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The Economics of Bank Bankruptcy Law

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Preface

This book shows that a special bank bankruptcy regime is desirable for the efficient restructuring and/or liquidation of distressed banks. We first explore in detail the principal features of corporate bankruptcy law. Next, we examine specific characteristics of banks including public confidence, negative externalities of bank failures, opaqueness and the asset substitution problem, and liquidity provision. These features distinguish banks from other corporations and are largely neglected in corporate bankruptcy law. Other implications arise from the pressure of multiple regulators. Finally, we make recommendations for necessary changes in both prudential regulation and reorganization policies, which should allow regulators and banking authorities to better mitigate disruptions in the financial system and minimize the social costs of bank failures. We support our recommendations with a discussion of bank failures from the 2007–2009 financial crisis.

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Chapter 1
Introduction

The 2007–2009 financial crisis has shown that bank failures are a common threat in both developed and emerging economies. Hundreds of lenders have failed since the onset of the crisis. One lesson from the recent financial turmoil is the need for more effective systemic regulation. In addition to improvements in the current prudential and regulatory measures that should allow regulators to identify risks at an early stage and prevent them from threatening the entire financial system, there is an increased demand at the national and international level for a specific bank bankruptcy law. This special regime for dealing with troubled banks should create appropriate tools for prompt intervention in the case of bank distress that would allow for efficient reorganization and closure of these institutions in order to limit their impact and protect the safety of the system. Since the onset of the financial crisis, it has become evident that the legal frameworks for resolving troubled banks vary widely across countries. This lack of uniformity between resolution regimes (and, in many instances, the total absence of such regimes) has proved inadequate when dealing with large distressed specialized and/or universal financial institutions, particularly when they had foreign branches and subsidiaries. The immediate consequence has been a disorderly intervention by financial authorities in many countries, which required immense liquidity support for financial institutions and asset guarantees worth several trillion dollars in total.

The objective of this book is twofold. First, it provides a literature review on corporate bankruptcy law, characteristics of banks, systemic crisis, and bank bankruptcy regimes. Second, the book gives recommendations for optimal design of a bank bankruptcy law and emphasizes the differences between the existing corporate bankruptcy law and a special bank bankruptcy regime. The first step in discussing optimal bank restructuring policies and cross-country bank insolvency regimes is to focus on general corporate bankruptcy law. We show that, even though the objectives and economic principles driving the management of corporate distress are well defined and an optimal design for reorganizing and liquidating commercial companies is in place, corporate bankruptcy law largely neglects some distinctive characteristic of banks. Subsequently, we review those features that distinguish banks from other corporations. We acknowledge the special role played

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by banks in a country's economy and describe their main functions: (1) liquidity and payment services provision, (2) asset substitution, and (3) screening and monitoring of borrowers. Consequently, we explore how the distinctive features of banks create the need for a special bank resolution regime.

Public confidence is crucial for the banking sector. Once trust in the financial sector is lost, banks can be subject to runs, which affect not only an individual bank but may lead to panics and spread through the entire banking sector with repercussions for the economy at large. Negative spillover effects from a bank failure to other banks in the system spread to the real economy through, for example, credit rationing for small enterprises or disruption of the payment system, and can even create a currency crisis and sovereign defaults. The enormous social costs call for regulatory intervention. In particular, there is a strong demand for a special resolution regime that is effective in restoring public confidence and stabilizing the system.

As evidence from the 2007–2009 financial crisis and from previous banking crises has shown, the authorities have usually chosen between two actions in the absence of adequate resolution regimes for dealing with insolvent financial institutions. They have either applied a general insolvency procedure (when dealing with individual bank failures), or they have recapitalized troubled banks by using public funds (when the failing banks were considered to have a systemic impact). Both actions proved to be very costly on the one hand, and to have undesired collateral effects on the other hand.

A general insolvency regime is ill-suited to deal with bank insolvency because it is more concerned with value maximization for bank claimants, thus ignoring the systemic stability of the banking system. This can have dire consequences for the financial system at large, as Lehman Brothers' collapse in 2008 has shown.

Relying purely on public funds is not a proper panacea for failing banks either. Generous public support for failing banks can create an ex-ante moral hazard and can give banks incentives to take more risk when the financial system functions normally. When offered unconditionally (e.g., without any restrictions on management compensation schemes or replacement of existing management, or without limitations on bank activities), liquidity injections from banking authorities or asset guarantees have the perverse effect of subsidizing creditors at taxpayers' expense, with a huge cost to the government budget,[1] while eliminating market discipline and allowing illiquid (and even insolvent) banks to compete with well-capitalized and well-managed banks. We argue that the special resolution regime for banks should allow banking authorities to wind down systematically important players in an orderly way. Different resolution tools should be available to deal with both an individual bank failure and, more importantly, a systemic failure.

The 2007–2009 financial crisis has refuted the naive thinking that prudential regulation of banks may prevent bank failures and negative externalities associated

[1] See the AIG (American International Group) bailout by U.S. banking authorities in September 2008.

with them. Some of the regulatory rules implemented by banking supervisors (i.e., deposit insurance and implicit government guarantees) may even exacerbate banks' risk-taking incentives and increase the likelihood of distress. We emphasize that an optimal bank resolution regime should complement prudential regulation and supervision. More market discipline is desirable for reducing banks' incentives for excessive risk-taking. This can be realized both ex-ante by minimizing the coverage of deposit insurance and ex-post by imposing losses on uninsured creditors when resolving troubled banks.

Finally, banks' activities are often supervised by several regulators with different individual objectives. Coordination among them is difficult, particularly in times of distress and in the presence of political pressure. The coordination failure between domestic regulators can be mitigated by imposing information-sharing agreements and supervisory cooperation during the pre-insolvency phase, as well as by creating clear triggers for the bank insolvency regime and shared responsibilities during the resolution process. The resolution process nevertheless becomes more complicated when failure threatens a large cross-border bank with subsidiaries spread across different national jurisdictions. National authorities would have a strong incentive to protect domestic creditors, and various insolvency regimes may not be synchronized across countries. Hence, optimal bankruptcy law needs to consider the cross-border implications of bank failure under the current fragmented legal framework.

We show that these special features of banks are typically not taken into account in corporate bankruptcy, and we argue that this makes corporate bankruptcy law ill-suited for resolving bank bankruptcies. We also make policy recommendations with respect to the special rules needed for resolving troubled banks. Our recommendations are centered on four main themes: (1) ex-ante optimal regulation, (2) timely intervention by the regulator, (3) ex-post optimal resolution of distressed banks, and (4) the need for international coordination to create a uniform resolution regime for banks in distress.

While establishing a specific resolution regime for banks, one should first address those regulatory features that may increase the likelihood of distress and ex-ante moral hazard. One way to ensure the mitigation of these problems is the introduction of procyclical capital ratios. Banks should be required to hold more capital in good times. This limits the share of risky assets in the bank balance sheet during upturns and reduces the likelihood of distress in downturns, and the accumulated cushion allows banks to run normal activities during recessions, when access to funding is more difficult. Another way is to increase the importance of market discipline. Finally, transparent quantitative ratios should be used when estimating the risk of bank distress, and the reliance on credit-rating agencies' input should be reduced and their activities regulated.

Timely intervention by the regulator is crucial for mitigating the negative effects of bank bankruptcy. A pre-insolvency intervention can address financial weaknesses at an early stage. Intervention should consist of a set of recommendations to correct the problem identified by the regulator, a request for raising fresh capital, and restrictions of activities. To ensure the success of pre-insolvency intervention,

it is critical to set a clear trigger for this intervention in a transparent way and above the insolvency and (long-term) illiquidity. If the bank fails to take corrective actions, the regulator should impose more rigorous sanctions. Financial authorities should be able to take rapid actions, without the approval of a bankruptcy court, or the consent of shareholders or creditors.

The objectives of an ex-post resolution for distressed banks differ substantially from those of corporate bankruptcy. Whereas containing the negative externalities of bank failure is the main concern for bank bankruptcy regimes, in corporate bankruptcy the main objective is to maximize the total value of the firm. An optimal resolution mechanism should allow for effective tools to deal with failing banks. This set of tools should include (1) selling assets (entirely to a private-sector purchaser or in parts), (2) partial or total transfer of assets and liabilities to a new entity (i.e., a good bank–bad bank scheme or a bridge bank tool), (3) temporary public control, and (4) capital injection.

An international agreement for the resolution of multinational (i.e., cross-border) banks is also necessary. We acknowledge that the establishment of such an agreement is challenging and needs adequate time to be implemented due to various particularities of bank bankruptcy regimes across countries. Nevertheless, once accomplished it will assure the convergence of national insolvency regimes and it will eliminate the disputes between domestic regulators regarding national interest and sovereignty. The optimal agreement should provide equal treatment to the creditors of a multinational bank regardless of their location and should contain an effective mechanism for sharing losses, supervisory duties, and responsibilities between national authorities during the resolution process.

As set out in detail above, an effective resolution process for banks, given their distinct features, is needed. It should allow regulators and banking authorities to quickly mitigate disruptions in the financial system and to minimize the social costs associated with bank failures. The specific bank insolvency procedure should consider other objectives than maximization of value, with the most important being the containment of systemic risk, the promotion of market discipline, and the mitigation of moral hazard.

This book is organized as follows. In Chapter 2, we present the principal elements of corporate bankruptcy law. In Chapter 3 we discuss the main characteristics of banks that differentiate them from non-financial corporations, and we explain what these characteristics entail for the bankruptcy process involving banks. Chapter 4 reviews the theoretical and empirical literature on systemic crises, and Chapter 5 explores general issues related with the optimal bank restructuring policies. Chapter 6 presents the legal frameworks and resolution regimes for bank insolvency in various countries. Chapter 7 explores recommendations for the necessary changes in both prudential regulation and reorganization and closure policies and presents recommendations alongside real banking crisis cases from the 2007–2009 financial crisis. Finally, Chapter 8 contains the book's conclusions.

Chapter 2
General Issues in Bankruptcy Law

The primary aim of this book is to understand bank bankruptcy law and to make suggestions on how to improve its design. In order to be able to do this, one first needs to understand the principles behind the general bankruptcy law.[1]

We first synthesize various rationales for the existence of general bankruptcy law given in the economic literature. Bankruptcy law needs to satisfy divergent objectives. It needs to prevent coordination problems among creditors. It also needs to promote efficiency in the relationship between a debtor and creditor in the ex-ante sense, when the debtor is solvent, and in the ex-post sense, when the debtor is already insolvent.[2]

2.1 Coordination Problems

The need for bankruptcy law is most evident in the case of a corporation borrowing from several creditors. Without bankruptcy law in place, c*oordination problems* between creditors may trigger bankruptcy prematurely (Jackson 1986). Even upon a slight perceived problem with a corporation, each creditor may try to be on the safe side and sue the corporation first in order to be repaid before other creditors. Creditors would then race to collect their debt in a behavior similar to a run on a bank. Secured creditors could cash in the collateral. Short-term creditors could decide not to roll over their loans. This would force the premature liquidation of a corporation that may be worth more as a going concern.

[1] *Encyclopedia Britannica* defines bankruptcy as "Status of a debtor who has been declared by judicial process to be unable to pay his or her debts." However, the question is why such a status of bankruptcy is needed in the first place.

[2] We focus here on corporate bankruptcy law. See White (2005) for a comparison of corporate and personal bankruptcy law.

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Bankruptcy law aims to mitigate this coordination problem. A common mechanism in most bankruptcy laws is to impose a legal stay (also called an automatic stay) in which debt repayment in bankruptcy is frozen. Creditors with equal debt contracts are given equal standing in bankruptcy. Early collection of debt no longer puts them in front of other creditors. This mitigates the race to collect debts. It gives the corporation close to insolvency more breathing space and can prevent its premature liquidation (Hotchkiss et al. 2008; von Thadden et al. 2010).

Although bankruptcy aims to mitigate coordination problems due to multiple creditors, the question is why corporations borrow from multiple creditors in the first place. Financing from multiple creditors and the threat of early collection is beneficial because it exerts additional pressure on the debtor. A debtor in a good financial state, knowing that renegotiation in an adverse situation is difficult, restrains from excessive risk-taking, exerts sufficient effort, and has no incentives to strategically default on his debt repayment (Bolton and Scharfstein 1996). A multitude of creditors also have lower incentives to engage in rent-seeking activities (Bris and Welch 2005).

However, having multiple creditors may create inefficiencies. In particular, financing from multiple creditors can lead to duplicated monitoring of creditors (Winton 1995). Creditors will free ride on monitoring the debtor (Bris and Welch 2005). Difficult renegotiation between multiple creditors may induce excessive liquidation even when continuation is optimal and when default is beyond the debtor's control (Bolton and Scharfstein 1996). It is the aim of bankruptcy law to allow for the benefits and at the same time mitigate the drawbacks of having multiple creditors.

However, this is not an easy task. Bankruptcy law only partially mitigates coordination problems between creditors. Creditors have means to put themselves before other creditors despite bankruptcy law. One possibility is to engage in leapfrogging. That is, a creditor may improve seniority and quality of the collateral in renegotiation of his loan with a debtor. For example, the creditor can condition rolling over his loan on improvement of his seniority and collateral, thereby increasing his payout in bankruptcy.[3]

The argument against bankruptcy law may also be that a debtor and his creditors can renegotiate debt contracts on their own through voluntary debt restructuring, for example.[4] Debt restructuring can be beneficial for debtors *and* creditors if a corporation with a viable business has only temporary financial problems but profitable long-term prospects. However, coordination problems may hinder negotiation between a debtor and multiple creditors. A hold-out problem can occur, in

[3] The existing creditors may also try to renew their loan after the bankruptcy has already started because in most bankruptcy laws this could automatically give them a super-senior status against all remaining creditors.

[4] Institutional lenders can also coordinate on their own in order to prevent coordination problems. See Brunner and Krahnen (2008) for the case of bank pool formation in distressed lending in Germany.

which a small creditor could oppose restructuring of debt and demand overcompensation (Gertner and Scharfstein 1991). Because voluntary debt restructuring needs the unanimous consent of creditors, even a small creditor may have excessive power in the negotiation process. Bankruptcy law commonly mitigates the hold-out problem because the corporation in bankruptcy needs less than unanimous support of the creditors for restructuring. Bankruptcy proceedings are usually designed to facilitate negotiations between shareholders and creditors. An important question of optimal design of bankruptcy law is how to set a trigger for bankruptcy.

Optimal bankruptcy trigger: Bankruptcy law aims at setting the optimal timing of *when* the corporation would enter bankruptcy and, by doing so, mitigates coordination problems between creditors. Coordination problems act as countervailing forces in pushing for bankruptcy. On the one hand, running to collect debt triggers bankruptcy prematurely. On the other hand, the hold-out problem hinders voluntary negotiation between the corporation and multiple creditors, and may postpone the start of bankruptcy proceedings. In this respect, an important ingredient of bankruptcy law is who can trigger bankruptcy and under what conditions.

To mitigate the race to collect debt, creditors should have the power to trigger bankruptcy. Each creditor can then prevent early collection by other creditors (e.g., seizure of collateral by secured creditors) that could lead to premature liquidation. If the hold-out problem is an issue, a debtor should also have the power to trigger bankruptcy. In this case, a debtor could, by entering bankruptcy on his own, override a small creditor that would oppose restructuring. However, the conditions to exercise a trigger need to be precisely stated, otherwise the debtor would strategically enter bankruptcy to rid himself of his debt. Usually the firm needs to be illiquid (i.e., unable to repay debts as they fall due), but in several bankruptcy laws in addition to illiquidity the corporation needs to be insolvent as well (i.e., the value of liabilities needs to surpass the value of assets).[5]

Von Thadden et al. (2010) explicitly model the differences between debt collection and bankruptcy. Each creditor's right to liquidate assets will protect him against opportunistic behavior by the debtor. In contrast, bankruptcy law through an automatic stay limits the individual rights to liquidate assets. In this setting, giving the right to trigger bankruptcy to creditors is not always optimal because creditors would want to foreclose individually if this offers them higher value than in bankruptcy. In such a case, the debtor should have the power to trigger bankruptcy to defend against an excessive foreclosure (see also Baird 1991).

Going back to the need for bankruptcy law, cannot creditors and debtors mitigate potential problems on their own by writing detailed contracts that would appropriately contain coordination problems? The incomplete contract theory recognizes that writing complete contracts (i.e., contracts that are contingent on all future states of nature) is simply too difficult a task.[6] In this view, the design of bankruptcy law

[5] An example is the UK corporate bankruptcy law.

[6] In Bolton and Scharfstein (1990) and Hart and Moore (1994) a court cannot precisely verify which state of nature has occurred; hence, a contract contingent on the states of nature has no legal value because the court cannot determine the contingent obligations of creditors and debtors.

should mitigate inefficiencies that may arise in individual contracting between a debtor and his creditors.

Importantly, bankruptcy law should not create new inefficiencies. Debtor and creditors could adjust debt contracts and circumvent unwanted features of bankruptcy law only to a certain extent. Davydenko and Franks (2008) empirically compare different bankruptcy laws and confirm that creditors adjust debt contracts to the special features of bankruptcy law, but can only partially mitigate the suboptimal features of bankruptcy law.[7]

Now we analyze how bankruptcy law affects incentives and the behavior of a debtor and his creditors.

2.2 Ex-Ante Efficiency: Incentives in Bankruptcy Law

The main objective of bankruptcy law in the ex-ante sense is to elicit optimal incentives and behavior from debtors and their creditors before bankruptcy occurs. Bankruptcy law should refine the features of debt contracts in bankruptcy to (1) evoke optimal control of debtors by creditors, (2) give debtors incentives to undertake optimal risk and supply sufficient effort, and (3) affect optimal timing of bankruptcy.

Several theoretical contributions specify the benefits of a debt contract for efficient contracting between a debtor and his creditor. In a standard debt contract, the creditor is entitled to a fixed payment and the debtor to the residual. However, if the creditor cannot be repaid, the bankruptcy occurs with the debtor receiving zero and all the proceeds going to the creditor.

In a costly state verification framework, in which creditors can only audit debtors' returns at a cost, Gale and Hellwig (1985) and Townsend (1979) show that an efficient contract that minimizes auditing costs contains the main features of a standard debt contract. If a debtor repays the borrowed funds and the interest, the audit is not necessary and auditing costs are not incurred. However, if a debtor defaults on loan repayment, the creditor needs to audit the debtor and seize the debtor's remaining funds.

In the free cash-flow theory of Jensen (1986), debt serves to pump cash out of the firm and out of the reach of a manager that would spend it for his own perks, instead of using it to the best interest of shareholders. In the asymmetric information framework of Myers (1984), debt is less informationally sensitive than equity and therefore easier and cheaper to raise. In the incomplete contract approach, Hart and Moore (1998) show that debt contracts are optimal because they allow debtors to reinvest the most in good states of the world when this is valuable (e.g., when the

[7] Davydenko and Franks (2008) show that French banks require more collateral to respond to a creditor-unfriendly bankruptcy code. However, they show that bank recovery rates remain remarkably different across countries with different bankruptcy laws.

economy is booming) and allow creditors to liquidate the projects in bad states of the world (e.g., in a recession). In addition to the theoretical studies, a brief look at practice also shows that only a few corporations do not use debt financing at all.

Theoretical literature on optimal debt contracts has implications for the optimal design of bankruptcy law in the *ex-ante* sense; that is, at the moment when a debtor is still solvent. An efficient debt contract entitles the creditor to the debtor's remaining funds upon default on a loan repayment. Hence, in the ex-ante sense optimal bankruptcy law should be creditor-friendly: it should guarantee high payoffs to creditors in the case of bankruptcy. Only if bankruptcy is considered a sufficient threat would managers take debt repayment seriously enough and not expropriate free cash flow from the firm (Jensen 1986) or conceal the true returns of the firm (Gale and Hellwig 1985; Townsend 1979).

Creditor-friendly bankruptcy law creates appropriate incentives for debtors in the ex-ante sense. Povel (1999) argues that creditor-friendly bankruptcy law presents a sufficient threat that underperforming managers would be fired in the case of bankruptcy, thereby giving incentives to managers to provide sufficient effort. Bebchuk (2002) shows that debtors take less risk ex-ante if bankruptcy law is creditor-friendly. His intuition is twofold. First, creditor-friendly bankruptcy law provides a sufficient penalty in the case of failure, and therefore debtors are more careful not to take excessive risk. In addition, if bankruptcy law is creditor-friendly, creditors anticipate high returns in the case of bankruptcy and demand lower interest rates. Lower interest rates increase the attractiveness of safe projects and limit risk-taking. Empirical research shows that corporations take less risk under creditor-friendly bankruptcy codes.[8]

Ex-ante optimal bankruptcy law defines the division of the value of the bankrupted corporation between the debtor and its creditors that maximizes the value of the corporation before bankruptcy. In the ex-ante sense, bankruptcy rules do not serve to protect creditors because creditors can protect themselves even if bankruptcy law is debtor-friendly: they can charge higher interest rates or have a stricter lending policy. However, the design of bankruptcy law affects firm value in an indirect sense through its impact on incentives and behavior of creditors and debtors. Proper incentives lower the cost of and access to debt financing (see also Longhofer and Carlstrom 1995).[9]

[8] However, Acharya et al. (2009) provide evidence that firms more often engage in value-destroying diversifying acquisitions under creditor-friendly bankruptcy codes. Excessive conservatism spurred by creditor-friendly bankruptcy codes also hinders innovation; see also Acharya and Subramanian (2009). Berkovitch et al. (1997) show that creditor-friendly bankruptcy law may allow creditors to appropriate a debtor's rents and therefore diminish investment into firm-specific human capital.

[9] Longhofer (1997) theoretically shows that creditor-friendly bankruptcy law enhances access to credit. Empirical evidence is provided by Berkowitz and White (2004). In order to lower the cost of debt, Cornelli and Felli (1997) show that bankruptcy law needs to move valuable control rights from the insolvent debtor to creditors before the start of the bankruptcy process. La Porta et al.

The design of bankruptcy law should set the right incentives to trigger bankruptcy. Bankruptcy law that is creditor-friendly acts as a threat for a debtor not to strategically default (i.e., to declare bankruptcy to obtain debt relief).[10] However, when the firm approaches bankruptcy, the need for creditor-friendly bankruptcy law is diminished. Under creditor-friendly bankruptcy law, the manager of a failing corporation will try to postpone bankruptcy to the detriment of creditors (Berkovitch and Israel 1999). The manager can hide losses through the use of creative accounting, or simply free cash flows by spending less on R&D and on product quality. A debtor-friendly bankruptcy law will improve the timing of bankruptcy. Keeping the manager on board in case of bankruptcy will induce the manager to declare bankruptcy in a timely manner (Povel 1999).[11]

2.3 Bankruptcy Procedures and Their Ex-Post Efficiency

The objectives of bankruptcy law change substantially in the ex-post sense when the debtor has already entered bankruptcy. Bankruptcy law in the ex-post sense should maximize the value of assets of the bankrupted firm. Three objectives are important. Bankruptcy should lead to welfare-increasing asset reallocations. The costs of bankruptcy due to administrative procedures and lost reputation should be as low as possible and the incentives for the debtor and his creditors should induce optimal behavior.

Efficient bankruptcy procedures are central for the smooth operation of a market economy. Corporations usually use bankruptcy to exit the industry and to cease their operations. Bankruptcy allows competition to drive inefficient corporations out of business and incapable managers out of their jobs, which raises the average efficiency of the industry (Melitz 2003; Syverson 2004). Exit from the industry should be as cheap as possible in order to have high entry and high competition in the industry. Such reallocations lead to Schumpeterian-like "creative destruction" that may offer welfare gains and benefit consumers.

(1997) show that countries with greater creditor protection have larger and more developed credit markets; see also Djankov et al. (2007).

[10] Even though creditors may protect themselves against strategic defaults, such actions may increase the cost of debt and lower its availability. Long-term creditors may demand durable collateral and force the firm to match liabilities with assets (Hart and Moore 1994). In this sense, creditor-friendly bankruptcy law that mitigates strategic defaults allows for longer maturity of debt and less collateral.

[11] Bisin and Rampini (2006) show that bankruptcy is especially important in an environment where the main creditor cannot monitor whether the debtor takes on additional debt from other creditors. They show that debtor-friendly bankruptcy law induces the debtor to declare bankruptcy in a timely manner. Bankruptcy adds value for the creditor because the court verifies the assets and liabilities of the debtor, liquidates the assets, and repays the senior creditor (the bank) first.

Bankruptcy procedures around the world are time-consuming, costly, and inefficient. Djankov et al. (2008) analyze the efficiency of insolvency laws in 88 different countries on the basis of the hypothetical case of an insolvent hotel: on average, 48% of the hotel's value is lost. Inefficiency is exacerbated by the possibility of an extensive appeal of judicial decisions during insolvency proceedings and by the failure to continue insolvency procedures during the appeal (see also Gamboa-Cavazos and Schneider 2007).

The cost of bankruptcy and the efficiency of asset reallocation are affected by the basic procedures employed in bankruptcy. There exist three basic procedures around the world to address insolvency: foreclosure by the senior creditor, liquidation, and reorganization (Djankov et al. 2008). Under foreclosure, the ownership of the entire firm or specific assets of a bankrupted firm are transferred to the (most senior) creditor either directly or through a fast-track court procedure. Under liquidation, the corporation terminates its operations and sells off its assets, or is sold for cash as a going concern (an example is Chapter 7 in U.S. bankruptcy law). Under reorganization, the corporation restructures its operations with the aim of continuing its business (an example is Chapter 11 in U.S. bankruptcy law).

The costs of bankruptcy differ among countries and among bankruptcy procedures. The direct costs of bankruptcy consist of legal costs such as expenses for lawyers, restructuring advisers, and accountants. The indirect costs are more difficult to specify. They include opportunity costs such as lost sales, loss of employees, and loss of key suppliers due to bankruptcy. Bris et al. (2006) show that the costs of liquidations under Chapter 7 in U.S. bankruptcy law are comparable to the cost of reorganization under Chapter 11. The direct costs of liquidation amount to 8.1% of total assets, whereas the costs of reorganization amount to 9.5% of total assets.[12] Indirect costs are substantially larger. Andrade and Kaplan (1998) estimate them to be 10–20% of the total assets of the firm.

Liquidation: Liquidation is a court-supervised procedure in which the firm is closed and sold for cash either as a whole or, more frequently, piecemeal. This allows the claimants of the bankrupted firm to be compensated according to their priority. According to the absolute priority rule, the claim with the highest priority is repaid first in full, followed by repayment of the claim with the next highest priority, and so on, as long as there is enough worth to be distributed. If the absolute priority rule is strictly followed, claimants with the lowest priority, such as shareholders (and sometimes also junior creditors), are usually completely wiped out.

One aim of liquidation is to remove an incapable manager and owners, and to give somebody else a chance to more efficiently utilize the failed firm's assets. However, liquidation could lead to inefficient use of assets, especially if the entire industry is depressed. In this case, firms in the same industry will be willing to buy

[12] The estimates deviate substantially across empirical studies and range from 1.4% to 9.5% in Chapter 11 proceedings and from 6.1% to 8.1% in Chapter 7 proceedings; see Altman and Hotchkiss (2006).

assets only for low prices. Consequently, assets can be acquired by firms from a different industry, potentially leading to suboptimal utilization. This "fire-sale effect" will be strongest if the firm's assets and collateral are industry-specific (see Shleifer and Vishny 1992 for theoretical argumentation and Acharya et al. 2007; Pulvino 1998; Ramey and Shapiro 2001, for empirical evidence on the fire-sale effect).

