank bailouts, bail-ins, or other resolutions. The chapter describes the concepts and theories behind these requirements, how these requirements may or may not function through the three mechanisms for avoiding bank financial distress. Both international and US capital requirements are explained, and the empirical evidence on the mechanisms is reviewed. While the theory is equivocal about the *Prudential* and *Certification Mechanisms*, the empirical evidence overwhelmingly suggests that capital requirements are effective through these mechanisms. The *Subsidy Mechanism* is not relevant for capital requirements. The chapter also reviews the evidence on the controversial issues regarding the effects of capital requirements on bank liquidity creation and profitability, suggesting mixed results for liquidity creation, but mostly positive effects on profitability.

### 1.5.3 Using liquidity requirements as a first line of defense

Chapter 21 reviews liquidity requirements, a first line of defense to reduce liquidity risk to avoid bank distress and reduce the likelihoods of bailouts, bail-ins, or other bank resolutions. Liquidity requirements are explained, and the mechanisms through which they may operate are analyzed. The chapter also describes international and country-specific liquidity requirements, and summarizes the empirical evidence on the mechanisms. The theory is mixed as to whether liquidity requirements work through the *Prudential* and *Certification Mechanisms*. Most of the
empirical evidence supports that liquidity requirements generally operate through the *Prudential Mechanism*, albeit with some room for improvement. There is no empirical evidence to our knowledge on the *Certification Mechanism* for liquidity requirements. The *Subsidy Mechanism* is not applicable for this line of defense.

We also discuss in Chapter 21 the issue of whether it is appropriate to have liquidity requirements that guard against large aggregate liquidity shocks, when such shock may be alternatively dealt with by central banks’ lender of last resort (LOLR) function. Research discussed in Chapter 16 suggests that the expansion of the Federal Reserve’s use of LOLR was highly successful in boosting bank lending during the Global Financial Crisis.

### 1.5.4 Using stress tests as a first line of defense

Chapter 22 discusses stress tests, which have been employed by regulators since the Global Financial Crisis to make large banking organizations resistant to future crises and other problematic situations. They are essentially forward-looking capital requirements that mandate that these organizations hold sufficient capital so they would be able to continue to operate and lend during hypothetical future adverse scenarios like financial crises. As is the case for the other chapters in Part IV, the theory, practice, and empirical research results are reviewed and analyzed. Analogous to capital requirements, the theory is ambiguous about the *Prudential and Certification Mechanisms* for stress tests, but the empirical evidence suggests that stress tests are operative through both of these mechanisms. The *Subsidy Mechanism* does not apply to stress tests. The chapter also discusses the potential downsides of stress tests. They may confer TBTF status to the stress-tested banks and appear to reduce their credit supplies to large and small businesses.

### 1.5.5 Using prudential regulatory activity restrictions as a first line of defense

Chapter 23 provides information and research findings for prudential regulatory activity restrictions. These are limits or outright bans on what are considered risky bank activities, and are imposed by regulators to reduce the incidence of financial distress and reduce the likelihood that bailouts, bail-ins, or other resolutions are needed. The chapter describes several important prudential regulatory activity restrictions that have been imposed in the US and EU. Similar to the other first lines of defense that are explicitly designed to limit bank risk taking, the theory is ambiguous about whether these restrictions operate through the *Prudential and Certification Mechanisms*. The empirical evidence is also unclear.
regarding these two mechanisms. The *Subsidy Mechanism* is not applicable for prudential regulatory activity restrictions.

1.5.6 Using prudential supervision as a first line of defense

Chapter 24 gives background information and reviews the theory as well as empirical research findings regarding prudential supervision. This first line of defense aims to contain and reduce risks at both the bank and system levels, referred to as microprudential and macroprudential supervision, respectively. Prudential supervisors check if banks are in compliance with safety and soundness rules and regulations, monitor banks for excessive bank risk taking, and take actions against banks that do not follow the rules or regulations or are found to be excessively risky, preventing if possible, bailouts, bail-ins, or other resolutions. As is the case for the other policies to designed to reduce bank risk, the theory is ambiguous about whether prudential supervision makes banks safer versus riskier through the *Prudential* and *Certification Mechanisms*. However, the empirical evidence is consistent with this supervision operating through these two mechanisms. The *Subsidy Mechanism* is reversed for prudential supervision, as supervisors impose costs on and collect funds from the banks, acting more as a tax than a subsidy.