Foreclosure: Foreclosure aims to recover debt mainly for secured creditors (in contrast to liquidation, which aims to recover claims according to the absolute-priority rule). Foreclosure proceeds in some countries entirely out of court and in others with limited court supervision. It allows for rapid transfer of collateral to secured creditors. Secured creditors are usually well specialized for the use of collateral.[13] Foreclosure may lead to premature liquidation. Foreclosure of debt secured by asset-specific collateral will trigger the seizure of collateral and subsequent piecemeal liquidation of a firm that may be worth more as a going concern.

Foreclosure when coupled with "floating charge" debt securities leads to a more efficient liquidation versus continuation decision (Djankov et al. 2008). In a "floating charge" debt security, the entire business of the firm is pledged as collateral.[14] Hence, the floating charge creditor obtains control rights over the insolvent firm. The floating charge creditor then makes a decision whether to liquidate the firm or to continue its business on his own. Coordination problems between different creditors are therefore solved.

Floating charge creditors may also try to mitigate the fire-sale effect. Armour et al. (2002) and Franks and Sussman (2005) argue that banks in the UK, where a floating charge is frequently used, have moved their operations of reorganizing distressed firms from branches into centralized units. In this way banks can better coordinate their liquidation efforts and may partially contain the fire-sale effect (Davydenko and Franks 2008).

Reorganization: Reorganization is a court-supervised bankruptcy procedure aimed at restructuring a firm and making it viable in the long run. In reorganization, the firm and its assets are not sold; hence, there is no loss of value due to the fire-sale effect.[15]

In reorganizations, existing management and shareholders are frequently given another chance to save the firm. An important reason for this is that the existing

[13] Secured creditors are also specialized for monitoring the value of the collateral before the bankruptcy commences, which decreases the cost of debt financing.

[14] A typical example of the use of the floating charge is UK bankruptcy law. A floating charge holder could, upon reneging on a loan contract, conduct a private liquidation and have full control over the appointment of a receiver. In 2003 the power of the floating charge holder was somewhat decreased (Armour et al. 2007). In fixed charge debt security, only specific assets are pledged as collateral.

[15] Acharya et al. (2007) show that practically only reorganizations and virtually no liquidations occur during industry distress. Reorganizations also last substantially longer during industry distress.

manager (and sometimes main shareholders) may be the only ones that have enough knowledge about the core business and can successfully restructure the corporation in bankruptcy (von Thadden et al. 2010). Hence, replacing the manager may not be optimal in the ex-post sense. The manager may not be the only one responsible for firm bankruptcy (e.g., in the case when a crisis in the entire industry triggers bankruptcy). The current manager will then be able to restructure the firm better than a new manager without any knowledge about the firm. Reorganizations with the current management in charge should therefore prevail when assets are firm-specific (Ayotte 2007).

Even if the manager is not replaced, his role in bankruptcy becomes more difficult than in normal times. The conflict of interest between the debtor and his creditors intensifies during bankruptcy. The key objective for the manager needs to be to maximize the value of the entire corporation. His remuneration must follow this objective and must be closely connected to the value of the entire corporation instead of to the value of shareholders. One option is to reward the manager in the case of successful restructuring.[16] This may present a major shift in the desired behavior of management: the manager may need to undertake less risk and also liquidate (part of) the firm rather than continue with the (entire) business.[17]

Incentives: Bankruptcy law should be designed in such a way as to give optimal incentives to the already insolvent debtor and his creditors. Ex-ante efficiency does not imply ex-post efficiency of bankruptcy law. Whereas creditor-friendly bankruptcy law may be considered ex-ante more efficient than debtor-friendly bankruptcy law, this is no longer necessary in the ex-post sense. When a corporation is already in bankruptcy, debtor-friendly bankruptcy law will lead to more efficient restructuring than creditor-friendly bankruptcy law.

Debtor-friendly bankruptcy law may improve optimal risk-taking by financially distressed corporations. Bebchuk (2002) argues that creditor-friendly bankruptcy law increases risk-taking once a corporation becomes financially distressed. A financially distressed firm can no longer survive if it realizes modest returns on safe projects. The only way to prevent bankruptcy is to aim for high returns stemming from risky projects.[18] Debtor-friendly bankruptcy law will then mitigate the moral hazard distortion of insolvent debtors for risky projects, or "gambling for resurrection" (see also Eberhart and Senbet 1993; and Gertner and Scharfstein 1991). In the ex-post sense it may not be optimal to strictly follow the absolute

[16] See Altman and Hotchkiss (2006, p. 224) for more details on management compensation in U.S. bankruptcy proceedings and Gilson et al. (2000) for evidence on how a manager may respond to various compensation packages.

[17] Existing managers may have a hard time adjusting to the new role. Filtering failure may occur, in which the manager may file for reorganization even though the first optimal decision would be to liquidate. In the framework of asymmetric information, White (1994) shows that filtering failure may become more pronounced if the majority of corporations in bankruptcy are ripe for liquidation.

[18] To prevent bankruptcy and repay debt, the manager can also sell off profitable parts of a business even though fire sales at depressed prices may result in huge losses.

priority rule, in which first creditors are fully repaid and shareholders receive the rest only at the end.

Acharya et al. (2008) point to the consequence of the tradeoff between debtor-friendly versus creditor-friendly bankruptcy law. Debtor-friendly bankruptcy law leads to excessive continuation, whereas creditor-friendly bankruptcy law leads to excessive liquidation. Firms anticipate the type of inefficiencies (of liquidation/continuation) associated with creditor-friendly or debtor-friendly bankruptcy law and respond by changing their leverage. In particular, if the liquidation value of a firm is high, the costs stemming from excessive liquidation are rather small.[19] Consequently, firms operating under creditor-friendly bankruptcy law have similar leverage to the ones under debtor-friendly bankruptcy law. However, if the liquidation value of a firm is small, the costs stemming from excessive liquidation are high. Firms respond by decreasing their leverage, especially in economies with creditor-friendly bankruptcy laws. Acharya et al. (2004) show that the difference in leverage of firms under creditor-friendly and debtor-friendly bankruptcy law increases with the liquidation value of the firm.

An additional question is whether the absolute priority rule between creditors with different seniority should be respected. Winton (1995) argues that giving seniority to one creditor lowers the duplication cost of monitoring by several creditors. However, Cornelli and Felli (1997) show that sometimes a carefully designed deviation from the absolute priority rule induces creditors to increase monitoring of the firm in bankruptcy. Hackbarth et al. (2007) argue that renegotiation of bank debt lowers bank debt capacity. They show that bank debt is higher under strict bankruptcy laws that abide by the absolute priority rule than under weak bankruptcy laws. Baird and Bernstein (2006) stress that deviation from the absolute priority rule mainly occurs due to the uncertainty of the asset value of the failed corporation.

Berkovitch and Israel (1999) argue that bankruptcy law should constrain the debtor's strategic use of private information and at the same time allow creditors to use their private information obtained in the lending process. In their view, a developed bank-oriented economy like the German economy demands a creditor-friendly bankruptcy law, whereas a market-based economy such as the U.S. economy requires simultaneous creditor- and debtor-friendly chapters.[20]

Ayotte and Yun (2009) show that debtor-friendly bankruptcy law requires strong judicial expertise. High expertise and sufficient training allows judges to identify viable firms and liquidate others. Debtor-friendly bankruptcy law then minimizes excessive liquidation of creditor-friendly bankruptcy law. However, in the absence of judicial expertise and in an environment with weak enforcement rights, creditor-friendly bankruptcy law works better. Their prediction is that countries with

[19] Two proxies for liquidation value are used: (i) firm's assets specificity, and (ii) the ratio of intangible assets on the balance sheet.

[20] In an underdeveloped system, creditor- and debtor-friendly chapters of bankruptcy law should coexist as well, but debtors should be given even more power in bankruptcy.

Table 2.1 Objectives of corporate bankruptcy law

Mitigate coordination problems
1. Race to collect debt
1.1 Pressure corporations to exert effort
1.2 Pressure corporations to take moderate risks
1.3 Pressure corporations not to default strategically
2. Holdout problem
3. Facilitate renegotiation of debt (automatic stay, structured renegotiation)
4. Optimal trigger for bankruptcy
4.1 Creditors could trigger bankruptcy to protect themselves
4.2 Debtor could also trigger bankruptcy for his own protection in the case of insolvency and/or illiquidity of the firm
Ex-ante optimal: Maximize the value of a healthy firm
1 Creditor-friendly bankruptcy law (honoring absolute priority rule)
1.1 Prevents strategic defaults
1.2 Optimal debtor effort
1.3 Optimal debtor risk-taking
1.4 Optimal control of creditors
1.5 Incapable manager is fired
Ex-post optimal: Minimize the costs of bankruptcy and allow optimal asset utilization
1 Debtor-friendly bankruptcy law (deviation from absolute priority rule)
1.1 Improves optimal timing of bankruptcy
1.2 Prevents gambling for resurrection
1.3 Prevents concealing bad information
1.4 Prevents fire sales
1.5 Current manager has firm-specific knowledge
1.6 However, incapable manager/owners continue to be in charge

well-developed judicial systems and strong investor protection should employ debtor-friendly bankruptcy laws, whereas countries with weak judicial systems and weak investor protection should design creditor-friendly bankruptcy laws.[21] Djankov et al. (2008) show that complicated bankruptcy procedures such as reorganization perform best in high-income countries, whereas liquidation and foreclosure work best in higher middle-income and lower middle-income countries.

Table 2.1 summarizes the main objectives of corporate bankruptcy law. The prime objective of bankruptcy law is to limit coordination problems between multiple creditors. Bankruptcy law prescribes a structured manner of debt repayment and its renegotiation, with the aim of mitigating the race by creditors to collect their debt and holdout problems. The main objective of bankruptcy law from the ex-ante point of view is to maximize the value of a solvent firm. A creditor-friendly bankruptcy law improves the incentives of debtors: it prevents strategic default, excessive risk-taking, and insufficient effort of the debtor. In addition, creditors

[21] Claessens and Klapper (2005) provide evidence that creditor rights and judicial efficiencies act as substitutes. Higher creditor rights (except for an automatic stay) increase the number of bankruptcy procedures.

monitor the debtor more intensely. This lowers the cost and increases the availability of debt financing. However, from the ex-post point of view, the debtor-friendly bankruptcy law may be more efficient. Bankruptcy law in the ex-post sense should minimize the cost of bankruptcy and at the same time lead to optimal asset utilization. Debtor-friendly bankruptcy law induces prompt initiation of bankruptcy procedures because debtors have fewer incentives to conceal bad information or to engage in gamble-for-resurrection type of behavior. Debtors also exert higher effort in restructuring and take appropriate levels of risk in bankruptcy. The existing manager may also be the only one capable of successfully restructuring the firm due to his firm-specific knowledge. Successful restructuring can also prevent the loss of value due to the fire-sale effect. However, debtor-friendly bankruptcy law may allow an inefficient manager and owners to keep control over the firm.

2.4 Corporate Bankruptcy Law: Key Features and Implementation

In short, bankruptcy law aims to address coordination problems of creditors that would trigger liquidation of a corporation worth more as a going concern. Bankruptcy law also has several other, sometimes conflicting, objectives. In the ex-ante sense (i.e., before bankruptcy), bankruptcy law aims to give proper incentives to creditors, firms, and managers. Creditor-friendly bankruptcy law seems to satisfy this objective. In the ex-post sense (i.e., after bankruptcy or at the point of bankruptcy), however, debtor-friendly bankruptcy law can lead to more efficient restructuring and utilization of assets of failing firms.

U.S. corporate bankruptcy law contains two chapters: Chapter 7 allows for liquidation and Chapter 11 for reorganization. Although still characterized as debtor-friendly, in recent decades U.S. corporate bankruptcy law has moved towards becoming more creditor-friendly. Creditors use debtor-in-possession (DIP) financing to gain control in reorganizations under Chapter 11. Asset sales are also becoming a more common method even under reorganization under Chapter 11 (see Appendix for further details). Bankruptcy law aims to contain systemic risk through netting in the case of bank contracts and closeout netting in the case of derivative contracts (see Sections 5.3 and 5.4).

In the Appendix we also propose some changes to U.S. corporate bankruptcy law. First, in times of economic crisis, the terms of DIP financing may be made more generous to spur reorganizations and prevent fire sales. Second, the shift of control to creditors should be enhanced, especially for large corporations. Third, systemic consequences of netting and closeout netting need to be reevaluated and appropriately mediated either by removing it completely or through imposing additional regulatory scrutiny. A firm may be given an option between (1) closeout without netting and (2) closeout and netting but tougher regulatory standards.

We have built a framework for why bankruptcy law is needed in general. The still unanswered question is why banks are special and whether this creates the need for special bank bankruptcy legislation.

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Chapter 3
Are Banks Special? Implications for Bank Bankruptcy Law

Next, we will analyze what makes banks special, and what this entails for the bankruptcy process involving banks. We review the main characteristics of bank bankruptcy law and describe the methods for restructuring of a failing bank. Subsequently, we show that these characteristics are typically not taken into account in corporate bankruptcy law. Corporate bankruptcy law should therefore be adapted by special amendments, or a completely new bank bankruptcy law could be used.[1]

3.1 What Is Different About Banks?

Banks are considered special or different from other corporations in several ways, making corporate bankruptcy law ill-suited for resolving bank bankruptcies. First, trust in the financial sector is crucial. Banks can be subject to runs and other destabilizing processes that make timely intervention crucial because unraveling is imminent. Second, a bank failure imposes substantial externalities for the economy at large. That is, the social cost of a bank failure exceeds the private cost. Corporate bankruptcy law largely neglects the social cost of bankruptcy. Third, banks are subject to prudential regulation including deposit insurance, which may exacerbate incentive problems and induce banks to take on excessive risk. Fourth, banks also rely on implicit government guarantees, which interfere with the effectiveness of bankruptcy procedures in an ex-post sense (i.e., for failing banks). Fifth, banks' various activities are often supervised by several regulatory agencies. Conflicts between the objectives and requirements of these authorities might make coordination among them very difficult. Likewise, large, cross-border banks are subject to

[1] Ayotte and Skeel (2010) argue that, even though bankruptcy law can effectively be used in the failure of a financial institution, special amendments are needed for systemically important firms. We argue that special amendments may not be enough and special bank bankruptcy legislation is more suitable for addressing the special features of bank failures.

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the scrutiny of several different regulators from several countries. The coordination problems between the regulators and the discrepancies in bank bankruptcy regimes across countries lead to inefficient procedures for bank bankruptcy.

3.1.1 Liquidity Provision and Bank Runs

One of the features that distinguish banks from other corporations is that banks act as liquidity providers. Banks provide liquidity (i.e., give access to liquid funds) to their creditors in the form of liquid demand deposits and also to their borrowers in the form of loan commitments (Diamond and Dybvig 1983; Kashyap et al. 2002). Bank bankruptcy law needs to consider the liquidity provision function of a bank and view deposits not only as liabilities but also as an additional value of the bank. Rapid dismantling of the bank's liability side (via runs) or freezing bank debt (in a bankruptcy process) therefore destroys value. Bank bankruptcy law therefore cannot freeze (i.e., impose an automatic stay on) bank liabilities without seriously hindering the liquidity provision function of banks. Banks are also interlinked. Freezing liabilities could create insurmountable problems for other banks and induce systemic risk. The regulators therefore frequently guarantee deposits of the bank in bankruptcy or try to rapidly sell the deposit book to another stable bank.

The liquidity provision adds value to banks' clients, but it also makes banks intrinsically unstable institutions. The coordination problem of being the first creditor to collect is especially acute among banks and is rooted in the withdrawal-upon-demand and sequential-service-constraint features of the deposit contract. The fear is that excessive withdrawals would force a bank to liquidate assets and thereby incur substantial liquidation costs that undermine the bank's ability to honor its remaining deposits. Thus, bank runs might be triggered by pure panics (i.e., coordination problems among depositors). The bank's demise could then become a self-fulfilling prophecy: once a depositor thinks that others will withdraw, he will withdraw too. This is optimal given the presence of the sequential service constraint.[2] On the other hand, excessive withdrawals could be triggered by concerns about the bank's financial soundness. Asymmetric information among depositors about how poor the bank's fundamentals are precipitates the crisis.[3] This mechanism of bank runs also works via the wholesale side of the banks. Wholesale clients will withdraw their balances (and business) in the case of perceived problems. This will effectively unravel the bank. Huang and Ratnovski (2009)

[2] See Bryant (1980), Diamond and Dybvig (1983), Rochet and Vives (2005). Goldstein and Pauzner (2005) evaluate the probability of a bank run based on the coordination problem between depositors and economic fundamentals. Bhattacharya et al. (1998) provide a comprehensive overview of the rationales for regulation in the context of the fragility of financial intermediaries.

[3] See Calomiris and Kahn (1991), Chari and Jagannathan (1988), and Jacklin and Battacharya (1988).

show how the actions of wholesale financiers have exacerbated liquidity risks during the recent financial crisis.

Coordination problems also occur between creditors of non-financial corporations (i.e., creditors race to collect their debt; see Section 2.1). However, coordination problems between bank depositors are much more severe due to a greater maturity mismatch between bank assets and liabilities, due to the withdrawal-upon-demand and sequential-service-constraint feature of demand deposits, and due to the importance of confidence for the financial system at large.

Bank bankruptcy law is therefore stretched by conflicting forces. Like any corporation, banks are subject to acute coordination problems (i.e., depositors run on the bank to withdraw their deposits). Corporate bankruptcy law solves coordination problems by using an automatic stay and freezing debt contracts until bankruptcy is resolved. Unlike corporations, bank bankruptcy law can only impose an automatic stay on bank creditors at a substantial cost because that would destroy one of the key functions of a bank: its liquidity provision.

Fierce coordination problems between bank creditors also hinder effective ad hoc solutions to bank bankruptcy. Having no bank bankruptcy law in place may prove to be very costly. Ad hoc solutions take time. A certain level of political support is needed. The regulatory bodies also need time to adapt to the changes and acquire additional restructuring skills.[4] In the case of a bank run, however, timely intervention is crucial: delayed intervention creates huge costs.

3.1.2 Systemic Impact and Regulatory Failure

Runs on individual banks create problems, but systemic crises are of real concern. Uncertainty about the nature of a run may lead to contagion of otherwise stable banks, which triggers a system-wide collapse or panic. If one bank goes bankrupt, deposit holders may interpret this event as a signal for the existence of solvency problems in the entire financial sector and react by massive withdrawal of funds.[5] The social cost of bank then are considerable. Bank failures can produce a sharp monetary contraction and induce a recession.[6] Bank failures reduce the supply of bank loans, which is especially detrimental to small- and medium-sized business

[4] Swagel (2009) discusses political constraints in passing the Troubled Assets Relief Program through the U.S. Congress.

[5] See Allen and Gale (2000), Chari and Jagannathan (1988), Dasgupta (2004), Diamond and Rajan (2005), Freixas and Parigi (1998), and Freixas et al. (2000) for theoretical models of financial contagion. Empirical evidence for contagious effects of banks failures is provided by Iyer and Puri (2010), Kelly and O'Grada (2000), and Saunders and Wilson (1996). Not only coordination problems but also a combination of competition and information problems among banks make the banking industry highly susceptible to credit booms and credit crunches, exacerbating systemic risk; see Dell'Ariccia and Marquez (2006) and Gorton and He (2008).

[6] See Bernanke (1983) for an argument that banking crises deepened the severity of the Great Depression.

financing (Hubbard et al. 2002). The total collapse of a banking system might even cause a breakdown of the payment system and impair trade. Empirical research confirms that the costs of bank crises are high. In cross-country studies, Hoggarth et al. (2002) assess the costs at 15–20% of annual GDP.[7]

The broad economic importance of bank stability and the considerable costs of bank instability to the economy at large help justify the existence of extensive banking regulation. Deposit insurance and regulatory intervention (bailout and closure policy) are standard regulatory instruments employed by central banks to avoid systemic banking crises.

Deposit insurance provides a guarantee to depositors that their claims will be repaid (generally up to a maximum) and, by doing so, it aims to prevent depositors from running on banks in times of perceived financial weakness. However, deposit insurance creates problems too, and does not completely eliminate the instability in banking. Deposit insurance may decrease stability by encouraging bank risk-taking, due to the decrease in market discipline from depositors (see Section 3.1.4). Bank runs can also occur from the wholesale side, from uninsured depositors, or from short-term creditors that terminate their rollover contracts or demand additional collateral.[8] In addition, borrowers could induce severe strain by draining their credit lines when a financial crisis emerges.[9]

Stability of the banking system is also provided by the existence of the *lender-of-last-resort* facility from the central bank. The increasing number of banking crises around the world in the last three decades has fueled a growing body of literature that tries to evaluate regulators' choices between rescuing and closing troubled banks. The classical argument by Bagehot (1873) regarding the idea of central bank intervention as a lender of last resort is that the central bank should lend at a penalty

[7] Reinhart and Rogoff (2010b) find that in the decade after the crisis GDP growth is significantly lower and unemployment higher compared to the decade before the crisis. Bordo et al. (2001) find that during the last 120 years the frequency of crises has increased and crisis probability has more than doubled since 1973. Lindgren et al. (1996) identify 133 countries facing banking problems between 1980 and 1996. Gorton (1988) analyzes panics during the U.S. National Banking Era from 1865 to 1914. Honohan and Laeven (2005) document banking crises throughout the world since 1970. Calomiris and Manson (2003), Caprio and Klingebiel (1996), Dell'Ariccia et al. (2008), Honohan and Klingebiel (2003), Lindgren et al. (1999), and Ongena et al. (2003), document the costs of these banking problems. Comprehensive surveys on banking crises include Allen and Gale (2007), Bhattacharya and Thakor (1993), Freixas and Rochet (1997), and Gorton and Winton (2003).

[8] In March 2008, Bear Stearns essentially experienced a bank run from hedge funds, which pulled out their liquid assets. In September 2008, a "silent bank run" occurred on Washington Mutual, in which several large depositors depleted their accounts to a level below the federal insured level of $100,000. In September 2008, several counterparties demanded additional collateral from AIG on its credit default swaps. Such requests would have brought down AIG and the public intervention was necessary (Brunnermeier, 2009).

[9] Ivashyna and Scharfstein (2008) provide evidence that borrowers drained their loan commitments in the current financial crisis. Borrowers may have done this because they expected banks not to be able to continue lending.

rate to illiquid but solvent banks, against good collateral. However, the question is how the central bank would know which bank is illiquid but not insolvent. Is the central bank better at determining the illiquidity and insolvency of a distressed bank? The evidence shows that regulators lend to both illiquid and insolvent banks.[10] The regulators are often reluctant to close an insolvent bank. The reason is threefold: (1) it is difficult to distinguish between illiquid and insolvent financial institutions, (2) it is easier to reduce the risk of contagion in the banking system by rescuing troubled banks than by liquidating them and providing additional measures to limit the panic,[11] and (3) forbearance occurs due to reputation reasons, since regulators do not want to admit their mistake in the prudential supervision of the currently failed bank (Boot and Thakor 1993).

Goodfriend and King (1988) criticize Bagehot's view of the role given to the lender of last resort. They argue that a solvent bank will be able to find liquidity in an efficient interbank and money market. By using a too-big-to-fail approach, Freixas (1999) argues that banking authorities should bail out an insolvent bank, whereas solvent banks are assumed to be bailed out by the interbank market. Rochet and Vives (2005) support Bagehot's doctrine by showing that even sophisticated interbank markets will not provide liquidity due to a potential coordination failure between investors that might have different opinions about bank solvency. Goodhart and Huang (2003) show that the central bank should act as a lender of last resort to avoid contagion during a banking crisis. Ratnovski (2009) argues that lender of last resort policy should incorporate information on bank capital to reach a more efficient solution.

Acharya and Yorulmazer (2008) argue that, when the number of bank failures is low, the optimal ex-post policy is not to intervene but, when this number is sufficiently large, the regulator should randomly choose which banks to assist. Thus, the crucial problem is to design an optimal restructuring policy that addresses individual bank failures and systemic bank failures in different ways.

As stated before, due to systemic reasons, regulators choose to prevent banks from failing. When a bank becomes "too big to fail," "too complex to fail," or "too interconnected to fail" (Freixas et al. 2000; Herring 2002; Mailath and Mester 1994; Rochet and Tirole 1996), the regulator may not be able to close the bank without damaging systemic stability and without adverse consequences for the real economy. Brown and Dinç (2011), Kasa and Spiegel (1999), and Santomero and Hoffman (1998) show that the regulators forbear more if the entire banking system is performing badly. In such situations, the regulators will simply be forced to bail out banks to prevent systemic crisis. Mitchell (2001) argues that if too many banks in the banking system are financially troubled (i.e., the too-many-to-fail effect), the social costs of closing all of them may exceed the costs of rescuing them.

[10] See Goodhart and Shoenmaker (1995) for a survey of resolution policies during 104 bank failures.

[11] Upon the Lehman Brothers bankruptcy in 2008, the Federal Reserve had to lend aggressively to all the banks in the system in order to avoid the collapse of the financial markets.

The huge systemic impact of bank insolvency and consequent negative externality for the economy at large are much more pronounced in bank failure than in failure of a non-financial firm. One of the main objectives of bank bankruptcy law should therefore be to secure the systemic stability of the banking system at large in addition to value maximization for bank claimants.

3.1.3 Ex-Ante Moral Hazard: Risk Shifting

The systemic importance of a banking system creates a soft-budget-constraint problem (Dewatripont and Maskin 1995). In particular, banks anticipate that their failure is too costly for the economy as a whole and that the regulator or the government will have to bail them out. Negative externalities give substantial bargaining power to the failing banks. This creates a moral hazard problem in an ex-ante sense: A stable bank no longer fears bankruptcy due to implicit government guarantees and explicit guarantees (e.g., deposit insurance). The bank undertakes excessive risk to obtain high profits, knowing that the potential loss will be absorbed by the deposit insurer or the government.[12]

Calomiris (2007) argues that the expanded government safety net, including deposit insurance and bailout guarantees, which is designed to promote stability of the banking system, has become the primary source of instability in banking. For example, deposit insurance creates severe distortions in competition between banks and in their risk-taking incentives. In particular, deposit insurance relieves the bank manager from the pressure of potential bank runs (Calomiris and Kahn 1991) because depositors no longer care about the risk of the bank, knowing that they are insured.[13] Thus, deposit insurance diminishes the extent of market discipline (i.e., depositors no longer discipline banks by withdrawing deposits and by requiring higher interest rates), particularly during a banking crisis (Martinez Peria and Schmuckler 2001). Consequently, a bank manager can take on excessive risk and obtain excessive rents.

However, eliminating deposit insurance completely may not be desirable. Whereas corporate bankruptcy shows that coordination problems is beneficial in establishing correct ex-ante incentives (see Section 2.1.1), the benefits of bank runs may be more limited (although still important; see the third pillar of Basel II, which

[12] This soft-budget-constraint problem is not limited to banks. Large corporations may also become too big to fail and the government may be forced to rescue them. However, interconnections between banks and systemic concerns thus induced create greater negative externalities for the economy at large.

[13] Banks may confront the opaqueness and risk shifting problem themselves by funding through deposits withdrawable on demand. The threat of a bank run may put discipline on a bank's management not to engage in excessive risk (Calomiris and Kahn 1991; Flannery 1994). Insuring deposits and/or providing implicit guarantees then destroy the benefit of the pressure of demand deposits.

stresses the importance of market pressure). Banks attract finance from many small and uninformed depositors with limited monitoring abilities (Diamond 1984) unlike non-financial corporations, where the number of creditors is usually smaller and one creditor (e.g., a bank) frequently has a special role in monitoring (Bolton and Scharfstein 1996; Winton 1995). The problem of who monitors the monitor (i.e., who monitors the bank) becomes then more acute than who monitors the non-financial corporation. Carefully designed deposit insurance that leaves out informed large depositors may help impose sufficient pressure on banks to behave safely (Gropp and Vesala 2004). However, it is usually the regulator that bears a large part of the burden of bank monitoring. The correct implementation of bank bankruptcy procedures lowers the need for intrusive prudential bank regulation for healthy banks. In particular, if the bankruptcy procedure contained systemic risk, deposit insurance could be limited. This limited implementation of deposit insurance may mitigate moral hazard at the bank and depositor levels. More specifically, higher market pressure on banks could be preserved: on the one hand, the threat of a bank run could discipline the bank manager, lowering the regulatory burden. On the other hand, partial insurance for the bank's depositors will increase market discipline and will avoid a situation in which depositors are attracted by banks offering the highest interest on their deposits. Depositors will make their own risk assessment and demand higher return for their money if the bank is perceived to be of low quality or has riskier investments.

Deposit insurance should also be designed in a way to contain bank individual risk *and* systemic risk in the banking system. Acharya et al. (2010d) and Pennacchi (2006) argue that charging an actuarially fair deposit insurance premium will induce banks to herd and intentionally take on systemic risk. Acharya et al. (2010d) offer two policy proposals. First, large banks should pay a higher premium per dollar of insured deposit than small banks. Second, the deposit insurance premium should increase with the systemic risk of a bank (measured as the excessive level of correlation of the bank's investments).

The standardization of deposit insurance protection is more critical in the presence of cross-border banks. Currently there is no cross-country agreement regarding how the responsibilities of repaying insured depositors should be shared in the case of failures of foreign subsidiaries. As evidence from the failure of Iceland's Landsbanki Dutch subsidiary (Icesave) in 2008 and subsequent discussions between Icelandic and Dutch governments show, the answer to the following questions is not trivial under political and legal constraints: should the deposit insurance in the host country be responsible for repaying depositors or the deposit insurance in the foreign country? Should they share the burden (but, in this case, what should each country's share be conditioned on)?

One possible solution to this problem might be the creation of an international deposit insurer funded only by the cross-border banks. Each bank should contribute to the domestic deposit insurance system (as it happens currently). On top of this, once a bank receives international exposure and sets up a subsidiary in a foreign country, two requirements should be fulfilled: (1) the subsidiary starts to contribute to the host country's deposit insurance fund, and (2) the parent bank starts to contribute

to the international deposit insurance fund. At a later stage, when the subsidiary faces distress, the international deposit insurer (together with the host country deposit insurer) should repay the subsidiary's insured depositors (if necessary).

Regulators have tried to contain excessive bank risk-taking by using prudential regulation such as the Basel I, Basel II, and more recently Basel III regulatory frameworks. The main pillar in these proposals is capital regulation. The goal of capital regulation is to induce banks to internalize risk-taking by putting bank capital at risk (Kashyap et al. 2008; VanHoose 2007). However, as the current financial crisis shows, capital requirements are not enough (Acharya and Richardson 2009; Brunnermeier et al. 2009; Perotti and Suarez 2009).

Regulation should also be designed with the aim of containing systemic risk. Banks should be given appropriate incentives not to become too big to fail or too complex to fail. Similar to the liquidity charge proposal by Perotti and Suarez (2009), which targets the maturity mismatch between banks' assets and liabilities, a deposit insurance size-sensitive premium or size-proportional capital charges would address the too-big-to-fail problem. Likewise, deposit insurance and capital charges sensitive to the complexity of assets the bank holds (i.e., high volume of CDOs, CDS, ABS, etc.) will make banks less likely to retain them on their balance sheets (conditional on not allowing for the existence of off–balance sheet complex operations).[14]

Some more drastic proposals to contain bank fragility have also been proposed. It is the combination of liquid deposits and opaque loans that makes banks inherently fragile. Proponents of narrow banking call for separation of these two core bank activities. Narrow banking proposals argue that demand deposits should be invested in liquid assets, whereas illiquid loans should be financed with non-checkable long-term liabilities (Bryan 1988). Such separation could preclude instability but would also be costly. Berlin and Mester (1999) argue that access to core deposits enables banks to insulate borrowers against exogenous credit shocks. Core depositors respond less to a potential change in the interest rate. Consequently, banks more heavily funded with core deposits smooth loan rates more. Kashyap et al. (2002) claim that banks provide liquidity on both the asset sand the liability side. If the demands for liquidity by depositors and borrowers are imperfectly correlated, banks may realize synergies in combining both functions. Song and Thakor (2004) argue that banks use core deposits to prevent withdrawals based on disagreement between investors and banks, which is the most acute for the most opaque relationship loans. They conclude that banks match the highest-value liabilities with the highest-value loans.[15]

Hence, narrow banking proposals would impose substantial costs on the banking system because the synergies between illiquid loans and liquid demand deposits would be lost. From a slightly different point of view, careless splitting of the bank

[14] See Acharya et al. (2010c) for policy proposals to charge prudential levies on strategies exposed to systemic risk.

[15] Diamond and Rajan (2001) argue that demand deposits prevent expropriation of excessive rents by the bank and by its borrowers.

balance sheet by separating deposits from loans may be costlier than separating assets from debt in the bankruptcy of non-financial corporations, where the synergies between assets and liabilities are scarcer.

Alternatively and complementary to burdensome ex-ante regulation, a government safety net should be contained (e.g., the coverage of deposit insurance should be limited) and an effective bank bankruptcy law that would minimize the social cost of bank failure should be implemented.

3.1.4 Ex-Post Moral Hazard: Opaqueness and Asset Substitution

Banks seem to be inherently more opaque than other corporations. Banks acquire valuable proprietary information when lending to borrowers (Boot 2000). At the same time, they are highly leveraged. Morgan (2002) provides evidence that the combination of assets with risks that are difficult to observe (e.g., loans and trading assets) and high leverage increases the uncertainty over a bank's value.[16] Opaqueness and access to liquid assets increase the asset-substitution problem: a bank can take on a substantial amount of risk at short notice. This moral hazard problem is exacerbated in the ex-post sense, when the bank is undercapitalized.[17]

Evidence from the U.S. Savings and Loans crisis during the 1980s indicates that weakly capitalized thrifts engaged in moral hazard behavior and undertook excessive risks. Brewer (1995) shows that weakly capitalized thrifts invested in commercial mortgage loans, acquisition and development loans that increased the volatility of their stock prices to augment their stock returns (see also Brewer and Mondschean 1994). DeGennaro et al. (1993) show that insolvent financial institutions were the least successful in surviving if they had undertaken high growth and risky strategies.

Akerlof and Romer (1993) point to the "looting" behavior of weakly capitalized thrifts. Thrift owners did not undertake excessively risky activities, but were simply illegally stealing from their institutions. La Porta et al. (2003) provide evidence for legal looting in the case of banks in Mexico from 1995 to 1999. They show that banks engaged more often in related lending (i.e., lending to corporations owned by bank owners) when they were financially distressed. Related borrowers obtained favorable borrowing terms even though they were more likely to default. Even if the banks failed, the owners could keep control over their industrial firms.

[16] Iannotta (2006) also provides evidence that, when controlling for risks, credit-rating agencies give split ratings to banks more often compared to non-financial firms. However, Flannery et al. (2004) use the stock market's microstructure properties to show that bank stocks are not unusually opaque.

[17] Goyal (2005) shows that subordinate bank debtholders respond to increased risk-taking incentives of a bank by writing restrictive covenants in bank debt.

Opaqueness, implicit government guarantees, and deposit insurance form a perfect environment for the continuous existence of undercapitalized banks, also called "zombies" by Kane (1987). Undercapitalized (or even insolvent) banks can still finance themselves through insured deposits and creditors that would anticipate a government bailout or liquidity injections by the central bank.

The existence of zombie banks creates substantial costs for the economy. Failing banks no longer perform the role of monitoring their borrowers. They will pick highly profitable but risky investments to gamble for resurrection. This further weakens financial stability. Caballero et al. (2008) and Peek and Rosengren (2005) show that weak Japanese banks in the 1990s did not restructure failing borrowers. Banks were forced to roll over loans to insolvent borrowers to avoid writedowns and their own closure. Consequently, insolvent firms were more likely to obtain bank financing, distorting competition throughout the rest of the economy. Subsidized lending to insolvent firms prevented the entry of new firms such that even solvent banks lacked good lending opportunities. Bad lending behavior stifled economic growth (Berglöf and Roland 1995; Kornai et al. 2003).

Krueger and Tornell (1999) examine the Mexican case to show that bad loans persist on bank balance sheets and are not restructured without government pressure. Domestic banks burdened by a large proportion of bad loans were not sufficiently competitive and lost the best borrowers in competition with foreign banks.

The Swedish banking crisis in the 1990s showed that openness in reporting expected losses and writedowns is important for recovering public confidence in financial system stability (Ingves and Lind 1996). Only small problems were resolved on their own and the banks used current income for a gradual write-down. However, if the problems are dire, such gradualism leads to substantial costs.

It is necessary to stress that, in addition to banks, non-financial corporations are also prone to excessive risk-taking, asset substitution, and looting, especially if they are weakly capitalized (Jensen and Meckling 1976; Myers 1977; Section 2.1.3 of this book). However, the agency problems in the case of banks are exacerbated by the presence of deposit insurance and government guarantees that prolong banks' dwelling in insolvency. In addition, the special role of banks and negative externalities of their failure make banks' agency problems costlier for the economy at large and gives them a high bargaining power in negotiations with regulators.

3.1.5 Multiple Regulators and Political Economy of Banking

Banks that operate in only one country are usually involved in different activities often supervised by several regulatory bodies. Most of the existing literature assumes that multiple regulations were managed by a single agency.[18] Nevertheless,

[18] Campbell et al. (1992) and Mailath and Mester (1994) study the incentives of a single regulator. Kahn and Santos (2001) argue that a single regulator leads to too much forbearance and to insufficient bank monitoring.

as the evidence suggests, various authorities with different functions take part in the process of bank regulation. Conflicts between the objectives and requirements of these authorities might make coordination among them very difficult.

Repullo (2000) argues that it is important to take into account the incentives of multiple regulators to take appropriate actions. By revealing the conflict within central banks, which are involved in both monetary policy and also commit themselves to maintaining an efficient and stable banking sector, Repullo (2000) investigates whether the deposit insurer or the central bank should act as the lender of last resort. He finds that the optimal institutional allocation of the lender of last resort's responsibilities can be achieved by making the central bank responsible in the presence of small banks' liquidity problems while making the deposit insurer responsible when the liquidity problems are large.[19] The critical ingredient behind this result is the assumption that both the central bank and the deposit insurer have access to information on the bank's financial condition. Although these institutions share the same information, their policy objectives are not aligned. The central bank cares more about the negative externalities a bank failure might generate and does not incur any losses in the form of depositors' compensation, but the deposit insurer is concerned about her obligation to repay the depositors of a failed bank. Hence, the deposit insurer is always too tough during a bank insolvency procedure, whereas the central bank may be either too soft (when the bank's losses are small), or too tough (when the losses become larger).

Kahn and Santos (2006) question the assumption of common information and argue that regulators' incentives to share information with one another should explicitly be taken into account in the presence of multiple regulators. When the central bank privately collects information about commercial banks, it is less likely that it will share its private information with the deposit insurer if it expects that the deposit insurer will make a decision considered inefficient.

Although the setup in which the lender of last resort function might be performed by two different institutions is an important step forward for banking regulation, there are a few practical aspects left open. Bolton (2000) argues that the framework in which a deposit insurer handles large liquidity problems is relevant for individual small bank failures only. The deposit insurer is unable to bail out large banks (i.e., the deposit insurer has limited resources) and the central bank will be the institution that finally has to tackle the problem. He also draws a parallel with corporate bankruptcy law. As we have previously discussed, corporations have two ways to manage distress: either through liquidation (Chapter 7) or through reorganization (Chapter 11). Likewise, the illiquid banks could be allowed to pick their favored lender of last resort. On the one hand, this will induce forum shopping in which illiquid banks will go for the more lenient agency (in Bolton's [2000] model, the

[19] Ponce (2010) extends Repullo's framework by considering the objective of the bank supervisor, while bankers' optimal actions are endogenously determined. He finds that the unconditional bailout of illiquid banks is socially desirable when shortfalls are large and recommends corrective actions on the bankers if they misbehave.

central bank would be more lenient than the deposit insurer). On the other hand, this is exactly what happens in corporate bankruptcy law when the corporation decides whether to file under Chapter 11 or under Chapter 7. The benefit of giving the decision to the manager is that the manager has additional information about the distressed firm (or bank, in our case) and is better placed to make an optimal decision about restructuring and hence also about the selection of the most appropriate formal framework of restructuring.

In addition to the conflicts between the objectives of domestic regulators, there is yet another problem that deserves to be explored. International (e.g., cross-border) banks are supervised by several regulators from different countries. Regulatory and legal frameworks are not synchronized across countries. Even corporate bankruptcy laws differ substantially across countries and bank bankruptcy laws are no exception. Some countries only use amendments to corporate bankruptcy law when dealing with bank failures, whereas others have separate bank bankruptcy laws.

A decentralized regulatory structure may create potential conflicts of interest between the regulators. A national regulator may not sufficiently internalize the disruptive effect of a failure of a foreign bank, but rather ring-fence for the assets within its reach to satisfy its own regulatory objective. The national regulator may also favor too-big-to-fail rescues. In addition, it may strive for the emergence of national champions. All of these issues call for caution with respect to a level playing field and regulatory arbitrage issues.[20] Hence, optimal bank bankruptcy law needs to consider the cross-border implications of bank failure in light of the current fragmented regulatory and legal framework.

From the legal point of view, a domestic bank can extend its activities into a foreign country by setting up either a subsidiary or a branch. A subsidiary is a judicial entity in the host country, whereas a branch represents an extension of the domestic bank, without judicial personality. The difficulties of a cross-border bank (at either the level of some branches or subsidiaries, or at the level of the parent bank), should be addressed in the early intervention phase by measures such as liquidity support and inter-bank asset transfers, or recapitalization. However, such measures may fail. In such cases, an insolvency procedure starts.

Ashcraft (2008) provides evidence that making a parent holding company liable to cover a loss of its subsidiary bank increased the stability of a bank affiliated with a multi-bank holding company relative to a stand-alone bank. Although there is not much difference across countries in supervision and regulation activities of the banking systems, there is less uniformity at the international level regarding the treatment of banks in distress (Asser 2001; Hupkes 2000). The problem escalates in the case of the failure of a large cross-border financial institution (see Section 7.3 for the Fortis failure case).

Severe problems might arise when branches of a cross-border bank face insolvency. Due to the conflict of interest between host country's authority and foreign

[20] See Boot and Marinč (2009) for a discussion of the problems pertaining to the supervisory arrangements at the European level.

authority, timely intervention might be delayed, increasing the contagion threat for otherwise healthy banks. In order to mitigate this problem, it might be desirable to move from branches to subsidiaries. The host country will then be fully responsible for reorganizing and closing (if necessary) the subsidiary of the foreign bank. This makes sense because most of the assets of the subsidiary are in the host country, and so the domestic regulator can seize these assets to repay the depositors and/or taxpayers (if the reorganization is done under state administration using taxpayers' money).

Nevertheless, a cross-country agreement would be required, such that each country should credibly exert its supervisory power over the domestic banks and foreign subsidiaries under their jurisdiction. Otherwise, late discovery of problems at one bank might have a negative spillover effect on its foreign subsidiaries, increasing the burden of the foreign banking authority. Nevertheless, as Cihak and Nier (2009) argue, if problems are identified at both the parent bank and its foreign subsidiaries, it might be desirable to allow the domestic regulator to lead the reorganization process in order to avoid the situation of breaking up the cross-border bank in resolution. The creditors of the cross-border bank should enjoy equal treatment regardless of their location. In order to avoid issues such as national interest or sovereignty, the resolution procedure should follow an international agreement.

Some insights on how to design such a bank bankruptcy law come from the IMF's intervention mechanism as an international lender of last resort in international financial crises. Existing literature suggests that the provision of sufficient international liquidity to countries threatened by a crisis (which might be driven by either liquidity runs or panics) might help avoid it.[21] Nevertheless, these interventions should be limited in frequency and size so as to reduce debtors' and creditors' moral hazard (particularly when liquidity support is given to insolvent countries). The intuition behind this proposal is as follows. Limited intervention by an international agency, conditional on painful domestic adjustments made by the government, can restore investors' confidence to roll over their credits. Likewise, international banks might receive liquidity support from an international supervisor. This intervention (if necessary) should be conditional on a periodical contribution made by the international banks similar to the deposit insurance premium. This emergency intervention will induce a greater incidence of additional support by the national regulator (because the size of liquidity problem is reduced).

Although it is true that regulators may deviate from socially optimal actions, political interference will aggravate the situation. Failures of financial institutions might have an adverse effect on the economy as a whole and, as a consequence, on the prospects of the incumbent for another mandate. Hence, bank failures also create large political costs resulting in political pressure on regulators for forbearance. Brown and Dinç (2005) show that bank bailouts are more common before elections. Costly and timely intervention for the banking sector is avoided by deferring the recognition of losses incurred by troubled banks, as Kroszner and

[21] See Corsetti et al. (2006) and Morris and Shin (2006) for a discussion of how an international financial institution helps preventing liquidity runs through coordination of agents' expectations.

Strahan (1996) argue when referring to the Savings and Loan crisis in the U.S. and Bongini et al. (2001) show when referring to the Asian crisis. Politicians' decisions regarding banking-sector regulation are strongly influenced by lobbying groups.[22] Policymakers are often asked to take a specific position on given legislation, with long-term impacts on regulation process. The repeal of the Glass Steagall act is one such example. By eliminating the separation between commercial and investment banking, the regulators allowed banks to become much larger than they would have, which made their losses during the recent financial turmoil much larger and subsequent bailout intervention necessary (Barth et al. 2000).

In short, several features that make banks special and different from non-financial corporations demand different procedures for bank bankruptcy law. On the asset side, the combination of an asset-substitution problem, the opaqueness of assets, and a government safety net create incentives for excessive risk-taking by bank managers. On the liability side, liquidity provision through liquid deposits creates the potential for severe coordination problems such as bank runs. Moreover, banks are interconnected and the failure of one bank may contagiously spread through the entire financial system, imposing substantial negative externalities. All of these reasons call for prudential regulation such as deposit insurance and closure policies. However, deposit insurance creates additional distortions and may allow the insolvent banks (i.e., zombie banks) to survive. The bank bankruptcy regime should deviate from corporate bankruptcy law to appropriately consider these special features of banks.

Table 3.1 summarizes the special features of banks and the banking system, and their impact on the bankruptcy process.

3.2 Bank Bankruptcy Law

In this section we discuss how bank bankruptcy law should differ from corporate bankruptcy law to appropriately consider special features of banks. We stress the need for timely intervention by the regulator and analyze how to optimize the ex-ante and ex-post effects of bank bankruptcy law. We also give guidelines for the design of optimal bank bankruptcy law.

3.2.1 Timely Intervention

Timely intervention by the regulator to close undercapitalized banks is crucial for mitigating the negative effects of bank bankruptcy. Timely intervention deserves

[22] The role of lobbying groups in politics is described by Olson (1965) and Stigler (1971).

Table 3.1 What makes banks special?

Characteristic of banks and the banking system	Impact on bank bankruptcy law
Liquidity provision	Freezing bank liabilities is costly
Severe coordination problems (i.e., bank runs)	May lead to abrupt termination of a bank
Externalities due to systemic risk: contagion, erosion of public confidence, impact on real economy, payment systems	May lead to taking on excessive systemic risk Gives substantial power to troubled banks
Bank operations are special (exacerbated need for ex-ante efficiency)	Ex-ante regulation is not sufficient
Severe agency, information asymmetry problems	
Asset substitution	
Opaqueness	
Prudential regulation (i.e., capital requirements, deposit insurance) has implications on ex-post efficiency	May lead to forbearance (excessive continuation) with ex-ante risk-taking (soft-budget-constraint problem) and ex-post risk-taking
Political pressures	
Fragmented regulatory and supervisory structure leads to coordination problems and to delayed intervention.	Centralized versus decentralized regulatory structure in the case of bank bankruptcy
Incentives of regulators may not lead to the first-best solution	
Cross-border banking	Coordination between national regulators Supranational regulator/rules

special treatment in bank bankruptcy law. We show that special bank features as highlighted in Table 3.1 in Section 3.1 augment the need for timely intervention.

Timely intervention, coordination problems, and systemic concerns: It is important to set the trigger for timely intervention above insolvency and (long-term) illiquidity. This allows the regulator to move an undercapitalized but still solvent bank into an insolvency regime. The losses to public funds (e.g., to the deposit insurance fund) are minimized and the reputation of the regulator is safeguarded. If the regulator's commitment to timely intervention is credible, depositors no longer fear losses in the case of bank failure. Bank failures are less damaging for interconnected banks. This safeguards public confidence, contains systemic concerns, and lowers political pressure to keep the failing bank afloat. Too-big-to-fail and too-complex-to-fail problems are less acute as well. The regulators could close an undercapitalized but still solvent bank at low costs to public funds and with limited systemic impact. Hence, timely intervention prevents unraveling through bank run–type events.

Note that coordination problems between bank creditors are more severe than between creditors of a non-financial corporation (due to the sequential service constraint of bank demand deposits and because depositors are small and uninformed; see Section 3.1). In addition, the systemic repercussions are much greater in the case of bank failure than in the case of a failure of a non-financial corporation. Therefore, timely intervention should be a crucial ingredient of bank bankruptcy law.

Timely intervention and ex-ante and ex-post incentives: Timely intervention mitigates incentives towards excessive ex-ante risk-taking by a solvent bank: the soft-budget-constraint problem. That is, if banks anticipate prompt closure they no longer rely on a government safety net and they carefully internalize the costs of risk-taking. Anticipating prompt closure, banks also restrain from taking on excessive systemic risk. Herding behavior, or growing too big to fail or too complex to fail, will no longer be attractive.

Timely intervention also prevents ex-post risk-taking by the already insolvent bank. A regulator that intervenes in a timely manner removes undercapitalized zombie banks (by not allowing them to operate unless certain requirements are fulfilled; see below further details about *pre-insolvency phase*) that can only operate due to deposit insurance or implicit government guarantees from the banking system. In this way, timely intervention prevents gambling for resurrection by a zombie bank and limits the potential negative impact on the entire banking system and on the real economy. In this respect, bank bankruptcy law should give leverage to the regulator in negotiation with the management and shareholders of the failed bank. The regulator should have control over corporate governance issues. The regulator should have the power to limit the wages and bonuses of senior bank management and/or dismiss management of the undercapitalized bank. By gaining control over an undercapitalized or even insolvent bank, the regulator should be able to cut the dividend payments of the distressed bank, prevent unnecessarily risky behavior, and impose losses on bank shareholders.

Timely intervention and fragmented regulatory structure and political pressure: Timely intervention also mitigates the drawbacks of a fragmented regulatory framework in banking. In case of a failure of a multinational bank, it is easier to reach an agreement between different regulators when the losses due to the intervention are still limited.

Bank bankruptcy imposes lower political damage if the regulator intervenes promptly. That is, timely intervention minimizes the cost to (uninsured) depositors, the deposit insurer, and public funds. Consequently, the political pressure against closing the bank is substantially lower. However, political pressure mounts in the other direction. Politicians try to establish influence over the failing bank and its lending practices and restructuring policies through pressure on the regulator. It is crucial that the regulator that leads the restructuring of the failed bank be shielded from political pressure as much as possible and that it have a clear mandate to sell off the distressed bank after a given restructuring period.[23]

Despite the benefits of early intervention, banking authorities are reluctant to intervene promptly. One reason is that they simply lack the legal framework to do so. In this respect, bank bankruptcy law should deviate from corporate bankruptcy law and allow for regulatory intervention before the bank becomes insolvent.

[23] Several empirical studies find evidence that the government ownership of banks is costly for the economy at large due to (for example) politically influenced lending, lower subsequent financial development, and lower growth of per capita income and productivity (La Porta et al. 2002; Sapienza 2004).

The sufficient legal condition to close the bank may be the breach of regulatory requirements (the criteria may be an insufficient level of capital or even illiquidity). Yet another problem that hinders timely intervention is political pressure, which affects the enforcement of prudential regulation. Even if the legal framework for intervention is in place, the banking authorities may be under political pressure to avoid tough and unpopular measures. Another reason for late intervention is that banking regulators struggle to obtain accurate information about banks' problems in timely manner.

Trigger: The trigger of the bank insolvency regime could be based on hard quantifiable data or on the discretion of the regulator. In practice, both methods are used; the best seems to be a mixture of both. The justification for strictly defined thresholds is to limit the forbearance of the regulator. However, even strictly defined thresholds may not be sufficient. Banks may conceal information from the regulator to prevent foreclosure.[24] Accounting standards may allow for exaggerated regulatory capital over the true economic value (see Wall et al. [2005] for the U.S. experience). In addition, a strictly defined threshold may be too low (or, less likely, to be too high).[25] In these cases, relying on strict thresholds is insufficient and a certain level of discretion should be given to the regulator. Discretion gives the regulator the power to close down a problematic bank even if the bank has not (yet) breached formal requirements. Discretion may be abused though by regulators if implemented in the presence of several regulatory bodies with different tasks and conflicting preferences: For example, the deposit insurer may excessively intervene if its task is to trigger bank distress in order to limit loss to the insurance fund; if the monetary authority is the one triggering bank bankruptcy, this may lead to excessive forbearance however. Hence, discretion should only come together with transparency and clear accountability, and with optimal institutional allocation of the supervisory and intervention responsibilities.

Pre-insolvency phase: To limit excessive risk-taking, a special pre-insolvency phase is desired. The regulator should interfere with the bank's management if the bank is approaching certain threshold criteria: some minimum requirements for operation in banking. The regulator has available several options in the pre-insolvency phase: it can impose limits on certain risky activities, management fees, and dividends. It can even demand recapitalizations. The pre-insolvency phase could also be seen as an option for management and shareholders to consolidate a weak

[24] In 1999 the failure of First National Bank of Keystone, West Virginia occurred. Its management delayed prompt closure by hiding the bank's insolvency from banking agency examiners (U.S. Treasury 2000). Huizinga and Laeven (2009) show that banks concealed true losses when in distress, and especially during the 2007–2009 financial crisis. Banks used accounting discretion to overstate the value of real estate-related assets and opportunistically classified mortgage-backed securities to increase the accounting value of assets.

[25] Honohan (2008) argues against mechanical risk-management models. He calls for a discretionary approach towards regulation based on evidence from the 2007–2009 financial crisis.

bank on their own. The ability to raise additional capital effectively signals that the bank can restructure on its own without a threat to depositors' safety.