1.5.7 Using deposit insurance as a first line of defense

Chapter 25 describes deposit insurance, discusses the theory and practice of this first line of defense around the world, and evaluates how well it operates or fails to operate through the three mechanisms to prevent and/or deter financial distress and avoid resolution. Importantly, some deposit insurance schemes are explicit or *de jure*, some are implicit or *de facto*, and most countries have a combination of both. *De facto* insurance often protects depositors broadly during financial crises, and also covers banks that are TBTF, TITF, or groups of banks that are considered TMTF at other times, and could be considered a form of preemptive bailout. The theory and empirical research both suggest that deposit insurance makes banks safer through the *Certification* and *Subsidy Mechanisms*. The insurance deters runs by depositors and other liability holders (*Certification Mechanism*), and bolsters bank capital by allowing them to borrow at close to the risk-free rate because of the government protection (*Subsidy Mechanism*). The theory suggests that the moral hazard incentives engendered by deposit insurance make individual banks riskier rather than safer through the *Prudential Mechanism*. However, the continued lending and other services provided by these banks during recessions — which often coincide with financial crises — may support the real
1.6 Looking toward the future

The final part of the book, Part V, looks to the future and contains three chapters on social costs and benefits, policy implications, and open research questions.

1.6.1 Social costs and benefits

Chapter 27 weighs the net social costs and benefits of bailouts, bail-ins, other resolution methods, first lines of defense, and countercyclical policies. This chapter also reviews some additional research on TARP and countercyclical prudential and monetary policies that is relevant for drawing conclusions, but does not neatly fit the topics of the earlier chapters. Any conclusions as to whether social benefits versus social costs
dominate depend on the financial circumstances and the short-versus long-run orientation for evaluation. The chapter therefore discusses conclusions for different financial stability conditions (severe financial crises and TMTF versus other financial conditions) and effects for short-versus long-term orientations. Table 19.1 displays these conclusions for all 16 of the policies for addressing the financial distress and potential failure of financial institutions analyzed in the book under these different circumstances.

1.6.2 Implications for bank policymakers and bank managers

Chapter 28 offers logical implications of the research findings in the book for both bank policymakers and bank managers. The suggestions reflect both short- and long-term orientations and are tailored to the stability conditions of the financial system. We also tailor our suggestions for bank managers to the individual financial conditions of their banks. For a number of the policies, the implications of the research are quite clear. During difficult financial conditions of severe financial crises and TMTF circumstances, bailouts may be a better policy choice than bail-ins, at least in the short run because bail-ins risk bringing down other financial institutions at precisely the wrong time. However, under more tranquil financial conditions, bail-ins may be preferred over bailouts because of the superior incentives provided by bail-ins. Some of the other resolutions, such as bankruptcy/failure and regulatory forbearance, are not supported by the research under any circumstances. Other policies, such as prudential supervision, deposit insurance, and countercyclical prudential policy are found to be generally favored, while support for strict enforcement of other policies, such as capital requirements and stress tests, depend on financial conditions.

1.6.3 Open research questions

Chapter 29 concludes the book by identifying the important unresearched and underresearched questions that need the most attention, and suggesting how future researchers might address them. The chapter gives five general suggestions for future research to help keep the financial system and real economy safe. These include: 1) A focus on reducing the likelihood and severity of financial crises; 2) Comparing multiple policy tools in the same study; 3) Measuring the indirect effects of policies on non-treated banks; 4) Comparing long-term and short-term program outcomes; and 5) Investigating policy tools in developing as well as developed nations. The chapter also points researchers toward key unanswered questions regarding each of the policy approaches for
dealing with the financial distress of the banking industry — bailouts, bail- ins, and other resolution approaches; first lines of defense; and coun- ter-cyclical policies.

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