The pre-insolvency phase also works to mitigate the fears of expropriation of shareholders. Giving too much power to the regulators may be counterproductive. It increases the cost of capital because investors would fear that the regulator will expropriate them even at the hint of unlikely bank failure. This induces banks to hold as little capital as possible and to engage in regulatory arbitrage, trying to circumvent capital requirements. Consequently, banks become even riskier. The pre-insolvency phase gives the bank's shareholders and management a chance to restructure the bank on their own, to prevent expropriation, and at the same time to contain the costs of bank failure.

In our view, the pre-insolvency phase plays a critical role in preventing systemic crises. The regulator may be able to revert bank herding behavior (i.e., when banks undertake similar risky actions). Banks will more easily raise capital when there is an abundance of liquidity on financial markets. However, raising more capital when there is a liquidity shortage can have disastrous effects on banks' balance sheets. As evidence from the recent financial crisis shows, when many banks with similar investments suffer a shock on their asset side, they might find it difficult to raise fresh capital. To repair their balance sheets, they have to sell some of their assets. The higher the quantity of assets to be sold in the market, the greater the downward pressure on asset prices will be.[26] Subsequently, more banks will become illiquid.

Regulators should try to extend the pre-insolvency phase and make the transition to insolvency less abrupt by inducing banks to fund through securities convertible into bank capital. For example, banks should have contingent capital that would transform into Tier 1 capital under certain circumstances.[27] A similar solution consists in a direct mechanism that would trigger debt-to-equity swaps, or at least junior-debt-to-equity swaps if the bank became weak. On the positive side, such a transition postpones bankruptcy and gives bank management time to restructure the bank. On the negative side, it may not necessarily transfer control over the failing bank to more efficient management and owners.

A market-based mechanism can also be designed to lower the costs of systemic instability. Kashyap et al. (2008) propose that banks would buy insurance against an economic downturn. More specifically, the insurance policy would pay off when the banking system as a whole is doing sufficiently badly. For the insurer, the insurance policy would have similar characteristics as an investment in a defaultable catastrophe bond. Such a mechanism would pump equity into bank

[26] See Acharya et al. (2009b), Acharya and Merrouche (2009), and Adrian and Shin (2007) for a description of the contagion mechanism in financial markets through fire sales.

[27] Flannery (2005) proposes that banks would finance by issuing "reverse convertible debentures" that would automatically convert to common equity if a bank's share price falls below some stated value. See also the speech by Thomas F. Huertas, Director, Banking Sector, FSA, ICFR Inaugural Summit, London, 1 April 2009.

balance sheets exactly when it would be needed most from the systemic stability point of view.

However, the problem of usually complex market-based mechanisms is their implementation. It may be too complex and consequently too costly for a bank to issue convertible securities (or an insurance policy against a systemic banking crisis). It may be easier to simply increase Tier 1 capital by issuing new equity (Admati et al. 2010).[28]

3.2.2 *Ex-Ante and Ex-Post Optimality*

The special features of banks described in Section 3.1 call for a rethinking of how tough/lenient bank bankruptcy law should be and whether it should differ from corporate bankruptcy law in this respect. Recall from Section 2.1 that corporate bankruptcy law is mainly stretched by two conflicting forces: creditor-friendly corporate bankruptcy law mitigates excessive risk-taking by still solvent corporations; however, debtor-friendly corporate bankruptcy law allows for better restructuring of already insolvent corporations. In this section we analyze the impact of special features of banks on how tough/lenient bank bankruptcy law should be in comparison to corporate bankruptcy law.

Banks have a highly fragmented debt structure in comparison to corporations: bank creditors are mainly small, uninformed depositors. Deposits are also characterized by a sequential-service constraint and can be withdrawn on demand. Hence, coordination problems, being more severe between bank creditors than between creditors of the non-financial corporations, call for special treatment. Creditor-friendly bank bankruptcy law that increases the expected repayment to bank creditors in the case of default weakens their incentives to withdraw funds. Hence, exacerbated coordination problems between bank creditors require bank bankruptcy law to be more creditor-friendly than corporate bankruptcy law is.

Banks in contrast to corporations provide liquidity to depositors. However, liquidity provision is most valuable if deposits are otherwise riskless (Gorton and Pennacchi 1990). Deposit insurance is one mechanism that makes deposits riskless and increases the supply of deposits. Alternatively to deposit insurance, bank bankruptcy law should be made creditor-friendly. Creditor-friendly bankruptcy law would increase the expected value of deposits in the case of bank default, lowering the riskiness of deposits. This raises the value of liquidity provision and enhances the supply of deposits.

To lower the costs of illiquidity, bank bankruptcy should also be resolved much more quickly than corporate bankruptcy and bank bankruptcy law should also aim

[28] Acharya et al. (2010b) show that under certain conditions having sufficiently high Tier 1 capital may mitigate systemic risk that arises due to moral hazard problems. However, under certain conditions it may be optimal to establish a special capital account (e.g., through dividend restrictions) owned by shareholders in good times but by the regulator in bad times.

for this through the limited use of an automatic stay. However, in a fast bankruptcy procedure it is more difficult to determine the exact value of the assets of the failed bank. The problem of valuation is aggravated by the specificity of bank assets and potentially depressed prices of bank assets in default. Inaccurate assessment of the assets of a failed bank leads to deviations of absolute priority rules with unexpected ex-ante and ex-post incentives for bank creditors and shareholders. To partially mediate this concern and also to better allow the regulators to assess systemic consequences, it is important for each financial institution to design a "living will," or a plan of events in the case of its failure (Goodhart and Schoenmaker 2010; Squam Lake Working Group on Financial Regulation 2009).

From an *ex-ante* point of view, creditor-friendly bankruptcy law (for a non-financial corporation) addresses excessive risk-taking by debtors, conditional on sufficient penalty in the case of failure. In a similar fashion, bank bankruptcy law should be no different. It should discourage the ex-ante risk-taking behavior of the bank's manager and shareholders by punishing them in the case of bankruptcy. However, mitigating moral hazard is a more demanding task for banking authorities than for corporate courts due to prevailing implicit and explicit guarantees in banking, the existing ex-ante regulatory framework, the complexity of bank operations, greater opaqueness, and the asset-substitution problem.

The presence of implicit and explicit government guarantees, such as deposit insurance, calls for bank bankruptcy law that is creditor-friendlier in comparison to corporate bankruptcy law. Government guarantees limit the pressure of depositors to run on the bank and give clear incentives to a bank manager to take excessive risk. Creditor-friendly bank bankruptcy law can partially mitigate the negative distortions that government guarantees create.

On the other hand, regulators implement an extensive prudential regulatory framework to mitigate bank risk-taking ex-ante. If ex-ante regulation is effective, bank bankruptcy law is needed less to set correct ex-ante incentives but more to allow for efficient ex-post restructuring of a failed bank. In this sense, bank bankruptcy law should be debtor-friendlier than corporate bankruptcy law, which is not accompanied by an ex-ante regulatory framework. This shows that bank bankruptcy law should not be evaluated and redesigned in isolation, but together with the assessment of the effectiveness of the prudential regulatory framework.

Bank assets are opaque, and the asset-substitution problem is acute, especially in the case of failing banks, while bank operations are complex (see Sections 3.1.3 and 3.1.4).[29] Combined with the limited monitoring ability of bank creditors (depositors are usually small, uninformed, and insured, and government guarantees may exist), this calls for a strict bank bankruptcy law that wipes out bank shareholders and removes bank management if the bank enters a bankruptcy procedure. Sufficiently

[29] Flannery (1994) argues that asset-substitution problems are more pronounced for banks than for non-financial corporations. In addition, bank assets are informationally intense and their risk properties are usually not easily described and contracted on, such that conventional mechanisms to limit risk-shifting behavior such as writing covenants may not be sufficient for bank debt.

strict bank bankruptcy law is optimal ex-ante: it can mitigate socially excessive risk-taking by banks.

In the ex-ante sense, bank bankruptcy law should be creditor-friendly, such that the existing manager should be replaced and the existing shareholders ousted from decision-making as soon as the bank enters an insolvency regime. Sufficient power should be given to the authority to be able to negotiate with shareholders even though they may oppose restructuring. An example is a legal option for the authority to redeem the shares at the evaluated price of the bank in the absence of state measures (Molin and Ingves 2008). The banker's incentives to take too much risk are mitigated by tough closure and restructuring policies.

The perspective may change ex-post, when the bank is already insolvent. If the bank manager has proprietary information about bank operations and he is crucial for successful bank restructuring, it may be optimal to leave him on the board of directors. This may also be true because the failure of a bank may not necessarily indicate bad management. Interconnections in banking are far-reaching and systemic failure can bring down a perfectly stable and well managed bank. In such case, firing a good manager is inefficient and debtor-friendly bank bankruptcy law may be optimal.

Even though expropriating shareholders is optimal ex-ante, it may not be optimal in the ex-post sense. Without shareholders, creditors or the regulator/government have to run the bank with neither creditors nor the government being efficient owners: creditors may want to terminate bank operations too quickly without regard for the systemic stability. The government ownership of banks is inefficient, especially in the long term. Expropriating shareholders also frightens investors and makes potential bank recapitalizations more difficult. Hence, it may be ex-post optimal to have debtor-friendly bank bankruptcy law.

The design of bank bankruptcy law also has an impact on information sharing between the bank manager and regulators. In the case of creditor-friendly bank bankruptcy law, the existing management (and shareholders) will try to inefficiently avoid or postpone bankruptcy and the regulator always needs to be alert to promptly trigger bank bankruptcy. Aghion et al. (1999) and Mitchell (2001) argue that strict bank closure rules that punish the bank management induce the failing bank to roll over bad loans in order to conceal its loan losses. Such bank behavior leads to inefficient restructuring of bank borrowers and prolongs the economic crisis, as the Japanese experience from the 1990s shows. On the other hand, soft closure rules (i.e., regulators prefer to give extra funds to banks instead of closing them) create incentives to overstate loan losses and lead to a too-many-to-fail situation in which banking authorities might find it socially optimal to rescue troubled banks. Optimal closure policy should come together with minimal rescue packages linked with liquidation of nonperforming loans.

A fragmented regulatory structure and political pressures on regulators are additional reasons why bank bankruptcy law should be creditor-friendlier than corporate bankruptcy law. Fragmented regulatory structure makes timely intervention more difficult. This exacerbates the disruptive behavior of bank creditors in a

bank run. One way of mitigating such behavior is also by increasing repayment to bank creditors through creditor-friendly bank bankruptcy law.

Bank bankruptcy generally goes against political interests. Politicians would rather pressure the regulator to pursue excessively lenient bank bankruptcy policies to optimize the chance of reelection (Brown and Dinç 2005). To counteract perverse political pressures, bank bankruptcy law should be creditor-friendlier than corporate bankruptcy law and should be creditor-friendlier in countries where regulators are less independent from politics. However, this is easier said than done because the politicians are the ones that write the laws and they may be inclined not to accept such bank bankruptcy law.

The importance of systemic stability calls for creditor-friendly bank bankruptcy law. First, proper ex-ante incentives are not only important for maximizing the ex-ante value of the bank but also for preventing socially excessive risk-taking by bank managers with detrimental impact on the systemic stability of the banking system and with potential costs for the entire economy. Creditor-friendly bank bankruptcy law should give bank managers incentives to undertake modest risk.

Second, creditor-friendly bank bankruptcy law is also needed ex-post for systemic reasons: if bank bankruptcy imposes a substantial "haircut" on bank creditors, confidence in the stability of the entire banking system may be derailed. Small depositors from other perfectly stable banks fear that the same thing will happen to them. In addition, other banks may be exposed to the failed bank either through bank deposits or through normal operations within the payment system. Creditor-friendly bank bankruptcy law that promises high repayment to the failed bank's creditors partially mitigates systemic concerns.

Having creditor-friendly bank bankruptcy law will not fully mitigate systemic concerns of bank bankruptcy. If the asset value of the failed bank is too low, completely expropriating bank shareholders is not enough to fully compensate bank creditors. In this case, bank creditors need to suffer losses as well. If the negative systemic considerations are too high, the government is forced to intervene and stop the systemic crisis through public money infusion.

Table 3.2 summarizes the analysis above. What can be observed from Table 3.2 is that bank bankruptcy law should be substantially stricter for bank shareholders in the case of bank distress in comparison to corporate bankruptcy law. In addition, the regulator in charge of restructuring should have greater power not only with respect to bank shareholders, but also with respect to bank creditors.

3.2.3 Liquidation, Purchase and Assumption Agreement, and Nationalization

In an individual bank failure, four main choices of bank resolution exist. The failing bank can be liquidated, sold as a whole in merger and acquisition, sold in parts

Table 3.2 How debtor-friendly bank bankruptcy law should be in comparison to corporate bankruptcy law

Special feature of banks	In comparison to corporate bankruptcy law, bank bankruptcy law should be:	Rationale
Bank runs	Creditor-friendly	To limit incentives of creditors to run on the bank
Liquidity provision	Creditor-friendly	Bankruptcy should be resolved quickly to limit costs of illiquidity
Implicit and explicit government guarantees (e.g., deposit insurance)	Creditor-friendly	To put sufficient ex-ante incentives on bank management
Prudential regulation	Debtor-friendly	Ex-ante incentives could also be managed by carefully designed prudential regulation (e.g., capital regulation)
Agency problems and opaqueness	Creditor-friendly ex-ante	To put sufficient ex-ante incentives on bank management
	Sometimes debtor-friendly ex-post	Bank management (and shareholders) have superior information about the bank
		Bank creditors (or the regulator/ government) may suboptimally run the bank; cooperation of bank managers and shareholders may be needed
		Fire sales and systemic concerns prevent liquidation
Fragmented regulatory and supervisory structure	Creditor-friendly	To put sufficient ex-ante incentives on bank management
Political pressures (through the regulator or government ownership)	Creditor-friendly	To balance the political pressure towards lenient closure policies
		To mitigate negative effects of government ownership
Systemic risk	Creditor-friendly	Correct ex-ante incentives are more important
		A "haircut" for bank creditors may create systemic instability. Government funds may be needed.
		Liquidation may not be possible due to systemic concerns

through a purchase and assumption agreement, or nationalized (see Asser 2001; Campbell and Cartwright 2002; IMF and WorldBank 2009).

A bank failure is generally costlier than that of a non-financial institution. James (1991) provides evidence that the loss on assets in bank failure is substantial (i.e., around 30% of the value of assets) and substantially higher than the indirect cost of

bankruptcy proceedings of a non-financial firm (from 10% to 20% of pre-failure firm value; see Andrade and Kaplan 1998). The direct cost of the regulator for resolving the failing bank (i.e., administrative and legal expenses associated with the failure) is large as well (around 10% of the value of assets) and appears to be higher than the direct cost of failure of the non-financial institution.

In addition, bank failure has a negative impact on real economic activity. Ashcraft (2005) analyzes the impact of a bank failure on a local real economic activity measured by county income (and controls for deposits to county income). Ashcraft (2005) shows that bank failure has a greater negative impact on real activity than thrift failure, consistent with the hypothesis that bank lending is more information intensive than thrift lending. He also shows that the failure of small banks has a higher negative impact on real activity within their counties of operations than the failure of a large bank, a fact consistent with the higher occurrence of small business lending in small banks.

Liquidation: The most abrupt method of bank resolution is liquidation of the failing bank. It can be used for small and isolated banks proven to be unviable and whose failure has limited effects on other parts of the banking system and on real economic activity. Liquidation can also be employed as the final stage of restructuring after other methods of restructuring have already been used. For example, a distressed bank can be split into a good and bad bank, and the bad bank can subsequently be liquidated.

Liquidation needs to be structured in a way that minimizes the threat to systemic stability. In particular, insured deposits should be repaid as soon as possible (i.e., in a matter of a few days at most). An automatic stay should be imposed on other bank creditors. Payment transactions made before the initiation of liquidation should be completed. In addition, close-out netting of financial derivative contracts should be enforceable. Priority of bank claimants should be honored. In addition, bank activities need to be terminated and a liquidator should be appointed to liquidate the bank's assets (IMF and WorldBank 2009).

Mergers and acquisitions: If the distressed bank is still solvent, the regulator tries to find an acquiring bank willing to buy the distressed bank as a whole. The acquiring bank receives not only all the assets and liabilities of the distressed bank, but also becomes the owner of the legal entity. Technically, mergers and acquisitions can occur through the transfer of shares of the distressed bank to the acquiring bank, by direct merger, or by establishing a new bank holding that would own both banks.

It is important that the regulator has the power to force share sales of a distressed bank, otherwise the existing shareholders could oppose such a transaction. This is different from corporate bankruptcy law, under which shareholders can still influence the manner of restructuring. In the case of a bank failure, the decisions need to be made quickly to prevent abrupt termination of a bank or even the spread of systemic risk. Hence, the regulator needs to have the power to promptly sell the distressed bank. The existing shareholders would be compensated from the proceeds of the sales if there prove to be any.

If the bank is close to insolvency and the transparency of the bank's assets and liabilities is low, finding an acquiring bank may be difficult. In such a case, the regulator should use a purchase and assumption agreement.

Purchase and assumption agreement: The most widely used method of bank restructuring is purchase and assumption agreement. In purchase and assumption agreement, the regulator should sell the failing bank as a whole or in parts to a stable acquiring bank. The difference from mergers and acquisitions is that in purchase and assumption agreement the purchasing bank only buys assets and obligations, but not the bank license and not any other potential obligation. Alternatively, the regulator can use purchase and assumption agreement to transfer only parts of the initial failing bank into the "bridge bank" and subsequently sell the bridge bank to a private acquirer and liquidate the remaining parts of the initial bank. In the extreme case, the bridge bank stays in the hands of the regulator for many years or the government even nationalizes it. The bank can also be saved in an open bank assistance, in which the regulator would only support the failing bank financially with capital and liquidity, with limited intervention in bank operations.

Instead of liquidation, the purchase and assumption (and mergers and acquisitions) method of selling the failing bank to a healthy bank is better suited for resolution of a bank heavily involved in lending to informationally opaque borrowers (such as SMEs). Ashcraft (2005) shows that bank liquidation has the greatest negative impact on real activity, followed by purchase and assumption, whereas open bank assistance has the lowest negative impact. This is consistent with the hypothesis that in liquidation the valuable relations between the bank and borrowers are lost. In purchase and assumption only part of the information is transferred to a buyer, whereas in open bank assistance most information and relationships are preserved.

James (1991) provides evidence on the cost of different methods of resolution: purchase and assumption (and mergers and acquisitions) is a less costly method of resolution than liquidation. The reason for this is that purchase and assumption preserves the going concern value of the bank. James (1991) shows that the going concern value of the bank is the highest for a bank funded with a high proportion of core deposits. This shows that purchase and assumption should be used especially if the bank is funded with core deposits. He finds that the value of bank assets is lower in receivership (in the U.S. the Federal Deposit Insurance Corporation, or FDIC, acts as a receiver for commercial banks; see Section 6.5) than in the private sector. Hence, the costs of bank failure can be significantly reduced if a high volume of assets is acquired by a private purchaser.

The formation of good/bad bank: The failing institution may be highly opaque and the uncertainty about the values of its assets may be substantial. In such a situation, the regulator should split the failing institutions in two parts and keep the good assets and insured liabilities in the good bank, the "bridge bank," and leave the bad assets and uninsured liabilities in the remaining bad bank. The bridge bank will then be more transparent and will be, after restructuring or immediately, sold to a private acquirer, whereas the bad bank is liquidated.

The purpose of bridge bank formation becomes clearer through some insights offered by the literature on optimal conglomeration in banking. Kahn and Winton (2004) show that a good bank/bad bank structure limits the risk shifting incentives of the bank in an environment in which investors cannot precisely assess the risk of the bank.[30] Separation of risky assets from safe assets is optimal when downside risk from risky assets is high and when the bank has many risky assets on the balance sheet. Insulating the safe part of the bank from the risky part by putting all risky assets in a separate subsidiary structure then improves monitoring incentives in the safe part of the bank.[31] Kahn and Winton (2004) also explain that the good bank could still own an equity stake in the bad bank. Such connection facilitates information sharing between both entities. Thus, a good bank will more likely be attached (through ownership) to the bad bank if loans are opaque and informationally sensitive. Boot and Schmeits (2000) show that conglomeration mitigates risk-taking by the bank manager if market discipline is weak and rents are low. In the case of the failure of a bank, market discipline is severely damaged (i.e., due to the presence of government guarantees) and the rents of the failing bank are also low. The regulator should then keep some connections between the bridge bank and residual bank in place. Such connections are not needed only for smooth operations of the bridge bank, but both entities can also coinsure each other and this will provide incentives for more prudent management of the bridge bank.

The purchase and assumption or good bank/bad bank scheme should be tailored to the special features of a distressed bank. For example, one type of distressed assets may be spun off in an asset-management company to increase transparency. To limit disruptive withdrawals by depositors, bank bankruptcy law should carefully define the treatment of depositors. Usually the entire deposit book could be transferred to the acquiring bank. Unsecured depositors could suffer a "haircut" and then later be further compensated (if the "haircut" turns out to be excessive).

Nationalization: In the extreme case, a failed bank can be nationalized. Nationalization offers rapid resolution with a beneficial impact on public confidence. However, nationalization may require the greatest fiscal outlay, especially if all debtholders or even shareholders of the failing banks are compensated. Nationalization also creates distortions on the market. A nationalized bank will have an advantage because of the implicit government guarantee or because of a more generous stance of the prudential regulator. Government ownership, once established, will not be easy to abolish. It will lead to indirect costs due to politically

[30] A recent example of the good/bad bank formation may be the UK bank Bradford & Bingley, which was split into two parts. The mortgage book was nationalized, whereas the deposit book and branch network were sold to a private purchaser; see HM Treasury (2008b).

[31] Kahn and Winton (2004) also argue that the separate structure is viable if cherry picking is not possible. In particular, the good bank should not have incentives to keep some of the risky loans aboard; that is, the profitability of risky loans has to be sufficiently low.

influenced lending and to lower real subsequent financial development and lower growth of per capita income and productivity (La Porta et al. 2002; Sapienza 2004).[32]

Nationalization also does not solve the underlying problem of why the bank failed in the first place. The nationalized failed bank can continue to operate without the necessary restructuring of its troubled assets and can incur continuous losses to the government. For example, the government-owned bank may also become undercapitalized. In this case, nationalization would solve nothing because the government is already an owner.

Restructuring policies have different ex-ante effects on bank behavior. Bailing out banks exacerbates moral hazard and encourages bank managers to take excessive risks. Acharya and Yorulmazer (2008) show that liquidity assistance to solvent banks for purchases of insolvent banks is superior to directly bailing out banks. Liquidity assistance provides banks with incentives to avoid ex-ante herding behavior. More specifically, when many banks fail, it is beneficial for a bank to survive precisely in order to be able to acquire the failing banks at distressed prices. In contrast, bailout policies induce banks to herd such that in the case of failure many other banks fail as well and the regulator is forced to bail all banks out. Acharya and Yorulmazer (2007) show that herding incentives are more pronounced when many small banks operate in the banking system rather than a few large ones. Perotti and Suarez (2002) show in their dynamic model of competition that selling a failing bank to a surviving bank gives ex-ante incentives to a bank to stay solvent because acquiring a failing bank increases the market power of the surviving bank, which leads to higher profits.[33]

Policies designed for restructuring an individual failing bank are insufficient in the case of a systemic bank crisis in which many banks collapse at the same time. We discuss the systemic aspect of banking crises in the following two sections.

Table 3.3 gives an overview of the advantages and drawbacks of various modes of bank resolution.[34]

[32] However, in underdeveloped countries government ownership of banks may spur the branching presence in underdeveloped parts of the country and reduce poverty; see Burgess and Pande (2005).

[33] In an opposing view, Cordella and Yeyati (2003) argue that the regulators should commit to bailing out failing banks in the case of a systemic crisis. In their model, however, systemic crisis is exogenously driven and bank behavior cannot change the probability of a systemic crisis. In such a case, ex-ante commitment to bail out banks does not hamper banks' moral hazard problem. Anticipated bailout policies increase banks' franchise values and banks even take less risk.

[34] Advantages and disadvantages of these tools are also discussed in Seeling (2006).

Table 3.3 Advantages and drawbacks of various modes of bank resolution

Mode of bank resolution	Advantages	Drawbacks	Guidelines for bank bankruptcy law
Liquidation	Market discipline is at work Shareholders can be expropriated Management can be ousted Ex-ante risk-taking is mitigated	Ex-post costly: value of bank assets declines due to Fire sales Lost information content Immediately costly for deposit insurer Gains from assets in future Reputation effects Systemic repercussions Costly for borrowers	Only if there is no impact on systemic risk. Define clear thresholds (insolvency vs. illiquidity) and trigger responsibility Banking activities are terminated Insured depositors are repaid or transferred to a healthy bank Automatic stay is imposed on bank creditors Payment system transactions made before the initiation of liquidation should be completed Close-out netting of financial transactions should be enforceable Honor priorities of bank claimants
Mergers and acquisitions and purchase and assumption transaction	Fast Ex-post more efficient than liquidation The acquiring bank can keep some information content No need for fire sales Deposit book may be left untouched Franchise value may be preserved	Absolute priority rule may be broken Uncertainty for bank investors/creditors Large depositors are usually rescued	Give power to the regulator to force share and asset sales if a bank is in distress; however, define mechanisms for the distribution of (any) sale proceeds to shareholders Carefully move deposit book and/or repay insured depositors Purchase and assumption may be structured as a full transfer of subunits of a failed bank or clean transfer of the failed bank's assets No (or limited) automatic stay
Good bank/bad bank	Good (bridge) bank holds good assets and it is more transparent Increased chances to be sold to a private acquirer as a result of	Allocation of assets and liabilities between the new created entities Partial transfers lead to the "cherry picking" problem (i.e., moving	With recourse (to give correct incentives: a good bank is still working hard to recover bad loans left in the bad bank) or without recourse (to

(continued)

Table 3.3 (continued)

Mode of bank resolution	Advantages	Drawbacks	Guidelines for bank bankruptcy law
	lower uncertainty of asset values Easier access to external capital Deposit book is usually moved to the good bank The remaining impaired assets and some of the liabilities are moved to a bad bank and are liquidated Good bank specializes in normal banking operations, bad bank specializes in recovery of bad loans	good assets to the good bank), which may be detrimental to the uninsured creditors left in the bad bank	enable fresh start: a good bank has easier access to capital funds) A good bank should be a temporary entity aimed to be sold after restructuring No automatic stay (or limited to creditors left in a bad bank)
Nationalization	Fast	Ex-post: the government (or the regulator) is an inefficient bank owner	Only as a last resort
	Ex-post: value of bank assets in resolution is kept intact	Does not necessarily lead to restructuring	Shareholders (and potentially uninsured creditors) need to be wiped out
	Lending relations are maintained	Ex-ante: bank management and shareholders may take excessive risk	Competitive distortions with respect to other banks should be contained
	Creditors are protected	Demands infusion of public funds	No (or limited) automatic stay
	Public confidence is protected	What if state-owned bank is insolvent?	
	No systemic risk or contagion	May lead to large public debt and potential sovereign default	

3.2.4 The Design of Bank Bankruptcy Law and Its Relation to Corporate Bankruptcy Law

The design of bank bankruptcy law is a delicate process of setting correct incentives towards bank risk-taking and timely policies for bank closure and containing systemic risk, along with protecting bank claimants. Banks are given

a special position in the economy because wide safety nets are in place. Banks can rely on deposit insurance, public confidence, and regulatory support (i.e., through liquidity assistance). The previous section shows that stricter bank bankruptcy law towards a bank's shareholders is needed. However, bank bankruptcy law should deviate from corporate bankruptcy law in several points due to banks' particularities.

The objectives: Objectives in bank bankruptcy differ substantially from those in corporate bankruptcy. In corporate bankruptcy, the main objective is to maximize the total value of the firm. In bank bankruptcy, the main objective is to contain negative externalities of bank bankruptcy. Stability and confidence in the financial system need to be maintained. Additional objectives are: (1) to maximize the value of a bankrupt bank, (2) to limit the exposure of public funds, and (3) to protect the priority of bank claimants to limit the cost of funding for healthy banks. The objectives in bank bankruptcy are more complex than those of corporate bankruptcy for two reasons: (a) bank bankruptcy has high social costs, and (b) spillover effects of a bank failure might have a strong negative impact on financial stability and on the payment system.

Automatic stay: Restructuring a failing bank can only be successful if coordination problems between bank creditors and the information opacity of bank loans are correctly addressed. Corporate bankruptcy law mitigates coordination problems by imposing an automatic stay on debt repayment. In the case of a bank failure, an automatic stay on all bank liabilities (a "bank holiday") has severe consequences, including high liquidity costs, contagion to other banks, and damage to public confidence, to wider systemic problems, with the worst being the destruction of the entire payment system.[35] Bank holidays negatively affect banks' asset side as well. As a result, banks are not able to perform any lending activities. The inability of firms (in the case of a system-wide bank holiday) to have access to credit for their daily activities has strong repercussions on the economic environment. Hence, bank bankruptcy law has fewer options to use an automatic stay than corporate bankruptcy law.

Despite adverse economic consequences, freezing bank liabilities still occurs. While rarely used in the case of individual bank failures, it is used in the case of a systemic banking crisis (Ennis and Keister, 2010). For example, deposits were

[35] In Diamond and Dybvig's (1983) simple model, freezing deposits (also called suspension of convertibility) seems to be the optimal response to preventing bank runs if the liquidity shocks are i.i.d. among depositors. In this case, the bank only repays an expected proportion of depositors in the first period. Announcing this in advance, depositors anticipate that there will be no losses and are comfortable with leaving their funds in the bank. Consequently, only depositors with early liquidity needs raise their funds. Suspension of convertibility becomes more problematic if liquidity shocks are partially correlated (and/or not fully diversified). In this case, suspension of convertibility induces suboptimal liquidity provision because not all depositors with an early liquidity need are able to withdraw their funds. In the (more realistic) case of information-based bank runs, matters are more complicated. Suspension of convertibility may again lead to a suboptimal liquidity provision (Bhattacharia and Thakor 1993; Chari and Jagannathan 1988).

frozen for three months in Argentina in 2001. In the case of a systemic crisis, deposits are usually restructured: demand deposits are transformed into time deposits. Their values may also decline due to simultaneous currency depreciation (see Sections 4.1 and 4.2)

Transfer of contracts: Due to the absence of an automatic stay and due to severe coordination problems between bank creditors, bank bankruptcy must be resolved much more rapidly than corporate bankruptcy. The banking authority must act decisively. It has to have the power to swiftly move fragile contracts to another healthy bank (a private or government-owned entity). For example, withdrawable demand deposits should be transferred to safety almost instantaneously: the deposit insurer should immediately repay insured deposits or assist in their transfer to a healthy institution. The status of other contracts in which the reputation of the bank is crucial needs to be promptly addressed. Special care is needed when dealing with other creditors. Uninsured deposits may only be partially compensated. If uninsured depositors are not fully compensated, the impact on systemic risk needs to be assessed.[36]

The banking authority should also be granted the right to transfer not only deposit contracts but also other contracts to a healthy or newly established bank. Part of the failed bank should be sold to a healthy acquirer or even nationalized. In this way, deposits and loans can be kept at the same institution in order to conserve the valuable combination of the bank's deposit-taking and lending activities. Due to reputation concerns, a short bankruptcy procedure is crucial: bank bankruptcy law should lead to prompt winding-up of failing banks.

During the recent financial crisis, there were many discussions regarding the implementation of "good bank" and "bad bank" schemes.[37] Basically, the idea was to take away the troubled assets from the balance-sheet of financial institutions and to put them into a "bad bank" together with capital infusion. The reason for doing this is twofold. First, it leaves cleaner banks, which can function normally without the uncertainty regarding the value of their assets. The "good bank" will find it easier to raise private capital. Second, this separation takes advantage of specialization. People that are good at restructuring bad loans can focus on this job. They can afford to be more patient in the recovery of bad loans than banks are (i.e., they are allowed to sell distressed loans and other assets gradually over time), and as a result the recovery rates will be higher and the cost to taxpayers will be lower. The "good bank" should be managed by those that are better at normal banking activities. They can concentrate on the basic functions of intermediation without the distraction of dealing with underperforming loans.[38]

[36] The example is the rescue of all depositors and even bond holders of Continental Illinois to prevent spreading the risk to another bank. Continental Illinois was considered too big to fail (Morgan and Stiroh 2005; Wall and Peterson 1990).

[37] See Gros (2009), Guha (2009), and Holmes (2009).

[38] Sweden implemented this strategy in the second half of the 1980s. After a credit-fueled economic boom with soaring equity markets and real estate prices, Sweden's economy dived

Transfer of control: The banking authority must be able to take control of the bank to maintain vital functions (e.g., functions connected to the payment system). It is important that the transition of the controlling rights from the existing management to the authorities to be made swiftly to prevent periods without control that result in substantial dissipation of the value of bank assets (see IMF and World Bank 2009). Due to the acute asset-substitution problem in banking, expedited transfer of control is more important in the case of bank bankruptcy law than in the case of corporate bankruptcy law.

The modes of bank intervention: The most often used modes of intervention are liquidation, purchase and assumption transactions, and nationalization.

The most common procedures to address corporate insolvency are: (1) liquidation, (2) reorganization, or (3) foreclosure by the senior creditor (Djankov et al. 2007). The four basic resolution procedures around the world to address bank failures are variously categorized into: (1) liquidation, (2) recapitalization (either by the stockholders, lender of last resort, or the government; in the most extreme case, the bank is nationalized), (3) a voluntary or forced takeover by another financial institution of the entire or part of the failed bank, also called a purchase and assumption transaction, or (4) implementation of a "good bank/bad bank" scheme (Goodhart and Schoenmaker, 1995). In Section 3.2.3 we further described the characteristics of various bank resolution methods.

A clean start also prevents ex-post inefficiencies. If the manager responsible for the failure is left on board, he may try to cover up problems by taking excessive risk. If the amount of bailout by the banking authorities is too large, the bank will be induced to believe that future bailouts are very likely. On top of this, illiquid (or even insolvent) banks with poor management are allowed to compete with strong banks at the taxpayer's expense. This will reduce the likelihood of prudent investment by banks' managers in the future. Thus, in order to mitigate the above problems, any recapitalization by banking authorities should be reduced in volume, the cost for taxpayers should be minimal, the bank's shareholders should suffer severe losses on their investment, and even junior debtholders should suffer a "haircut" (see IMF and World Bank 2009).

An ex-post liquidity provision should give banks ex-ante incentives to differentiate their investments rather than to herd. As Acharya and Yorulmazer (2008) argue, the regulator should bail out some of the troubled banks in the presence of a systemic shock. Surviving banks should be allowed to purchase the failing banks at discounted prices.

Who should close the weak bank: Several characteristics make the regulator the most suitable to trigger bank bankruptcy. Bank creditors are not in a position to optimally trigger bank bankruptcy. First, (partially) insured depositors would trigger bankruptcy too late with a substantial cost for the deposit insurer and public funds. Second, bank creditors lack knowledge and incentives to carefully examine

into a deep recession. Troubled bank assets were 15% of GDP before the "good bank/bad bank scheme" was implemented. See also The Economist Staff (2008).

the solvency position of the bank. Consequently, they could only trigger bank bankruptcy if the bank is illiquid, which is too late and usually imposes substantial cost on the deposit insurance fund. Third, creditors of systemically important institutions could postpone triggering bankruptcy until the accumulated losses would be so large that the failure of the bank would create massive systemic risk. In this way, creditors would be betting on being bailed out. Fourth, bank creditors are also competing financial institutions. In certain (although rare) instances, it may happen that triggering bankruptcy is optimal for such financial institutions.[39]

Even though bank management should have the authority and responsibility to start bank bankruptcy, in many instances the regulator would still need to intervene. Bank management could manipulate accounting figures and use creative accounting to postpone bank liquidation. The importance of timely intervention in mitigating losses from bank failures demands that the regulator have the power to start bank bankruptcy.

Who should lead the resolution: The resolution of bank bankruptcy can be led by bankruptcy courts or by the supervisor. A court-led process corresponds more to corporate bankruptcy, narrowing the discrepancy between bank and corporate bankruptcy procedure and reducing distortions and arbitrage arising from an uneven treatment of banks and other financial institutions. However, giving the lead to the supervisor has several other advantages. The supervisor has knowledge and incentives to properly address all the externalities involved in bank bankruptcy. The supervisor can operate much more quickly than the court, which is crucial for containing systemic risk and preventing contagion to other still healthy financial institutions. The majority of countries have implemented a supervisor-led bank insolvency process (see IMF and World Bank 2009).

In some countries, several banking authorities exist that could lead the restructuring of a weak bank. The prudential supervisor has substantial knowledge of bank operations and of systemic risk, and can therefore optimally trigger and efficiently lead the bank bankruptcy process. As stated, reputation reasons may prevent it from timely intervention. In addition, the prudential supervisor does not have sufficient funds for bank resolution. Its cooperation with the treasury and the deposit insurer is crucial. Considering its exposure to losses, the deposit insurer (if it is separated from the prudential supervisor) can also be involved in the resolution of the failed bank. Beck and Laeven (2006) provide empirical evidence that banks are more stable in countries where a deposit insurer has the power to intervene in failing banks and revoke their membership in the deposit insurance scheme. This effect is only present, however, if the deposit insurer is insulated from political pressures and has access to supervisory information.

[39] For example, in the case of bankruptcy the failed bank may be acquired at below its fair price (see Perotti and Suarez [2002] for a model of competition between two banks in which a failure of one bank comes as a benefit for its competing bank because of its newly obtained monopolistic position). In general, however, a bank failure comes as a blow for other banks by damaging public confidence, for example.

Bank bankruptcy law should make the banking authority in charge as independent as possible. The rules for the replacement of the banking authority's personnel should be clearly stated. To enable their swift and independent action, the personnel also need adequate legal protection.

The institutional framework for reorganizing and liquidating multinational banks should also be addressed. The conflict between the objectives of various national authorities and the absence of an adequate international legal framework might delay intervention in the case of a bank with cross-border activities. This could lead to the failure of many national subsidiaries (or even the entire banking group). Because the national banking authorities show a strong preference for their own national interests (and are under the pressure of domestic taxpayers) and because the coordination problem (even with respect to sharing information) is so acute between them, a centralized prudential supervisor for cross-border banks might prove to be the optimal solution for timely and decisive intervention. As previously discussed, limited intervention by an international agency, conditional on painful domestic adjustments by the national authorities, might restore the solvency of the multinational bank, either in whole or in part.

Optimal bank governance in restructuring: To limit ex-post risk-taking, the regulator in charge of bankruptcy should have clear objectives for when it takes control over a failed bank and its daily operations. If the bank is in restructuring for a longer period of time, its ongoing operations should not be excessively risky. The bank should also avoid exploiting government guarantees in competition with other healthy banks. Because troubled banks receive (and anticipate in the future) more support than healthy banks, they will have a strong incentive to take excessive risk. Yet, there is another problem. Banks, either troubled or solvent, compete in the same market. Subsidized banks find themselves in a more advantageous position due to the lower cost of funding. This will lead to an inefficient allocation of liabilities across banks.

Regulatory arbitrage: Even though special features of banks call for separate bank bankruptcy law, its alignment with corporate bankruptcy law is crucial. Excessive differences between both regimes may spur regulatory arbitrage in which banks will try to circumvent the regime of bank bankruptcy law. For example, banks could establish affiliated nonbanking corporations that would not abide by bank bankruptcy law for the sole purpose of avoiding bank bankruptcy law. The current crisis demonstrates that banks increased their risks partially through their engagement in regulatory arbitrage. Banks escaped regulatory standards and supervision by being involved in securitization through special-purpose vehicles (Caprio et al. 2008). In addition, experience from the Swedish banking crisis in the 1990s shows that banks increased their risk through regulatory arbitrage (Molin and Ingves 2008). Bank supervision should prohibit the existence of subsidiary structures (i.e., SPVs), whose sole purpose is regulatory arbitrage and tax avoidance.

In short, several principles guide the design of optimal bank bankruptcy law. The need for a special bankruptcy law for banks exists due to: (i) negative externalities of bank failure, (ii) the opaqueness and asset-substitution problem of bank operations,

and (iii) bank liquidity provision function. To prevent asset substitution in the failing bank, the authority should have the power to remove the existing management and shareholders. A pre-insolvency phase should exist with a carefully developed trigger for bank bankruptcy. Responsibility for triggering bank bankruptcy should be clearly defined. The authority that would restructure the failing bank should have clear objectives: it should restore the stability of the entire financial system by lowering the negative externalities of bank failures. It should also lower the cost for public funds but also try to protect the property rights of bank creditors and shareholders to lower the cost of future funds for banks. To prevent distortions in competition, clear governance mechanisms for the bank in restructuring should be put in place. Optimal bank bankruptcy law should largely refrain from an automatic stay (especially in the case of insured deposits) to preserve public confidence. Bank bankruptcy law should also work to contain information dissipation that the transfer of a loan book will create. However, bank bankruptcy law should be aligned as closely as possible, given the above considerations for corporate bankruptcy law in order to prevent potential regulatory arbitrage.

The comparison between bank bankruptcy law and corporate bankruptcy law is summarized in Table 3.4.

We have addressed the specific attributes that bank bankruptcy law should possess. What is also needed is an analysis of the strength of each attribute of bank bankruptcy law to respond to the special features of banks (see Table 3.1). Such an analysis is presented in Table 3.5.

The first attribute of optimal bank bankruptcy law is its stance toward bank creditors. Creditor-friendly bank bankruptcy law can partially mitigate the danger of bank runs by giving creditors high priority in bankruptcy (in terms of the expected amount and timing of returns, and control over the bank). Consequently, the liquidity provision function of banks is enhanced. However, bank bankruptcy can be so costly that creditors are not repaid even though bank bankruptcy law is creditor-friendly. Therefore, systemic risk cannot be completely eliminated. Such a danger is exacerbated in the absence of timely intervention that can occur due to regulatory forbearance, regulatory capture, and the presence of fragmented regulatory structure.

The second attribute of optimal bank bankruptcy law is a pre-insolvency regime. A pre-insolvency regime facilitates timely intervention and forces the shareholders to absorb losses. This mitigates bank runs, spurs liquidity provision, and partially prevents systemic risk. However, in the case of systemic risk, losses can be substantial and can occur instantaneously. In this case, a pre-insolvency regime is not completely effective. A pre-insolvency regime also effectively mitigates coordination problems between several regulators by giving them sufficient time to respond.

The third attribute of optimal bank bankruptcy law is strong supervisory power in the case of bank bankruptcy. If the supervisor has strong power in the case of bank bankruptcy, this may prevent bank runs and systemic risk, especially if the banking authority also insures deposits and has spelled out an explicit objective to

Table 3.4 Comparison of the design of bank and corporate bankruptcy law

Bank bankruptcy law	Corporate bankruptcy law
The authority should have the power to remove the existing management and shareholders	The court could remove the existing management and shareholders
Voluntary restructuring is (almost) impossible due to many creditors and reputation concerns	Managers may enter into voluntary restructuring
A pre-insolvency phase should exist	No pre-insolvency phase
Trigger (discretion vs. quantifiable rules)	Trigger is insolvency or illiquidity
The regulator should close the failing bank	The management and creditors can trigger bankruptcy
Usually the regulator is better positioned to manage resolution than the court	The court manages the resolution
The objectives of the regulator in resolution:	Maximize the value of the corporation
Stability of the entire financial system	Protect the priority of firm claimants
Maximize the value of the failed bank	
Low cost for public funds	
Protect the priority of bank claimants	
Legal stay	Freezing debt contract is common[a]
Freezing debt contracts may trigger systemic risk	Special treatment of systemically important contracts
Transfer of contracts	Netting of bank debt
Repay insured deposits or transfer them to safety	Close-out netting of derivatives
Protect bank creditors (and shareholders as residual claimants)	
Governance of banks in restructuring	Managers (if still in charge) should work to the benefit of debtholders and shareholders only as residual claimants
Prevent distortions in competition between banks	
The authority in charge should concentrate on safety (less on profits)	
In the restructuring	The court has strict rules on asset sales/ liquidation that may lead to fire sales
Information should be preserved as much as possible	
The deposit book should be preserved	
Liquidity support by the lender of last resort	Post-petition financing
Align bank bankruptcy law closely with corporate bankruptcy law to prevent regulatory arbitrage	

[a]There are a few exceptions: secured debtholders can try to seize collateral if they can prove that its value will drop in bankruptcy

guard systemic stability. However, strong regulatory power exacerbates regulatory forbearance, regulatory capture, and coordination problems between multiple regulators.

The last attribute of optimal bank bankruptcy law is a carefully designed deposit insurance scheme and the consequent special treatment of depositors. Deposit insurance with extensive coverage mitigates the threat of bank runs by depositors and facilitates bank liquidity provision to depositors. However, bank runs can be

Table 3.5 Effectiveness of various attributes of bank bankruptcy law

Special feature of banks	Creditor-friendly bank bankruptcy law	Pre-insolvency regime	Strong powers of the regulator	Deposit insurance
Bank runs	4	4	5	4
Bank liquidity provision	5	5	5	5
Regulatory forbearance and regulatory capture	4	3	1	1
Systemic risk	3	3	5	3
Fragmented regulatory structure	3	5	1	2
Severe agency and information asymmetry problems	5	4	3	1

5 = most effective; 1 = least effective

triggered by other bank creditors. Hence, deposit insurance does not prevent systemic crisis. Deposit insurance encumbers depositors' control over bank risk-taking, which exacerbates the agency and information asymmetry problems and increases regulatory forbearance and regulatory capture.

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Chapter 4
Systemic Crises

In order to design the optimal bank restructuring policies, it is important to distinguish between the failure of an individual bank and a bank panic. Theoretical and empirical literature reveals that restructuring policies in a systemic crisis need to be much broader than in the case of an individual bank failure. We first review the theoretical literature on optimal restructuring of banks in a systemic crisis. Second, we survey the empirical literature on systemic crisis. Finally, we evaluate various containment and restructuring methods.

4.1 Theoretical Research on Systemic Crises

The theoretical literature makes attempts to identify the optimal tools for bank restructuring in a systemic crisis. Two problems complicate the identification of causes for a systemic crisis and optimal policy responses. First, in a systemic crisis, solvency and liquidity problems are intertwined. Second, and related, bank restructuring does not occur independently from the rest of the economy but goes hand in hand with corporate restructuring and depends on financial market (non-) functioning.

Optimal intervention in the case of a systemic crisis depends on the severity of the problems in the banking system. However, at the beginning of a systemic crisis the authorities usually do not know how severe the problems are and whether the crisis is purely based on bank illiquidity or also on bank insolvency. Even in the case of pure liquidity problems in a banking system, the real economy will be affected. Especially small, bank-dependent borrowers suffer if their banks are subject to exogenous liquidity shocks (Khwaja and Mian 2008). The same happens if banks are hit by exogenous shocks to their capital. Chava and Purnanandam (2011) show that bank-dependent borrowers suffered the most due to the shock to

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DOI 10.1007/978-3-642-21807-1_4,

the U.S. banking system coming from the Russian crisis in 1998.[1] They also show that liquidity infusions by the Federal Reserve increased the market values of bank-dependent borrowers more than the market values of firms that have access to public markets. This shows that market valuations of firms depend on the stability of the banking sector. Liquidity injections by the central bank help in the case of liquidity shocks and small capital shocks to the banking system.

However, if the solvency problems are high, liquidity infusions will not restore stability of the banking system. The (prematurely) injected liquidity of the monetary authorities may flow outside the banking system. It will derail incentives of banks to obtain liquidity on their own, or even put insolvent banks on life support (Bolton et al. 2009, 2010). Liquidity infusions may also fail to encourage bank lending to the real sector. Banks will hoard liquidity rather than increase new lending.[2] The regulator needs to complement liquidity measures with solvency interventions such as recapitalization, asset repurchases, and (subsidized) government guarantees.

To understand when liquidity provision should be used and when recapitalization, it is instructive to review the intuition behind Myers (1977). In particular, in the "debt overhand" problem, over indebted firms will be unable to raise equity to undertake profitable projects because equity would only help senior debtors. Philippon and Schnabl (2009) analyze optimal mechanisms in such an environment. They show that recapitalization is more effective than providing debt guarantees or buying risky assets. This is the case if the government has limited resources and limited information, and banks endogenously decide to participate in the government-support scheme.

As an (overly) simplistic rule, the regulator should use liquidity interventions in the case of liquidity problems and solvency interventions in the case of bank solvency problems. However, the liquidity and solvency problems are usually hard to disentangle. Diamond and Rajan (2005) analyze how a combination of illiquidity and insolvency spread contagiously through the banking system. In their model, banks can transform long-term loans into short-term loans if depositors withdraw their funds early and the market liquidity is scarce. However, restructuring the maturity of bank loans is costly and banks with a high proportion of long-term loans are forced into insolvency. Depositors would anticipate such development and would run on the banks, which would exacerbate liquidity and solvency problems in the banking system.

Diamond and Rajan (2005) analyze what impact recapitalization of banks might have. They conclude that recapitalization should be aimed at banks with many

[1] Puri et al. (2009) find that in the 2007–2009 financial crisis German *Landesbanken* with substantial subprime exposure reduced lending more than their less-exposed peers.

[2] In the 2007–2009 financial crisis, banks in the U.S. reduced new lending by 68% in the 3 months after the Lehman Brothers collapse (Bolton et al. 2009; Ivashina and Scharfstein 2008). Ivashina and Scharfstein (2010) show that the decline was due to smaller credit supply by banks and occurred despite a large infusion of liquidity by the Federal Reserve.

short-term loans. In this case, recapitalization prevents bank run and immediate fire sales of liquid loans, which could drain the liquidity out of the system in the absence of recapitalization. In contrast, recapitalization of a bank with many long-term loans proves to be counterproductive. A recapitalized bank has no incentive to shorten the maturity of its loans, increasing illiquidity in the banking system. Higher illiquidity of one bank could transform into the insolvency of many other banks. As a result, low recapitalization triggers the need for higher consequent recapitalization. Diamond and Rajan (2005) warn against overly rapid recapitalization. If the regulator cannot be sure whether the problem is of a liquidity or solvency nature, liquidity provision is a better policy than recapitalization.

However, extensive liquidity support spurs moral hazard. In the longer period, recapitalization is needed. Gorton and Huang (2004) analyze the optimality of government bailout policies. In their model, firms inefficiently hoard liquidity and invest in short-term projects in order to buy liquidated long-term projects. To prevent this inefficiency, the government buys out bad loans from banks and forgives part of debt of the troubled firm in order to limit the moral hazard problem of firm's managers. The government can induce banks to sell only bad loans by paying a fixed price for them. Effectively, the government subsidizes weak banks by taxing good banks. Gorton and Huang's (2004) model does not discriminate across different methods of dealing with bad loans: the efficiency does not change if the government directly buys bad loans or uses an asset-management company.

Gorton and Huang (2004) stress that not only firms but also undercapitalized banks can be affected by moral hazard. In such a case, bailing out undercapitalized banks by taking out bad loans from bank balance sheets is twice as effective. The government subsidizes banks and entrepreneurs at the same time.

Diamond (2001) seeks to answer how large recapitalization needs to be in the case of a systemic crisis. He shows that recapitalization is insufficient if it only induces banks to write off loans - but banks continue to liquidate viable borrowers. However, recapitalization can also be excessive and leave high rents to bankers in terms of high wages or dividends repayment. Therefore, recapitalization should be combined with labor force reductions, explicit management plans, and the threat of subsequent closure. Van Wijnbergen (1997) analyzes the Polish example of restructuring in the transition period. He advocates major recapitalization of troubled banks with subsequent hard constraints (in the form of prudential regulation) on bank managers.

Hoshi and Kashyap (2010) analyze the financial crisis in Japan in the 1990s and compare it with the 2007–2009 financial crisis. They argue that rescue packages need to be sufficiently large, otherwise distressed banks hide losses and do not restructure their impaired loans in a timely manner.

Experience from transition economies shows that often bank and corporate restructuring are intertwined processes. Van Wijnbergen (1997) argues that banks can lead the restructuring of their borrowing firms. Importantly, the gains from restructuring should not be taken away from banks by the tax authority, for example. In Poland this has been achieved by promising that the government would play a passive role in debt restructuring. More specifically, to keep viable

firms alive the tax authorities would match tax reductions for such firms to credit reductions agreed by banks.

In the absence of recapitalization, forbearance of weak banks has a negative effect on the restructuring incentives of their borrowers. Berglöf and Roland (1995) claim that banks with low liquidity bet on being bailed out by the government and hence strategically invest in unprofitable firms. The government faces the following tradeoff. On the one hand, the government can induce banks to lend and prevent a credit crunch. On the other hand, such a policy generates a soft-budget-constraint problem in which banks may not liquidate or restructure failing firms, but would rather gamble on being bailed out. When banks' loan portfolios are poor, the soft budget constraint can only be increased through large ex-ante capital injections that are prohibitively costly for the government. They argue that a partial transfer of bad loans to an asset-management company increases the soft budget constraint of banks. A partial transfer also keeps the costs of a bank rescue at a lower level than a complete transfer of bad loans.

Mitchell (2001) argues that the policy of dealing with undercapitalized banks affects not only the behavior of banks but also the behavior of the banks' borrowers. In her view, cancellation of debt inherited from the past is not optimal in economies with weak corporate governance mechanisms because debt repayments represent the only means that disciplines firm managers. Correct incentives to firm managers are only given by making debt relief sufficiently unattractive. Such a situation was particularly relevant in the transition economies; see Van Wijnbergen (1997) for the Polish experience.

Another intervention possibility is to remove problematic assets from banks. Based on the experience from transition economies, Van Wijnbergen (1997) argues against moving bad loans from bank balance sheets into a separate asset-management company. Such transition may stigmatize firms and prevent them from receiving bank loans long into the future. In addition, the asset-management company should be set up to quickly sell or restructure bad loans. However, the employees of an asset-management company would have few incentives to do so and to abolish their own source of influence and jobs (for the experience of an asset-management company from Slovenia and Hungary, see Van Wijnbergen 1998).

The question is whether the intuition of Van Wijnbergen (1997) from transition economies also holds for developed economies, in which financial markets are much more developed. The optimal resolution of a systemic banking crisis may well become more difficult to design due to the increased interconnections between banks and financial markets (Boot and Thakor 2010). Two issues arise. First, problems in the banking system cannot be solved on their own without also considering problems in the financial markets.[3] For example, the problems in one bank may lead to fire sales, dump prices on the asset market, and spread the contagion to other previously solvent banks (Fecht 2004). Brunnermeier and

[3] In the ex-ante sense, asset bubbles cannot be left alone waiting for them to pop up on their own. The regulator needs to confront them through tight monetary policy, for example.

Pedersen (2009) show that the ability of traders (e.g., investment banks and hedge funds) to raise funds is inherently connected to the asset's market liquidity.

Second, financial markets may be used to fuel private funds into the stricken banking system. In this sense, asset sales are an important tool for carving out problematic assets from the banking system, facilitating an inflow of outside capital, and at the same time unfreezing financial markets. Bolton et al. (2009, 2010) argue that (the intention of) carving out bad assets through asset sales prevents banks from immediately engaging in fire sales. Hence, asset sales can work to increase liquidity on financial markets.

We now address the intuition on the optimal use of asset purchases. Asset purchases are especially valuable in economies with developed financial markets. An asset-purchase program carves out troubled assets to boost transparency and confidence. This increases liquidity in financial markets. Designing an appropriate partial transfer keeps the incentives in place. The value of asset repurchases is less obvious in economies with underdeveloped financial markets. Firm-specific, proprietary information that a bank possesses is lost in a loan purchase. Firms having their loans purchased are stigmatized. In addition, banks sell their least valuable assets, which lead to the loss of public funds. Such implicit infusion of public funds is largely opaque and therefore ill suited for fixing the solvency problems of banks.

We now turn to the general supervisory and regulatory framework in which banks operate and analyze its role in systemic crisis resolution. High-quality accounting standards help prevent the moral hazard of bank managers misreporting their earnings. In countries with weak accounting standards, strict bank closure rules can be counterproductive. In particular, bank managers will hide rather than liquidate bad loans in order to stay afloat even though liquidation is the first best policy (Aghion et al. 1999; Mitchell 2001). Aghion et al. (1999) show that soft bank closure rules lead to excessive liquidation of bad loans. Indirect bank recapitalization through buying out nonperforming loans may help though. In particular, a nonlinear transfer price mechanism can be established in which bad loans up to some proportion of bank assets are bought at a higher price than subsequent bad loans. Such a nonlinear transfer price mechanism prevents banks from overreporting bad loans with the aim of excessive recapitalization.

The quality of a supervisory system matters in setting the right restructuring policy. Corbett and Mitchell (2000) show that banks refuse to participate in recapitalization programs due to reputation concerns even if the constraints attached are very soft on bank management and owners. A strong supervisory system helps the regulator identify weak banks and induce them to accept recapitalization programs. The differences in the quality of supervisory systems explain why some countries (e.g., Sweden and South Korea) could successfully induce banks to proceed with voluntary recapitalizations, whereas in others (e.g., Mexico and Japan) recapitalization programs were received unenthusiastically. Corbett and Mitchell (2000) propose that bank management that avoided recapitalization programs should be punished in the case of underperformance.

In an attempt to solve a systemic crisis, the regulator needs to retain the big picture of the crisis and in order to change the big picture sometimes drastic

measures need to be taken. In many cases, small-scale policies have a negligible impact on the economy, mainly because coordination problems between depositors, borrowers, and banks play a crucial role. Bebchuk and Goldstein (2008) claim that a bank's decision to lend depends on the lending behavior of other banks. If many banks stop lending at the same time, companies that are left without funds are hurt. Because companies are interconnected, the negative effect spreads through the real economy and even a company with previously valuable projects becomes unprofitable. Consequently, a bank that anticipates a lending freeze stops lending on its own. Bebchuk and Goldstein (2008) discuss several measures that would facilitate credit flow. Interest rate cuts and infusion of capital into banks are not sufficient to unlock a credit freeze. In addition to capital infusions, the government should demand commitments from banks to extend loans. Such a policy is effective if it affects the lending behavior of many banks.

Bebchuk and Goldstein (2008) also propose a more direct approach in which the government could directly extend loans to companies or could guarantee the minimum profits for banks that will extend loans. In the 2007–2009 financial crisis, governments followed this route and directly supported stricken companies and/or industries or subsidized interest rates or extended loan guarantees.[4]

Another reason why the regulator needs to intervene strongly is that otherwise banks will exploit the fragility of the banking system and particularly the regulatory measures for their own benefits. In anticipation of fire sales of distressed banks in the future, banks will hold on to illiquid assets (Diamond and Rajan 2010). Even worse, Diamond and Rajan (2010) predict that weak banks would be most reluctant to sell the most illiquid securities and would even be inclined to increase their exposure to illiquid assets by leveraging up.

A weak stance by the regulator is an important source of fragility in the banking system. Ennis and Keister (2010) show that a regulator that cannot commit to freezing deposits in the case of a system-wide panic is responsible for the start of a run on the banking system. The problem lies in time inconsistency. That is, the policy not to freeze deposits is optimal in the ex-post sense (due to high liquidation costs) but not in the ex-ante sense. In the ex-ante sense, a regulator that could commit to freezing deposits in a timely manner would prevent value-dissipating fire sales and, by doing this, completely prevent bank runs. Ennis and Keister (2010) point to the important general characteristic of timely intervention. The regulator would like to commit to intervening in a timely manner before intervention is necessary; however, at the moment when timely intervention is necessary, the regulator would like to postpone it.

Managing expectations seems to be a crucial factor in setting up the exit from a systemic crisis. Establishing confidence in regulatory policies and actions encourages private investors to go along and to leave funds in the banking system or even to contribute funds directly in an asset-management company, for example.

[4] The European Commission allowed for state aid to support companies and banks hit by the 2007–2009 financial crisis (see European Commission 2009a, 2010c).

Eggertsson (2008) shows that a shift in expectations (created by Roosevelt's policy actions) was responsible for the U.S. recovery from the Great Depression.

Despite its adverse effects, even a systemic crisis may yield opportunities: a stricken country will pursue structural reforms that would otherwise not be politically acceptable (Haggard 2001).

4.2 Empirical Research on Systemic Crises

To limit the cost of a systemic crisis, the government needs to actively intervene. The legal environment built for the failure of one individual bank can be useful, but often ad-hoc solutions are required to respond to the causes and other special characteristics of the crisis. Systemic crises have been researched empirically and to a lesser extent also theoretically. Two main conclusions appear from the empirical literature. First, the accommodative approach that promotes extensive government guarantees and liquidity support for weak banks is fiscally costly. Second, the quality of the legal framework and its enforcement rather than the size of intervention shorten the time of the crisis. Third, systemic banking crises usually go hand in hand with currency crises and sovereign default.

4.2.1 Accommodative Approach Towards Resolving Systemic Crises

A systemic crisis can be divided into three phases according to Claessens et al. (2001). In the first phase, the government needs to strengthen public confidence in the banking system and prevent liquidity problems of banks.[5] Payment systems need to be kept operating. In addition, the values of bank assets need to be anchored to prevent a downward spiral of losses.[6] Common policies include government guarantees, liquidity support by the central bank, and an increase in deposit insurance coverage. In the second phase, the financial restructuring of banks proceeds. In the last phase, the restructuring of banks' assets (e.g., nonperforming loans) and privatization of nationalized entities occurs.[7]

[5] A liquidity shock to the bank is transmitted to small and medium-sized enterprises in particular (see Khwaja and Mian 2008).

[6] The values of firms (especially of small and bank-dependent firms) depend on the strength of their banks. A systemic shock to the banking system therefore hampers the value of firms, which leads to another shock to the value of banks.

[7] Ingves and Lind (1996) present a Swedish experience in the treatment of systemic bank crisis. They argue that, after public confidence is established, organization and labor to deal with the systemic risk has to be put in place as independently as possible from political pressures. Banks have to be treated differently depending on how undercapitalized they are. Realistic goals for bank managers and restructuring agents need to be set.

The government faces a delicate decision about when to start with restructuring. Letting banks use government guarantees for too long creates a moral hazard problem of gambling for resurrection or looting. This may be costlier than the consequences of strict policies (e.g., the loss of confidence and the contraction in credit availability). Baer and Kliengebiel (1995) perform a case study on five crises (in the U.S. 1993, Japan 1946, Argentina 1980–1982, and Estonia 1992) to show that imposing losses on depositors does not need to end in bank runs. Rather, waiting with prompt restructuring is more dangerous, especially if regulators are forced to recapitalize banks even though they first claim that the banking system is stable. The lost reputation of the government's ability to successfully confront the crisis seems to be self-fulfilling.

Honohan and Klingebiel (2003) find that an accommodating approach towards solving a bank crisis creates substantial fiscal costs. Countries that use blanket deposit guarantees, open-ended liquidity support, repeated partial recapitalizations, debtor bailouts, and regulatory forbearance incur substantially higher fiscal costs than countries that implement strict regulatory policies. Strict regulatory policies include restraining the actions of the bank in prolonged liquidity difficulty, requiring the bank to raise sufficient capital and, if it fails, removing the management, selling the bank to a solvent institution, injecting public capital, or liquidating it (see also Bordo et al. 2001).

Laeven and Valencia (2008a) employ data on 42 financial crises in the period from 1970 to 2007 as gathered in Laeven and Valencia (2008b). They find that guarantees are fiscally costly; however, they also note that guarantees are used especially if the banking crisis is severe. They warn against joint guarantees and excessive liquidity infusion because of subsequent pressure on the currency, inflation, and potential destabilization of the entire economy. Instead, guarantees should be accompanied by credible policy actions aimed at restructuring banks.

Laeven and Valencia (2010) compare the past financial crises with the 2007–2009 financial crisis. They expand the database used in Laeven and Valencia (2008b) for data from 2008 to 2009. They find that fiscal costs in the past financial crisis were smaller than in the 2007–2009 financial crisis. Large public interventions in 2007–2009 period have mitigated repercussions of the crisis for the real economy but have led to high public deficits and have increased the levels of public debt to potentially unsustainable levels.

We use the database from Laeven and Valencia (2008b) to perform a very stylized comparison between financial crises of different types. In particular, we are interested in the following questions: (1) How do financial crises with high fiscal costs differ from ones with low fiscal costs (see Figure 4.1)? (2) How do financial crises with high output loss differ from ones with low output loss (see Figure 4.2)? (3) How does government ownership affect the characteristics of financial crises? Finally, (4) how are twin crises (financial crises that contain banking and currency crises) different from banking-only crises? In the figures we limit the presentation to only the variables from Laeven and Valencia's database, in which the independent sample *t*-test is statistically significant between groups (* denotes 10% statistical significance and ** denotes 5% statistical significance).

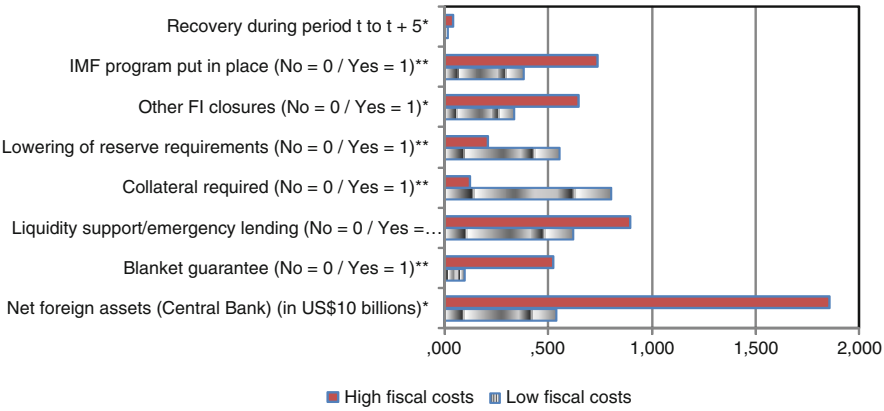


Fig. 4.1 The difference between financial crises with low fiscal costs and ones with high fiscal costs. * statistically different at 10%; ** statistically different at 5% (Source: authors' own computation based on Laeven and Valencia's (2008b) database)

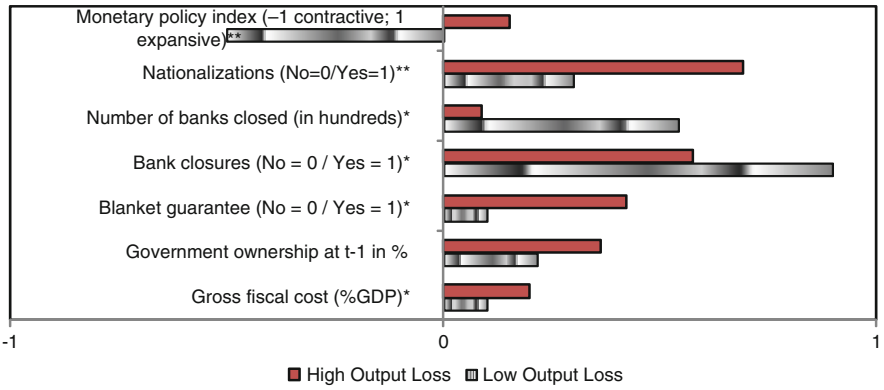


Fig. 4.2 The difference between financial crises with low output loss and ones with high output loss. * statistically different at 10%; ** statistically different at 5% (Source: authors' own computation based on Laeven and Valencia's (2008b) database)

Figure 4.1 analyzes the interconnection between the size of fiscal costs and the characteristics of the financial crises. First, high fiscal costs are associated with higher recovery (the difference between gross fiscal costs and net fiscal costs) and higher probability that the IMF program is put in place. This indicates that high fiscal spending is needed when the crisis is severe and when IMF support is necessary.

Second, Figure 4.1 shows that high fiscal costs are associated with higher probability that other financial institutions than banks are closed. The rationale for this is the following. If a financial crisis is severe, nonbanking financial institutions are closed. This necessitates high public intervention and entails high fiscal costs.

Third, Figure 4.1 shows that high fiscal costs are associated with generous blanket guarantees (and a smaller probability that reserve requirements are lowered). If fiscal costs are high due to the severity of a financial crisis, higher blanket guarantees are needed, which then decreases the need for lower reserve requirements.[8]

Fourth, Figure 4.1 shows that high fiscal costs are associated with higher net foreign assets of the central bank before the crisis. This indicates that the monetary policy was expansive before the crisis started. That is, expansive monetary policy before a financial crisis is associated with higher fiscal costs in the financial crisis.

We should outline the two main caveats of our brief statistical inroad into an empirical assessment of financial crises. First, our mean comparison does not allow us to test the causality between the factors and the groups. The direction of causality can also be reversed. For example, higher fiscal costs may trigger IMF intervention, or IMF intervention may trigger higher fiscal costs. Second, we do not control for other variables. For example, higher fiscal costs may not trigger IMF interventions on their own. It may well be that higher fiscal costs are a consequence of the underlying currency crisis, which also necessitates IMF intervention. Despite these caveats, the brief overview of the existing data on financial crises offers a taste of the important variables in times of financial distress.

In Figure 4.2 we analyze the differences between crises with high output losses (i.e., output losses are higher than the mode of output losses) and ones with low output losses (i.e., output losses below the mode). Contractive monetary policy is associated with crises with high output losses, whereas expansive monetary policy is associated with crises with low output losses. Nationalization is more likely and the number of banks closed is higher in the case of financial crises with high output losses compared to financial crises with low output losses. This may be a consequence of the observation that the regulator is more reluctant to close banks and is thus forced to nationalize them if the financial crisis is severe. Pervasive blanket guarantees are associated with high output losses. This shows that blanket guarantees are needed in cases of severe financial crises with high output losses.

Interestingly, high government ownership before the financial crisis is associated with high output losses. This may stem from the government being a less efficient owner or from the fact that banking systems with high government ownership are less developed and there the output losses are the highest. High gross fiscal costs are associated with high output losses.

4.2.2 Institutional Environment and the Costs of Systemic Crises

The institutional quality affects the efficiency of regulatory interventions in the case of a systemic crisis. Well-built bank bankruptcy law that aims at restructuring an individual failing bank serves as a starting point for an expedited and smooth

[8] Alternatively, higher blanket guarantees may be responsible for higher fiscal costs. Our simplistic method of comparison does not allow us to analyze the direction of causality.

resolution of the systemic crisis. Frequently, however, ad hoc solutions are necessary to restore public confidence, to strengthen payment systems, and to stop depreciation of bank assets. The quality of ad hoc solutions depends largely on the quality of the overall legal, regulatory, supervisory, and even political framework.

Claessens et al. (2004) find that the size of the fiscal outlay spent on systemic bank restructuring does not impact the speed of the recovery from the crisis. Instead, what is important is better institutions, including less corruption, and improvements in law and order, the legal system, and bureaucracy.

Ongena et al. (2003) show that in the Norwegian banking crisis from 1988 to 1991 the impact of bank distress on the bank's borrowers was low, which is in stark contrast with the situation in the Japanese and South Korean banking crises (Brewer et al. 2003; Bae et al. 2002). They attribute the difference to the more successful corporate governance mechanisms in Norway, which enabled firms to raise funds on the stock market instead of at troubled banks.

Dziobek and Pazarbaşiouğlu (1998) perform an empirical analysis of successful restructuring of banks in systemic crises. Several guidelines emerge. First, prompt corrective action is needed. Second, management deficiencies should be addressed because they were identified as a cause of the banking problems in all sample countries. Third, a lead agency, preferably independent from the central bank, should be designated to be continuously involved in monitoring bank restructuring. Fourth, although the central bank should supply liquidity, it should not lend to illiquid banks on a long-term basis. More effective seems to be removing nonperforming loans from the banks' balance sheets and transferring them to a separate asset-management company with an effective system of loan workout.

Another institutional factor is the level of government ownership in the banking system. The impact of government ownership on the severity, recovery, and optimal government policies in times of financial crises is largely unexplored.

We again employ Laeven and Valencia's database to give some rough estimates on the impact of government ownership on characteristics of systemic crises. Figure 4.3 shows that the recovery of fiscal costs (i.e., the difference between

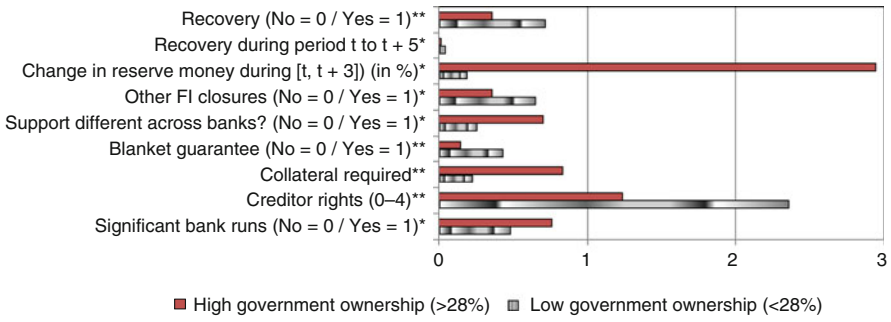


Fig. 4.3 The impact of government ownership on the characteristics of financial crises. * statistically different at 10%; ** statistically different at 5% (Source: authors' own computation based on Laeven and Valencia's (2008b) database)

gross and net fiscal costs) is higher in banking systems with low government ownership. A higher change in reserve money in crisis times is associated with higher government ownership. High government ownership is associated with a lower number of nonbanking financial institution closures and different support across banks. In addition, high government ownership is associated with lower blanket guarantees but higher required collateral. High government ownership is also connected with higher probability of a bank run and lower creditor rights.

4.2.3 The Interaction Between Banking Crises, Currency Crises, and Sovereign Defaults

Reinhart and Rogoff (2011) employ long-term historical data that includes 70 countries and spans over two centuries. They analyze how banking crises and sovereign defaults are interlinked. They show that sovereign defaults often occur after banking crises or accompany them. They also find evidence that banking crises are preceded by surges in private and public debt. Government debt is often hidden (especially domestic debt). In addition, as the crises unfold, the maturity of borrowing becomes increasingly shorter due to lost confidence in the financial system and sovereign borrowing and due to looming hyperinflation.[9]

Spillovers from financial crises into sovereign crises are large and common. Reinhart and Rogoff (2008) find that 3 years after a financial crisis the central government debt increases by 86% on average. Although the exact empirical evidence is not given,[10] we can hypothesize that the spillover effects from the banking failures to the sovereign defaults are the highest when the regulators have limited authorities to resolve banking failures in an orderly manner and where consequently the only option to prevent the systemic banking crisis is to nationalize failing banks, leading to increased levels of public debt.

In the case of severe financial crises, a general stay on all banking obligations can be employed. Deposits (including insured ones) can be frozen or rescheduled. A general stay on bank obligations is usually combined with currency devaluations and negotiations with the IMF. Such a stay is extremely costly for the economy at large. It fuels mistrust in financial system stability at large. It hampers the flow of funds from banks to small, financially constrained and bank-dependent firms. It may also destroy the operation of the payment system at large and flow of funds outside the country. A prolonged freeze of bank obligations will lead to pronounced

[9] It is beyond the scope of this book to carefully study the impact of various fiscal and monetary measures on crisis prevention or crisis recovery. See, for example, Reinhart and Reinhart (2010).

[10] Reinhart and Rogoff (2009) argue that the increasing public debt is mainly a consequence of fading tax income due to economic recession and to a lower extent due to government support for the banking system. However, they do not account for government guarantees, which rise quickly during financial crises.

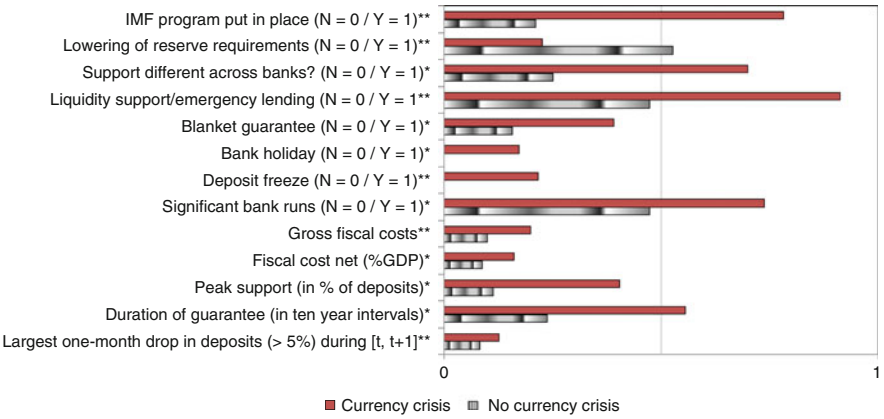


Fig. 4.4 Intervention policies in the case of (or absence of) currency crisis. * statistically different at 10%; ** statistically different at 5% (Source: authors' own computation based on Laeven and Valencia's (2008b) database)

liquidity costs of depositors, to potential for looting, and to pending lawsuits. All these reasons imply that a general stay should be employed as a temporary measure.

Figure 4.4 points to the differences between banking-only crises and "twin crises," in which currency crises follow banking crises. The IMF needs to put a program in place more often in the case of currency crises than in banking-only crises. In addition, lowering reserve requirements occurs less often in the case of currency crises than in the case of banking-only crises. In the case of currency crises, the support is more often tailor-made and different across banks. Liquidity support (e.g., emergency lending), blanket government guarantees, and the duration of guarantees (and peak support in % of deposits) are higher in the case of currency crises than in banking-only crises. Bank holidays and deposit freezes are more often associated with currency crises than with banking-only crises. Bank runs and the largest one-month drop in deposits are more pronounced in the case of currency crises compared to banking-only crises. In addition, net and gross fiscal costs are higher in the case of currency crises compared to banking-only crises.

4.2.4 Overview of Interventions During the 2007–2009 Financial Crisis

The 2007–2009 financial crisis presents a perfect case study to analyze the effectiveness of various intervention methods employed by numerous countries around the world. Countries needed to intervene heavily in order to prevent complete financial collapse. We now present a brief overview of interventions during the 2007–2009 financial crisis.

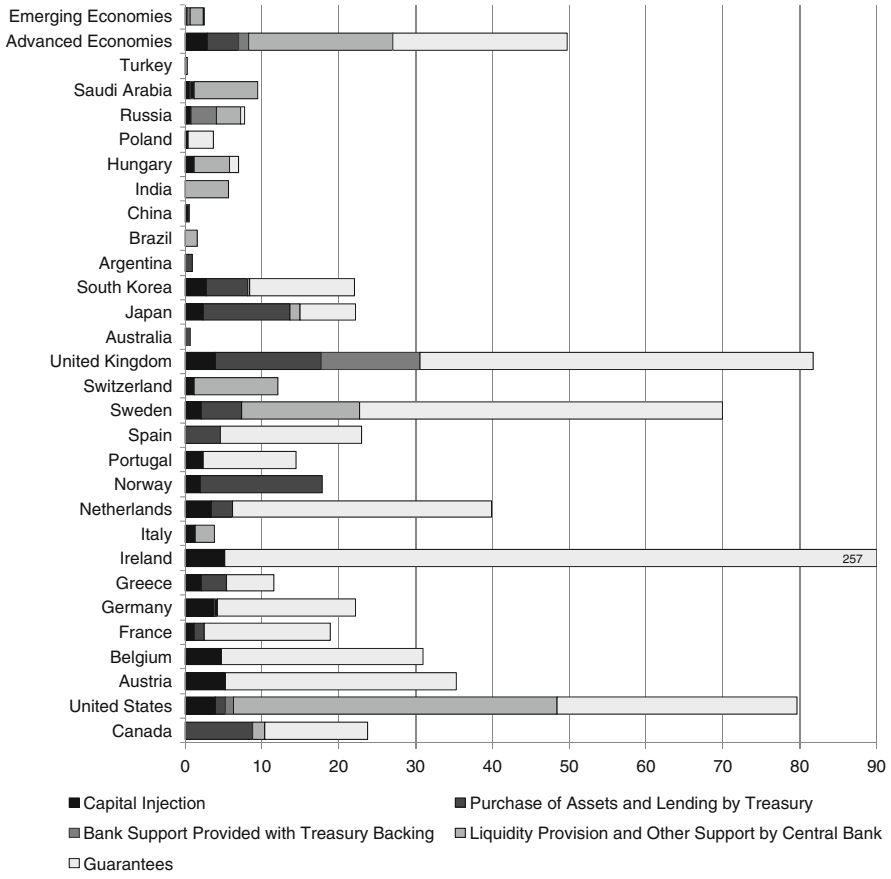


Fig. 4.5 Forms of interventions and government support during the 2007–2009 financial crisis (as of 15 April 2009 in % of 2008 GDP) (Source: FAD-MCM database on public interventions, IMF (2009a), (2009b))

Figure 4.5 gives an overview of measures across selected countries as of 15 April 2009. Especially advanced economies were forced into: (1) extending substantial guarantees to their financial systems (22.8% of GDP), (2) liquidity provision by central banks (18.8% of GDP), (3) purchase of assets and lending by the treasury (4% of GDP), (4) capital injections (2.9% of GDP), and (5) bank support through treasury backing (1.3% of GDP). The largest intervention was needed in Ireland and amounted up to 263% of GDP. The UK followed with a total intervention of 81.8% of GDP and the U.S. with 79.6% of GDP.

In contrast, emerging economies weathered the 2007–2009 financial crisis much better than advanced economies. Emerging economies only needed to extend a total support of 2.4% of GDP compared to 49.8% of GDP of advanced economies. Huge banks in the U.S. and the UK were shrinking, whereas banks in China, Brazil, and Australia were growing (Laeven and Valencia 2010).

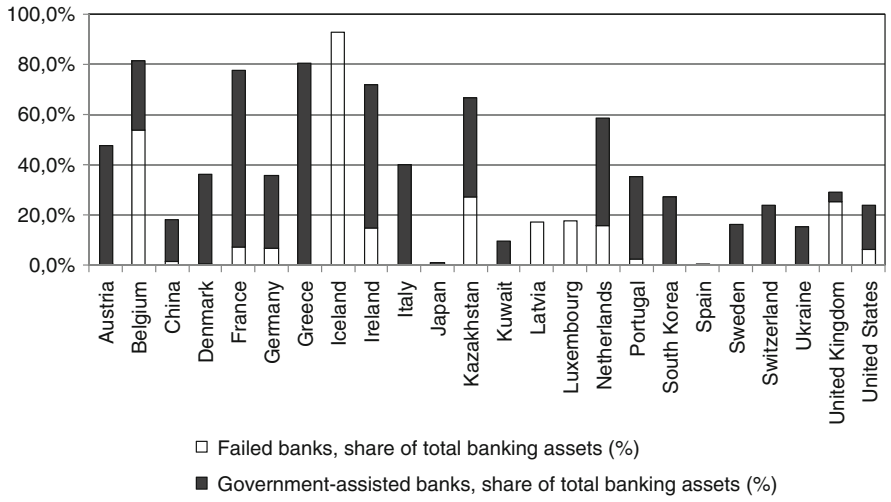


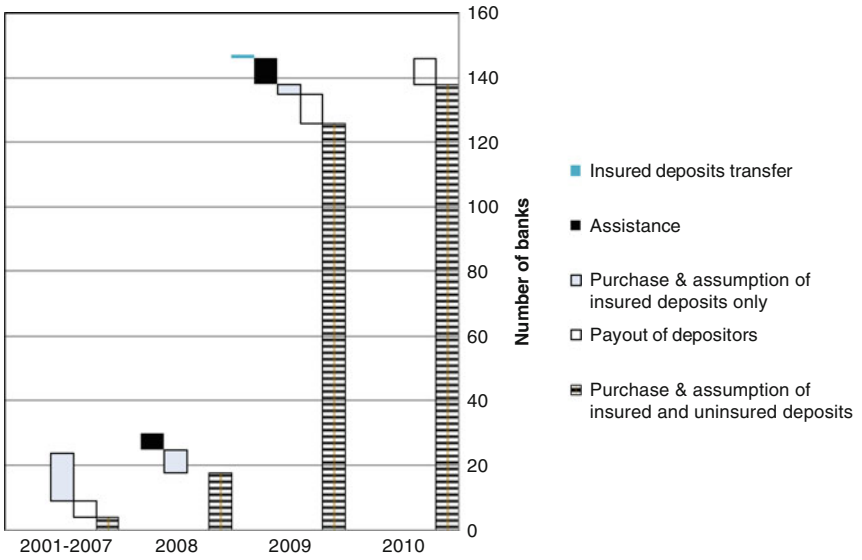
Fig. 4.6 Bank failures and government assistance (Source: Laeven and Valencia (2010). From August 2007 to August 2009)

Figure 4.6 shows a comparison of the size of bank failures and the size of government assistance across selected countries. The size of bank failures and the size of government assistance are measured in percentage terms of total banking assets. Note that the largest bank failures occurred in Iceland (93% of GDP), followed by Belgium (53.8% of GDP), Kazakhstan (27.2% of GDP), and the UK (25.2% of GDP). The largest government assistance occurred in Greece (80.3% of GDP), followed by France (70.4% of GDP) and Ireland (57.2% of GDP).[11]

An example from the U.S. in instructive, in which 317 banks failed (or were assisted by the FDIC) in the period from January 2008 to November 2010 (see Figure 4.7). This is a huge number compared to 25 banks that failed in the period of economic growth from January 2001 to December 2007. In the period from January 2008 to November 2010, total assets of distressed banks were $3.85 trillion compared to $8.4 billion in the period from January 2001 to December 2007.

The frequencies of different methods of intervention in the U.S. are also of interest. In the period from January 2008 to November 2010, the vast majority of 323 interventions by the FDIC were in the form of a purchase and assumption transaction of insured and uninsured deposits (282), followed by payout of insured depositors and subsequent liquidation of the failed bank (17), assistance by the FDIC (13), purchase and assumption of insured deposits only (10), and insured deposit transfer (1).

[11] Note that government assistance is defined only as public capital assistance in which the government acquires a minority stake in the failing bank. This explains the relatively low figure of government assistance for Ireland compared to the one in Figure 4.5.



Source: FDIC (2010).

Fig. 4.7 Frequency of various intervention methods in the U.S. (from January 2001 to November 2010) (Source: FDIC (2010))

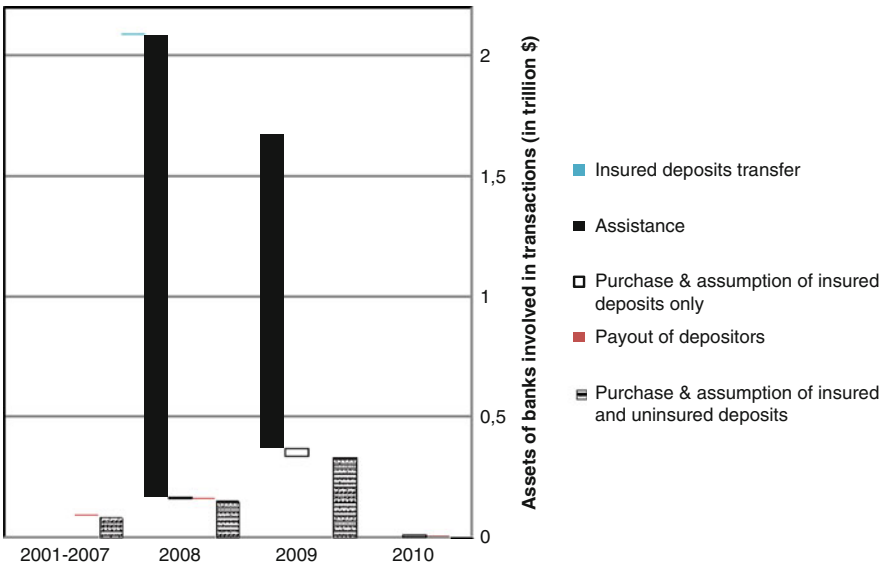


Fig. 4.8 Decomposition of various intervention methods in the U.S. in terms of asset size of failed banks (from January 2001 to November 2010) (Source: FDIC (2010))

Table 4.1 Optimal restructuring in a systemic crisis

Resolution mechanisms	Assessment
Accommodating approach	Appropriate in the case of wide liquidity shocks
Forbearance, open-ended liquidity support, blanket deposit guarantees	but needs to be combined with recapitalization in the case of capital shocks to the banking system
	Prolonged blanked guarantees are costly in the case of system-wide solvency problems: banks may hide losses and fail to restructure impaired loans
	Guarantees need to be credible
Recapitalization	Needs to be large enough and combined with effective governance controls (limits on dividends, remuneration, and clear achievement targets)
	+ Boosts new bank lending[a]
	+ Facilitates restructuring of impaired loans
	+ In the case of recovery, the government participates in gains[b]
Asset repurchase program	Carving out troubled assets may boost transparency and confidence
	+ Liquidity on the financial markets may increase[c]
	– Firms may be stigmatized
	+ Partial transfer may keep the incentives in place
	– Banks may sell their least-valuable assets[d]
	– Less effective in fixing solvency problems of banks
Automatic stay on bank obligations	A last-resort policy
	Usually combined with currency devaluations (and negotiations with the IMF)
	Can only be a temporary measure (due to huge economic costs, potential for looting, pending lawsuits)
Compulsory participation	Compulsory participation is better than the voluntary one, because with voluntary participation:
	– Banks may refuse recapitalization
	– Only bad banks may participate
	– Participation results in a stigma effect
Direct government aid to the real sector	Direct support
	Subsidized interest rates
	Guarantees on lending to SMEs, individuals
The quality of institutions (e.g., resolution authority), laws, the legal system, bureaucracy matters	Prevents political influence in lending decisions
	Quality is important due to necessary large-scale restructuring
	Credibility of the regulatory framework matters

[a]See, for example, Diamond et al. (2008).
[b]See also Stiglitz (2008).
[c]See also Diamond et al. (2008).
[d]See also Soros (2009).

Figure 4.8 compares the sizes of different types of FDIC interventions as measured by the assets of distressed banks in which interventions were employed. Interestingly, assistance by the FDIC was huge because of the $3.2 trillion of assets of 13 assisted banks (from 2008 to November 2010).[12] The purchase and assumption of insured and uninsured deposits was used for 282 banks with total assets of only $0.58 trillion (in the same period). Other intervention types by the FDIC (i.e., purchase and assumption of insured deposits only, payout of depositors, and insured deposit transfer) were relatively small. That is, they were used for interventions at banks with $0.05 billion of total asset size.

What Figures 4.7 and 4.8 indicate is that the U.S. had a well-built framework for dealing with small bank bankruptcies; however, the U.S. lacked a framework for the manageable unwinding of large financial institutions. Large financial institutions (except for Lehman Brothers) might be to be too big to fail and require for assistance transactions. The use of any type of intervention other than assistance transaction would create repercussions for systemic stability and would therefore be ill-suited in the failure of a large financial institution.

Table 4.1 summarizes optimal resolution mechanisms employed in the case of a systemic financial crisis.

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[12] All 13 assistance transactions occurred in a period of less than 2 months from 23 November 2008 to 16 January 2009. Bank of America ($1.5 trillion of assets) and Citibank ($1.2 trillion of assets) were by far the largest of the assisted banks (FDIC 2010).

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Chapter 5
General Issues on the Structure of Banking Industry

We now explore the main critiques of the general bank regulatory framework and suggest necessary reforms that can address the specific aspects of bank bankruptcy. We first address prudential regulation in banking. Second, we analyze whether systemically important public infrastructure can be separated from the rest of the banking system. Third, we analyze the rationale for netting, and last of all we propose how to contain systemic repercussions caused by the closeout netting provisions of derivative contracts.

5.1 Strengthening the Ex-Ante Regulatory Framework: Prudential Regulation

From the ex-ante perspective, in order to reduce the likelihood of bank distress during recessions, several structural issues should be changed.

First, capital regulation should be enhanced. In the 2007–2009 financial crisis, banks played the leverage game, in which they became overleveraged through off–balance sheet financing. Banks engaged in regulatory arbitrage. They obscured the real leverage and the risks involved through the combination of complex financial conglomerates, off–balance-sheet financing through SPVs and ABCP conduits. Calomiris and Mason (2004) showed that credit card securitization was used to circumvent capital regulation in regulatory arbitrage. Acharya et al. (2010) saw regulatory arbitrage as one of the culprits of the 2007–2009 financial crisis. The reason for overleveraging may well be the preferential tax treatment of debt financing in comparison to equity financing. The question is whether such preferential tax treatment is justifiable. Admati et al. (2010) argue that the large negative externalities of bank failures for the economy at large present an argument against preferential tax treatment of debt financing by banks. In their view, the optimal regulatory policy would be to increase bank capital requirements not just slightly

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but to much larger levels. This would best deal with the pronounced risk shifting and asset-substitution problem.

Second, the current procyclical effect of capital regulation should be addressed. During economic downturns, the risks increase and banks have to hold more capital due to risk-weighted capital requirements (e.g. their assets' probability of default and loss given default increase). However, raising new capital during a recession is difficult and banks are left with the only alternative of cutting down lending and investment, which further aggravates the economic downturn. To limit the risk of the business cycle, it is critical to introduce countercyclical capital ratios. The change from procyclical to countercyclical capital charges can be implemented by indexing capital requirements following one of the following approaches: (a) on macroeconomic variables (Repullo et al. 2009), (b) on asset growth, total leverage, and maturity mismatch (Brunnermeier et al. 2009), (c) conditional on the acquisition of a capital insurance (Kashyap et al. 2008), or (d) conditional on the acquisition of a liquidity insurance (Perotti and Suarez 2009).

The regulator could use dynamic loan loss provisioning (i.e. by acknowledging already incurred *and* anticipated losses in the bank loan portfolio; see developments under Basel III and Saurina 2009 for Spanish experience). Dynamic loan loss provisions can also work as a macroprudential tool for the regulator to measure the resilience of the banking system against a macroeconomic shock.

Third, the current framework for prudential regulation can be improved by moving towards macro-prudential regulation. In macro-prudential regulation, the primary objective of the regulator is to enhance the stability of the banking system as a whole instead of the stability of financial institutions on an individual basis (Goodhart 2006). One possibility for lowering systemic risk is to increase capital requirements for systemically important banks. This may be done in an arbitrary way. For example, Switzerland seeks to impose capital requirements of 19% of risk-weighted assets for systemically important banks. Alternatively, capital requirements could be tied to the contribution of an individual institution to systemic risk as measured by systemic risk indicators. To do this, however, systemic risk should be measured properly. Huang et al. (2009) measure systemic risk based on high-frequency equity return data and compute the price of insurance against systemic risk. In addition, systemic risk should be incorporated into prudential regulation. For example, capital requirements could be calibrated to the level of interconnectedness of a bank with other banks in the financial system (Chan-Lau 2010).[1]

Fourth, prudential regulation should rely less on inputs coming from credit-rating agencies. Alternatively, their activities should be regulated by a financial

[1] Adrian and Brunnermeier (2010) propose macroprudential regulation based on CoVaR measure of interconnectedness between financial institutions. CoVaR measures the value-at-risk of the financial system. In particular, the contribution of an individual institution towards systemic risk is defined as the difference between the CoVaR in the case of the financial institution's distress and the CoVaR in the case of a normal state of the financial institution.

stability authority (Altman et al. 2011). During the recent financial turmoil, the rating agencies severely underestimated the risk of innovative complex financial products (or, even worse, they did not understand the risks involved in these products), making the information provided to the investors unreliable. They are also criticized for conflicts of interests because their fees are provided by the same firms that sell financial products to investors (i.e. investment banks). Instead, transparent quantitative ratios should be used when estimating the risk of banks' distress.

Fifth, the transparency in the financial system should be enhanced. Although the Basel II regulatory framework contains market disclosure as the third pillar, the 2007–2009 financial crisis has revealed severe problems regarding transparency of banks, credit-rating agencies, regulators, and policymakers, and the transparency of their interactions. Barth et al. (2011) stress that bad public policies and failures in the governance of financial regulation were the main cause of the 2007–2009 financial crisis. Levine (2010) proposes increasing transparency in the financial system by creating a new institution called the Sentinel. The sole power of the Sentinel would be to require any information deemed necessary from financial institutions, regulators, or policymakers and its sole role would be to issue evaluation reports on financial policies. In Levine's view, this would put severe pressure and accountability on regulators and policymakers and would prevent their existing information monopolies.[2]

Sixth, corporate governance of banks should be strengthened. Financial institutions paid large bonuses to their managers during the 2007–2009 financial crisis. In addition, they distributed dividends to their shareholders even when on government life support (Acharya et al. 2010).

Freixas (2010) proposes two opposing structural solutions to safeguard financial stability. On the one hand, a strict bank bankruptcy regime could be established. In the case of bank failure, (uninsured) bank creditors would be transformed into bank shareholders. Uninsured creditors (e.g. subordinated debt holders) should be clearly separated from insured depositors and should obtain additional power in the corporate governance of a distressed bank. For example, they could have a representative on the board of directors. On the other hand, a lax bank bankruptcy law could be put in place. Banks could be left alive even when inadequately capitalized through generous deposit insurance, for example. In this case, taxpayers would bear a large part of the losses in the case of bank failures. Accordingly, they should have power in the corporate governance of banks. For example, regulatory authorities should have a representative on a board of directors.

Based on Freixas's (2010) proposal we can propose the key ingredients of an optimal pre-insolvency phase. The pre-insolvency phase should clearly deal with

[2] In this light one may understand the main role of the European Systemic Risk Board (the newly built EU body for systemic risk mitigation), which is making informed proposals that others (regulators or policymakers) should implement. However, the ESRB is not independent from banking regulators. See Section 6.3 for further discussion.

the acute corporate governance problems in a distressed bank. In particular, in the pre-insolvency phase managerial control should gradually shift into the hands of uninsured creditors or the regulator, depending on the strictness of bank bankruptcy law. If bank bankruptcy law is strict against bank creditors, bank creditors should be appointed to the board of directors in the pre-insolvency phase. If bank bankruptcy law is soft towards bank creditors and the regulator bears the major losses in the case of bank bankruptcy, the regulator should be appointed to the board of directors in the pre-insolvency phase.

In our opinion, bank bankruptcy law should be strict towards bank creditors and give strong power to the regulator in order to mitigate systemic risk. With this in mind, bank creditors seem to be more entitled to be appointed to the board of directors in the pre-insolvency phase than the regulator. This would serve as a threat for healthy banks to stay as far away from the pre-insolvency phase as possible. The regulator has other means of controlling a weak bank's actions and obtaining necessary information and does not need corporate governance mechanisms for these purposes. Such a proposal goes hand in hand with reconfiguration of the deposit insurance scheme. The coverage of deposit insurance scheme should then be strictly contained in order to make bank creditors responsible for potential bank losses.

Whereas bank creditors should be given an additional role in the pre-insolvency phase, the regulator should still have the main power in bank insolvency proceedings. The regulator can act quickly and decisively, and is better equipped with abilities to maintain systemic stability. Consequently, our proposal would be to gradually shift control over corporate governance of a failing bank to the creditors in the pre-insolvency phase. If the insolvency proceedings are triggered, however, the regulator should be put in charge.

5.2 Separation of Public Infrastructure from the Financial System

The existing evidence regarding the restrictions on bank activities is divided. On the one hand, cross-country studies show that investment banks (or banks with a high share of noninterest income) are, on average, riskier than pure commercial banks (De Jonghe 2010; Demirguc and Huizinga 2009). The 2007–2009 financial crisis shed light on the negative externalities coming from the shadow banking system (and from non–deposit-taking institutions, which are less regulated) towards the traditional commercial banking activities. On the other hand, Laeven and Levine (2009) show that imposing limits on diversification such as prohibiting joint investment and commercial banking (e.g. the access of commercial banks to other fee-based-income areas is denied) increases bank risk-taking.

A critical question is whether a special resolution regime should be used for highly levered institutions, "dealer banks" with dominant risky investments in

derivatives and other complex financial instruments, or the general bankruptcy procedures should be used instead (Duffie 2010). The main argument of proponents for a special resolution regime for dealer banks is that such institutions are systemically important for the banking system as a whole even though their business profile is different than a traditional bank's one (e.g. they do not gather deposits). Consequently, it is crucial to address the concerns regarding the reorganization and closure of institutions deemed to be "too big" or "too complex" or "too interconnected" to fail.[3] There are voices arguing that these institutions should be cut down to size in order to avoid the costs that might be incurred by the taxpayers if speculative investment banking activities turn sour.

On the other hand, Beck et al. (2010) argue that there is no need to prevent the conglomeration of investment and commercial banking activities, or a need for the existence of a special resolution regime for other types of non–deposit-taking institutions. Nevertheless, regulation for non–deposit-taking institutions is needed. Excessive risk-taking might be mitigated ex-ante (without imposing limits on financial innovation) by reviewing the capital charges that apply to structured financial products (e.g. increase the capital charges on all off–balance sheet transactions and on lending to the shadow banking system). Likewise, the capital charges and/or deposit premium should be increased when banks or non–deposit-taking institutions become larger or more interconnected. In order to reduce the moral hazard by applying this rule of increasing capital requirements, a demanding task for the regulator will be to set appropriate thresholds that trigger the increase in capital charges.

Another issue is whether certain activities should be removed from banks and performed by special institutions considered part of the public infrastructure. Several initiatives are underway in the EU and U.S. to offload derivative contracts from large complex financial institutions to central counterparties. This would limit the systemic risk posed by too-big-to-fail and too-interconnected-to-fail investment and dealer banks. It would increase the level of collateral that financial institutions are using for derivative contracts and at the same time it would reduce the systemic risk by allowing for multilateral netting (Cont and Minca, 2009; Duffie and Zhu 2009; Singh 2010). See also Section 5.4.

Another question is also whether the systemic risk deriving from the payable system that banks are operating can be isolated from adverse bank failures in any certain way. Recent years have shown a large increase in interbank payments, both nationally and internationally. For large-value payments, there are two types of settling rules in place. Some payment networks operate under net settlement rules. The value of all payments is calculated on a net basis and only at the end of the day the banks with a net debit position transfer money to the network and, subsequently, the network transfers money to the banks with a net credit position. Net settlement systems came under criticism two decades ago because they increase the default probability and the costs associated with potential defaults, and at the same time are

[3] Sjostrom (2009) describes the AIG failure and its subsequent bailout. Ayotte and Skeel (2010) describe the Lehman Brothers failure.

vulnerable to systemic risk.[4] The safest clearing and settlement systems seem to be those operating under a real-time gross settlement rule (RTGS). Each payment by a bank to other banks is continuously cleared and settled by transfers of funds. However, gross settlement increases the costs associated with holding reserves.[5] In the U.S., the transfers are made between reserve accounts with the Federal Reserve (Fed). The settlement does not occur until the end of the day, which makes the Fed take a credit risk by extending credit to participant banks. The systemic risk is mitigated because the Fed has the capacity to print money (if necessary); however, a critical question for the design of such a system is the price that should be charged for the extended credit.

The incorrect legal treatment of payment orders in the initiation of bank bankruptcy can create disruption in the payment system. The "zero-hour rule" is a mechanism in some insolvency systems in which the legal stay on all obligations (including payment orders) dates back to the beginning of the day when the bank bankruptcy is announced. More specifically, under the zero-hour rule outgoing (but not ingoing) payment orders before the announcement should be canceled and unwound. This may cause large unwinding of payment orders and potential contagion to several other players in the payment system. The zero-hour rule is largely seen as a disruptive mechanism and should be avoided. The "settlement finality provision" aims to mitigate systemic concerns by stipulating that bank bankruptcy cannot revert payment orders already performed.[6]

In addition to the large-value payment systems used to settle obligations between banks, there are other types of small-value retail payment systems, such as those used by households and by companies other than banks, which are obtaining an increasingly important role in the payment system. To name a few, there are debit cards and electronic payments (e.g. PayPal), credit card transactions (e.g. American Express, MasterCard, and Visa), multicurrency payments (e.g. CLS), tri-party repurchase systems used by large banks (i.e. funds are borrowed and lent by selling securities on a short-term basis with a repurchase agreement), clearing and settlement systems run by large private companies (e.g. airlines and telecommunication companies, or large multinational retailers such as Walmart).

The coexistence of different payment networks creates an additional (and still unforeseen) threat to the stability of the entire banking system. For example, several payment networks are largely unregulated (e.g. the credit card networks) or have unclear status (e.g. those networks run by private companies other than banks). Other payment networks are not under direct supervision of the banking authorities

[4] Kahn and Roberds (1998), Lamfalussy Report (Lamfalussy 1990).

[5] Baer et al. (1996).

[6] In the EU, Directive 98/26/EC precludes insolvency proceedings from having retroactive effects (see European Parliament and Council 1998). The amendments in Directive 2009/44/EC have been proposed to deal with increasing interlinkages between multiple payment systems that may increase systemic risk in the financial system (see European Parliament and Council 2009 and Weber and Gruenewald 2009 for discussion).

even though they perform a large share of the overall payment activities (e.g. the tri-party repurchase network).[7] The variety of payment networks increases the spillover effects of the failure of a large bank. Greater interconnections between financial and non-financial institutions have significant unforeseen consequences for all participants in the payments market, regardless of the network they operate in.

In the aftermath of the 2007–2009 financial crisis, the question of whether the payment system can be separated from banks in order to lower the negative externalities of bank failure has obtained a greater relevance. A natural first step is of course to bring all those clearing and settlement systems that are currently unregulated under the supervision of a designated authority. This may lead to a greater degree of coordination among regulatory authorities due to better access to the information that was previously the private benefit of the network manager. Second, a critical issue that should be addressed is the scope of those clearing entities that do not currently have emergency borrowing privileges. Put differently, should they be allowed to operate an entire payment network or only some parts of it? From the previous description of the RTGS rule, the role played by the liquidity provider (which also is entitled to print money) was crucial in avoiding disruptions in the system. Similarly, the scope of activities for any clearing entity should be conditional on the available reserves it held, which should be enough to compensate for the credit risk taken. The same effect can be obtained by granting access to emergency borrowing from the lender of last resort for all clearing entities. However, such privileges should come together with increased power for the main banking authority. The regulator should be the one designing the risk-management and supervisory standards for clearing entities.

5.3 Netting: The Case of Bank Loans

Whereas deposit insurance prevents bank runs and consequent instabilities in banking systems, systemic risk may also be addressed by increasing the priority of systemically important contracts. Netting and closeout are two mechanisms that implicitly increase the priority of specific claims. First we focus on netting protection of bank contracts.

Bank contracts are subject to set-off or netting (but not to closeout as derivative contracts). Netting is important for bank contracts because banks commonly both lend to their borrowers as well as take their deposits. A bank's net exposure to a borrower is therefore substantially lower than its gross exposure. In the event of default, the bank could set off all existing balances of the insolvent debtor against the debtor's outstanding claim. Effectively, the balances of a debtor act as a

[7] Bear Stearns, Lehman Brothers, AIG, JP Morgan Chase, and other investment banks and dealers extensively used this market to fund themselves before the onset of the credit crisis in 2007.

collateral that can be immediately seized by the bank in the event of the debtor's default. Netting therefore considerably lowers the bank's risk.

Netting protection of bank contracts in the case of corporate bankruptcy law increases the priority of bank claims and may be seen as an attempt by corporate bankruptcy law to give special, senior status to banks and, by doing this, limit systemic repercussions. The netting protection of bank contracts put banks in a better position with respect to other creditors.[8] The seniority status gives banks better incentives to monitor their borrowers. Hence, netting of bank contracts is in the interest of not only banks but also of other creditors.

Netting is an attempt by bankruptcy law to address systemic risk directly by increasing the priority of certain systemically important contracts (derivative contracts and bank contracts). However, higher priority and especially exemption of an automatic stay may increase systemic risk rather than decrease it.

The unintended consequence of netting is that firms will not leave deposits in the same bank where they borrow money, but would transfer deposits to another bank.[9] This would limit the effectiveness of netting provisions. At the same time, the systemic risk of the banking system may actually increase because banks are exposed to other banks through corporations.

Consider the following example. In the absence of netting, a firm would operate with a single bank and, in the case of bankruptcy, the bank would need to return the deposits of the failed firm and wait to receive part of its claim after the bankruptcy is resolved. With netting, the bank could immediately seize the deposits when the bankruptcy is initiated and wait for the difference between the loan and deposits until bankruptcy is completed. However, the firm can borrow at one bank and leave deposits with another. Then, in the case of bankruptcy, netting does not help. Moreover, now the first bank is exposed to the second bank. If the second bank has financial problems, the first bank may receive less from its borrower because the borrower's deposit is no longer safe. Hence, netting increases systemic risk of the banking system even though the position of a bank in an individual bankruptcy proceeding is enhanced with respect to other creditors.

5.4 Closeout Netting: The Case of Derivative Contracts

The closeout netting that derivative contracts enjoy gives even higher special protection than netting. Closeout permits the immediate termination of contracts and demands immediate payment in the event of default. Netting, also called set-off or offset, allows for simultaneous settlement of multiple contracts between the same

[8] In some countries, the set-offs are widely applicable to every contract and not only to bank contracts (Bergman et al. 2003).

[9] Ivashina and Scharfstein (2010) show that corporations had drained their credit lines when the 2007–2009 financial crisis started.

two parties. In addition, realization on collateral is exempt from the automatic stay in the case of derivative contracts (Partnoy and Skeel 2007; Vasser 2005).

The argument for closeout netting put forward by the U.S. Congress was to limit the risk of volatility of derivative contracts and the contagion effect thus created.[10] Without the closeout, the counterparties would be locked on a long-term basis into illiquid positions of rapidly changing value. This may have a disruptive effect on counterparties as well and could trigger a chain reaction of insolvencies.

However, closeout netting may actually increase systemic risk in the derivatives market rather than limit it. Bliss and Kaufman (2006) argue that closeout netting has led to high concentration with only a few large investment banks in the derivatives market. A failure of one of these huge players will create an uncontrolled unwinding of derivative positions and lead to a systemic failure. The liquidity problems of major investment banks in the aftermath of the collapse of Lehman Brothers confirm this intuition (Duffie 2010).

Addressing the systemic risk of derivative contracts directly through bankruptcy code, by permitting closeout netting, is not suitable because it offers special treatment to all derivatives regardless of how large and how systemically important the counterparty is (Edwards and Morrison 2005). Firms can also try to mask loans into derivative contracts just to give them higher priority status.

On the other hand, a rationale for why derivative contracts need to be exempt from an automatic stay is the following: foreclosure of derivative contracts does not lead to liquidation of the main business of a non-financial firm. An automatic stay prevents uncoordinated collection of debts and foreclosure of collateral that would lead to liquidation of a firm worth more as a going concern. An automatic stay guarantees that the firm-specific collateral is left within the firm, which allows for continuation of the firm's main operation. In the case of non-financial firms, exemption of an automatic stay for derivative contracts may lead to termination of derivative contracts and the foreclosure of the underlying collateral. However, the underlying collateral is not firm-specific and its foreclosure will not lead to termination of the main operations of the non-financial firm.

However, such a rationale for the exemption from an automatic stay is no longer in place in the case of a financial firm heavily involved in derivatives trading. Different positions in derivative contracts and the collateral used pertain to the main operations of such a financial firm. The uncontrolled unwinding of derivative contracts may result in prompt liquidation of the financial firm at fire-sale prices. Closeout netting is therefore problematic, especially at large financial institutions heavily involved in derivatives.

[10] House Rep. No. 97–420, 97th Cong., 2nd Sess., 3 (1982). The amendments to the Bankruptcy code in 2005 increased the privileges of derivative contracts from a limited number of contracts (e.g., Treasury repos and a few futures contracts) to a wide range of financial contracts such as secured financial credit (e.g., repurchase agreement). In the EU, the main directives dealing with financial collateral are the EU Financial Collateral Directive of 6 June 2002 (OJ L 168/43) and the EU Settlement Finality Directive of 19 May 1998, but these were subsequently amended several times (by Directive 2009/44/EC of 6 May 2009 and Directive 2002/47/EC).

Furthermore, closeout netting can create, rather than mitigate, systemic problems. Huge concentrations of derivative contracts in a few large investment banks have made such investment banks extremely fragile, interconnected, and exposed to common liquidity shocks. Two possible ways forward are identified. Either closeouts are removed from the wide range of derivative contracts or large traders of derivative contracts are subject to close regulatory scrutiny.

Completely removing closeout netting will drastically hamper the liquidity and size of the derivatives markets. This will have huge and unanticipated effects on the world financial systems due to the size of derivatives markets. In June 2010, the size of OTC derivatives reached $582 trillion compared to $672 trillion in June 2008 (Bank for International Settlements 2010). This is huge for both the world's equity and bond markets, and the uncontrolled disruption of the derivatives market may create another huge shock to financial markets and consequently to the world's real economy. Alternatively, systemic concerns can be prevented through structural changes. For example, appropriate trading infrastructure such as the central clearing house for derivatives trading can be established (see Section 5.2 for further discussion on how to separate systemic risk from the financial system by building appropriate public infrastructure).

We give another proposal for alleviating the current disruptive nature of derivative contracts in bankruptcy. We acknowledge that the combination of closeout and netting creates the problem. Netting promotes economies of scale and induces concentration of derivatives trading in a few large institutions. Closeout permits uncontrolled unwinding of derivatives positions. Unwinding is costly, especially if it is incurred in the case of an institution involved primarily in derivatives trading, for two reasons. First, unwinding may be so large that it will depress the prices for derivatives. Second, problems with the institution may indicate a low quality of the underlying assets – in this case, derivative contracts.

The problem could be mitigated if the firm is given an option whether to opt for netting or not. A firm that uses derivative contracts to hedge its risks would not opt for netting. The benefits of netting are limited and the firm would rather limit its gross exposures to counterparties. The failure of such a firm would not have a systematic impact on the derivatives market.

However, a firm heavily involved in derivatives trading would opt for netting because the benefits of netting for such a firm would be high. The bankruptcy of such a firm would also pose a systemic threat for the derivatives markets. Hence, the firm would need to abide by more stringent regulatory standards that would guarantee its safety.

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Chapter 6
Current Bank Bankruptcy Regimes and Recent Developments

We now review the general characteristics of bank bankruptcy laws around the world. Then we focus on selected bank bankruptcy laws in more detail. We analyze characteristics of the Swedish proposal towards the bank insolvency legal framework, the bank bankruptcy regimes in the European Union, Germany, and the U.S., including the provisions of Dodd-Frank Wall Street reform and the consumer protection act, and the recently implemented UK bank bankruptcy regime. Although it is beyond the scope of this study to provide a detailed cross-country legal analysis of bank resolution procedures, our aim is to review, compare, and evaluate the most economically significant characteristics of the selected bank bankruptcy laws.

6.1 General Overview of Bank Bankruptcy Frameworks Around the World

We now describe the main characteristics of bank bankruptcy frameworks around the world. We use the WorldBank (2010) database gathered in 2003 and 2008 and also employed in Barth et al. (2001a, b, 2003). The database encompasses 143 countries and analyzes the entire regulatory framework including prudential regulation, market pressure, deposit insurance, and regulatory supervision issues. We limit ourselves to the issues related to bank bankruptcy proceedings.

Figure 6.1 depicts the frequency of different methods of restructuring distressed banks. In terms of numbers, the most frequent restructuring method used was bank closure and liquidation (988 cases as reported in 2008 and 940 in 2003), followed by transfer of assets and liabilities (e.g., purchase and assumption transactions) or mergers and acquisitions (172 cases as reported in 2008 and 602 in 2003). The least frequently used restructuring method was intervention (e.g., taking control) and open bank assistance (e.g., liquidity support; 66 cases as reported in 2008 and 313 in 2003). However, in terms of percentage of banking system assets, the most

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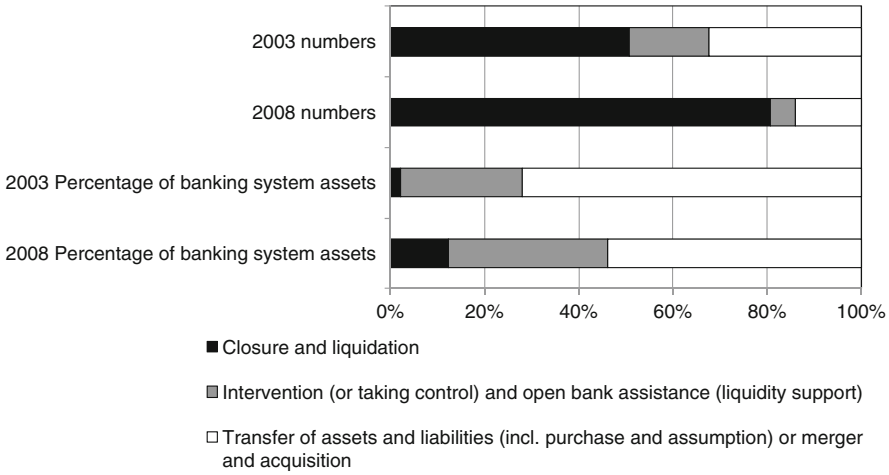

Fig. 6.1 Frequency of various restructuring methods in 2008 and 2003 (in terms of numbers and assets) (Source: Barth et al. (2001a, b, 2003), WorldBank (2010))

important restructuring method used was transfer of assets and liabilities or mergers and acquisitions followed by intervention and open bank assistance, and the least important was closure and liquidation.

What we can deduct from Fig. 6.1 is that closure and liquidation was predominantly used for small banks, whereas transfer of assets and liabilities, mergers and acquisitions, interventions, and open bank assistance were mainly used for large banks. This is understandable: liquidation of a large bank may be unsuitable because it has severe systemic repercussions. This indicates that systemic concerns affect the method of restructuring used by the regulator.

Figure 6.1 also shows how the relative importance of different restructuring methods changed from 2003 to 2008, while the number of bank liquidations and closures increased. In contrast, the number of interventions, open bank assistance, transfers of assets and liabilities, and mergers and acquisitions decreased during these years. In terms of percentage of banking system assets, the size of closures and liquidations *and* interventions and open bank assistances increased from 2003 to 2008. The importance of transfers of asset and liabilities and mergers and acquisitions declined over the same period.

Table 6.1 describes detailed characteristics of an average bank bankruptcy framework around the world. More than half of the reporting countries have mechanisms of cease-and-desist–type orders with automatic civil and penal sanctions on the bank directors and managers upon infraction. Only in one-fifth of the reporting countries are bank regulators required to announce formal enforcement actions. In 95% of the reporting countries, the regulator has the power to order bank directors or managers to build provisions for actual or pending losses. The regulator frequently has the power to suppress dividend payments (in 89% of the sample in 2008; 78% in 2003), bonuses (in 63% of reporting countries in 2008; 58%

Table 6.1 Characteristics of an average bank bankruptcy framework around the world (averages across countries, no = 0, yes = 1)

	2008	2003
Are there any mechanisms of cease and desist type orders, whose infraction leads to the automatic imposition of civil and penal sanctions on the banks directors and managers?	0.61	0.59
Are bank regulators/supervisors required to make public formal enforcement actions, which include cease and desist orders and written agreements between a bank regulatory/supervisory body and a banking organization?	0.24	0.28
Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses?	0.95	0.94
Can the supervisory agency suspend the directors' decision to distribute dividends?	0.89	0.78
Can the supervisory agency suspend the directors' decision to distribute bonuses?	0.63	0.58
Can the supervisory agency suspend the directors' decision to distribute management fees?	0.64	0.53
Have any such actions been taken in the last 5 years?	0.54	0.56
Is there a separate bank insolvency law?	0.18	
Does the Banking Law establish predetermined levels of solvency (capital or net worth) deterioration that forces automatic actions (like intervention)?	0.54	0.52
How many months did each of these resolution techniques take on average, from the moment of intervention by the responsible authority to the moment of resolution?	8.74	9.92
Is court approval required for supervisory actions, such as superseding shareholder rights, removing and replacing management, removing and replacing the director, or license revocation?	0.04	0.14
Is a court order required to appoint a receiver/liquidator in the event of liquidation?	0.53	0.52
Can the bank shareholders appeal to the court against a decision of the bank supervisor?	0.87	0.86

Source: Barth et al. (2001a, b, 2003), WorldBank (2010)

in 2003) and management fees (in 64% of reporting countries in 2008; 53% in 2003). These powers became more frequent from 2003 to 2008.

Special bank bankruptcy law was relatively infrequent in 2008. Only 18% of the reporting countries had it. Automatic triggers for insolvency procedures were implemented in 54% of the reporting countries. Court approval was rarely needed (only in 4% in 2008 and 14% in 2003) for undertaking supervisory actions such as removing management and/or shareholders, replacing directors, or revoking a bank license. However, the court still on average had power in appointing a liquidator in the case of liquidation (in 53% of reporting countries). Shareholders could usually appeal to the court if they disagreed with the bank supervisor (in 87% of the sample in 2008 and in 86% in 2003).

The resolution techniques lasted for a substantial period of time (on average 8.7 months in 2008), although the average time of interventions decreased from 9.9 months in 2003.

The responsibilities of several regulatory bodies in different resolution techniques are shown in Fig. 6.2. The bank supervisor has the greatest power in bank restructuring. It is the most likely regulatory body with power to: (1) insure liabilities beyond any explicit deposit insurance scheme, (2) forbear certain prudential regulation, (3) remove and replace directors, (4) remove and replace

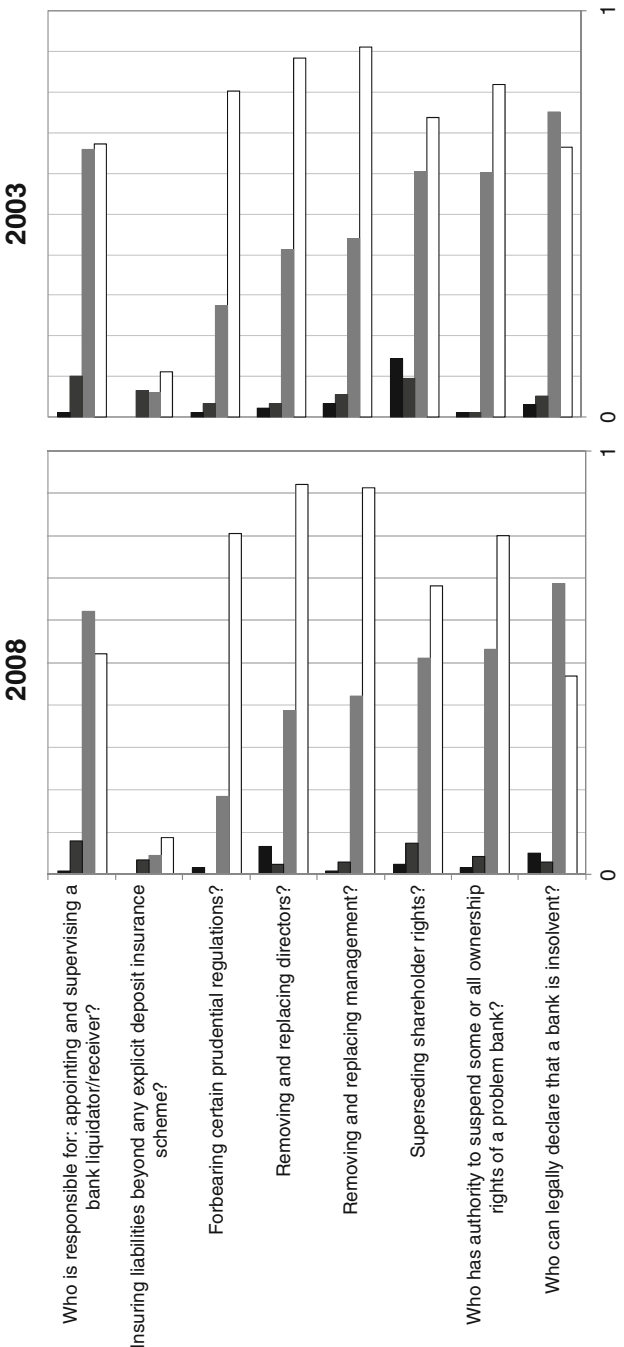

Fig. 6.2 Restructuring powers of various regulatory bodies (averages; no = 0, yes = 1) (Source: Barth et al. (2001a, b, 2003), WorldBank (2010))

management, (5) supersede shareholder rights, and (6) suspend ownership rights of a distressed bank. In only two cases is it on average more likely that the court and not the bank supervisor has the highest authority: in appointing and supervising a bank liquidator/receiver and in legally declaring that the bank is insolvent.

The comparison between 2003 and 2008 in Fig. 6.2 does not reveal any drastic change. The power of bank supervisors has slightly decreased in appointing and supervising a bank liquidator/receiver, in superseding shareholder rights, and in legally declaring bank insolvency. The responsibilities of the court have slightly decreased as well. The court less likely has power to forebear prudential regulations, to remove directors, and to legally declare bank insolvency, but is slightly more likely equipped with the authority to supersede shareholder rights.

6.2 Early Proposals on the Bank Insolvency Legal Framework: The Case of Sweden

Based on the extant experience gathered during the Swedish banking crisis in the 1990s, the Banking Law Committee urged a special regime of bank insolvency.[1] In the early 1990s, upon the collapse of the housing market, nonperforming loans amounted to 15% of Sweden's annual GDP, a value larger than the total equity of the banking system.[2] The government took swift and decisive actions to restore the confidence in the banking system. First, it guaranteed all the liabilities of Swedish banks. Second, a new banking authority was created in order to: (a) provide capital to undercapitalized banks (conditional on dilution of existing shareholders in state favor), and (b) analyze the banks' balance sheets and objectively establish the volume of nonperforming debt. Upon identification of bad debts, the banks were required to write them down. Third, the banks incurring the highest losses (Nordbanken and Gota) were nationalized. In parallel, financial authorities set up a "bad" bank for each nationalized institution in order to dispose of their bad loans. As a result, the remaining "good" banks, which were recapitalized by the government, received performing assets and were free to function normally. The "bad" banks, which received the nonperforming assets, were allowed to sell the distressed assets gradually over time to prevent losses due to fire sales. The solution implemented by Sweden allowed "bad" banks to be run as asset-management companies by experts in restructuring. The consequence was that the total cost of the bailout was below 2% of GDP.

[1] The final report of the banking law committee: Public administration of banks in distress (SOU 2000:66). See also Molin and Ingves (2008) and Viotti (2000).

[2] See Englund (1999) and Ingves and Lind (1996) for a review of determinants of the crisis and a description of regulatory response.

Before the 2007–2009 financial crisis (and also before the banking crisis of the 1990s) Sweden did not have a special law concerning bank closure and banks had to be wound up in the same way as other corporations. If the bank breaches regulatory prescribed standards, the regulator can only revoke its license, which would effectively mean that the bank should be liquidated. However, liquidation may sometimes trigger systemic collapse. Although the regulator can threaten to close the bank down, such a threat is not credible. This situation gives substantial negotiating power to the shareholders and management of the failing bank and prevents the regulator from swiftly reorganizing a failing bank.

The special scheme for reconstruction and winding-up of banks, called *public administration*, was therefore proposed (Viotti 2000). The main objective of public administration would be to prevent systemic risk. The newly created government body *Crisis Management Authority* (CMA) would be responsible for undertaking the tasks under public administration.

The CMA could send the petition to the court to take the bank into public administration when the bank is illiquid on a long-term basis and when grounds to revoke the bank's charter exist. In such a case, the CMA would take control of bank business but not its formal ownership. With public administration, the legal status of the bank would not change. However, the CMA would temporarily take over shareholders' voting rights.

The CMA could request a reduction in the share capital of a bank in administration. In addition, to prevent a hold-out problem, the CMA could enforce a minority of creditors to reduce their claims in the same way as the majority has agreed to do. The CMA could also issue a government guarantee, but only for debts arising after its issue.

The proposal also deals with legal stays. Insured deposits should be repaid as soon as possible to prevent erosion of public confidence. The CMA could override legal stays if this is in the interest of creditors or *for system stability reasons*. Interestingly, the CMA should impose legal stays on subordinated loans. System stability reasons cannot prevent this. The reason is that subordinated loans should not have a major impact on systemic stability and should therefore act as a cushion for potential bank losses.[3]

In short, the Swedish proposal would implement several characteristics into the bank insolvency regime that are not present in corporate bankruptcy law. A bank in public administration would not be legally closed; nevertheless, its control and (potentially) ownership would be transferred to the CMA. The CMA could also avoid a legal stay to contain systemic risk.

[3] Calomiris (1999) proposes that subordinated debt should be given to foreign banks, for which the government would have little incentive to bail them out.

6.3 The European Union Bank Bankruptcy and Reorganization Regime

Contrary to the U.S., which has already implemented a special bankruptcy code for banks, in most European Union countries corporate bankruptcy law applies to banks, whereas special rules are used to address the special features of bank insolvency. Some countries rely on special court-administrated bankruptcy proceedings under the banking law (i.e., Austria, Greece, Luxembourg, and the Netherlands), whereas in other countries banks are subject to general court-administrated bankruptcy proceedings (i.e., France, Hungary, Germany, Ireland, and Spain). The diversity that currently exists among resolution frameworks for banks within the EU was documented by Garcia et al. (2009) and by Hupkes (2003).

The national laws governing the bank bankruptcy regime have been revised lately or are in the process of being revised in many EU countries as a result of strong demand for harmonization of bankruptcy codes at the EU level. Cihak and Nier (2009) argue that the key legal aspects on which bank resolution regimes differ across the EU are the ability of bank authorities to initiate the proceedings, rights, and powers granted to provisional administrators, the role played by the deposit insurer, the set of tools available in the reorganization process, the rights of bank shareholders during the reorganization process, and the role played by the bankruptcy court.

The recent financial crisis has illustrated that this lack of uniformity between resolution regimes, together with the absence of a legal framework that may allow for an effective and rapid winding-up of troubled EU cross-border banks, creates significant pressure at the level of national authorities. These difficulties are addressed in the European Commission's Directive 24/2001 on the Reorganization and the Winding-Up of Credit Institutions. An important step forward following from this directive is the decision to grant increased power to national authorities in the reorganization and closure process. The directive builds on the First and Second Banking Directives, which are set for the principles of regulation and supervision based on home country control. These "unity and mutual recognition principles" are implemented by Directive 24/2001 for bank insolvency proceedings. With respect to regulation and supervision, these principles mean that each national authority is responsible for monitoring the exposure and capital adequacy of any cross-border bank with headquarters in its jurisdiction. National authorities are also able to initiate the bankruptcy process and to implement restructuring measures at the domestic bank level, as well as the level of a bank's foreign branches (within EU countries). The directive stipulates that, with respect to these foreign branches, the actions of the national authority will be applied automatically, without requiring the consent of the foreign host banking authority. Nevertheless, the directive does not grant any power to national authorities over bank subsidiaries in other EU countries. Subsidiaries are treated as separate legal entities falling under the jurisdiction of foreign banking authorities. As a result, upon bank insolvency,

a cross-border bank is split up into many legal entities, with foreign banking authorities applying measures available in their jurisdictions.

Several problems with Directive 24/2001 were identified. First, as Cihak and Nier (2009) argue, it does not address the issue of the negative spillover effects that the failure of a large foreign subsidiary has on the financial stability of a foreign country. If domestic authorities decide not to intervene and to let the foreign subsidiary fail, then the foreign authority will have the responsibility to protect the interests of foreign creditors. If the relative size of the subsidiary in the foreign banking system is large, the authorities may not have sufficient funds for restructuring it, leading to a huge increase in the fiscal burden and negative consequences for the foreign economy.

Second, the directive is concerned only with credit institutions, while ignoring the issue of other cross-border systemically important financial institutions such as insurance companies. Even though the directive proposes a single-entity approach and equal treatment of creditors in liquidation, it fails to stipulate a common threshold for the initiation of bank insolvency proceedings when a credit institution becomes insolvent. Thus, the directive does not resolve the issue of the existing heterogeneity among bankruptcy regimes in the EU. It fails to achieve the desired harmonization of national legislations and leaves the decision of when to intervene at the discretion of national authorities.

Third, the reorganization of a complex cross-border bank might be difficult to attain in the absence of clear agreements between national authorities regarding the resolution of foreign subsidiaries. The interests of domestic and foreign authorities are not aligned. Although domestic authorities care about the bank, as well as about the bank's branches and subsidiaries, the foreign authority is only concerned about that particular subsidiary that comes under its jurisdiction. In some instances, if the losses generated by the failure of a foreign subsidiary are considered small, the foreign regulator will decide in favor of liquidation to the benefit of local creditors, in order to avoid a lengthy restructuring process led by the banking authority of a different country. Such actions will limit the ability of a national authority to effectively resolve the failure of the foreign subsidiary.

The draft of European Directive 213/2001 on Financial Conglomerates proposes one way of resolving these issues. This directive recommends the mandatory appointment of a supervisor for any cross-border bank. The banking authorities of all countries in which the bank runs different activities through branches or subsidiaries should provide timely information to the delegated supervisor. Upon insolvency of either the main bank or one of its branches or subsidiaries, the supervisor will lead the restructuring and winding-up process, whereas local authorities will have legal responsibilities in their respective countries according to prearranged agreements.[4] EU Commission communication 561/2009 recognizes

[4] See Dewatripont and Rochet (2009) for a discussion on why, in economically integrated areas such as the EU, there is a strong demand for the emergence of an independent European supervisor.

the necessity for providing an integrated resolution for cross-border financial institutions by a single resolution authority. This proposal stipulates that the problems related to coordinating the actions of different national regulators can be avoided by establishing a single authority responsible for coordinating proceedings of cross-border banks, and a harmonized bank insolvency code in all EU member states.[5]

Another relevant legislative proposal of the European Commission is the creation of a bank resolution funds.[6] The purpose of such funds is to assure sufficient resources such that the insolvent banks can be wound down in an orderly manner, irrespective of their size and complexity, avoiding contagion effects and with a minimum impact on public money. Resolution funds are seen as a critical component of the new framework regarding bank insolvency process at the EU level. They will ensure that national authorities across the EU have access to common tools and will facilitate prompt actions in a coordinated manner by different national banking regulators.

The first step in creating this fund will be establishing a harmonized network of national funds. Interstate arrangements will govern the access to and use of these funds in order to assure that they will be used to facilitate (if necessary) an orderly failure of financial institutions, and not to bail out failing banks. These arrangements should produce the necessary coordinating structure among national authorities to facilitate efficient coordinated action in the case of insolvent cross-border banks.

The second step is to design the appropriate basis for contribution to these national funds. The proposal suggests that the contribution should be based on financial institutions' assets, their liabilities, or their profits.

The final step is to create an efficient intervention framework and to establish which measures the bank resolution fund should cover. Appropriate tools that might be financed through these funds include (but are not limited to): the creation of a bridge bank, partial or total transfer of assets and/or liabilities, and the split of an insolvent bank into a good and a bad bank. In some EU countries, the first step has already been taken. In Germany and Sweden, a fee on the systemic impact of banks and on bank liabilities, respectively, was proposed in order to create a stability fund that might help in counteracting the risk of financial instability created by the failure of credit institutions.

In the aftermath of recent financial turmoil, the European Commission proposed fundamental reforms of regulation and supervision of credit institutions in order to establish a more efficient framework for prudential regulation and financial stability across the EU and to create the desired harmonization with respect to capital adequacy, deposit insurance, and monitoring. Moreover, the European Commission is trying to complement these reforms by introducing a unified framework for reorganization and liquidation of troubled financial institutions.

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[5] European Commission, 2009d, Communication 561/2009 on the EU Framework for Cross-Border Crisis Management in the Banking Sector, Brussels.

[6] European Commission, 2010a, Communication 254/2010 on Bank Resolution Funds.

Communication 561/2009 of the European Commission covers three critical areas of interest: early intervention, resolution, and insolvency. Among other proposed measures, three of them stand out as having greater importance for pre-insolvency intervention. First, extensive power should be granted to all national authorities in order to be able to implement prompt actions against bank management, and to appoint a representative or an administrator whose sole objective will be to restructure the failing bank and to restore the financial situation. Second, national authorities should initiate the legal procedure based on common indicators and thresholds across EU countries, and they should follow a pre-agreed framework. Third, the proposal recognizes that special attention should be given to the supervision of cross-border banks and that a special regime for intra-group assets transfers should be provided. It is recognized that intra-group financial support could help stabilize the group as a whole. With respect to bank resolution, the communication acknowledges the limited scope of Directive 24/2001 regarding the treatment of subsidiaries in the insolvency process. Because this form of organization is predominant for cross-border banking business in the EU, effective cross-border resolution is difficult to attain because different national authorities with different powers and available tools are involved in the process.

Moreover, as 2007–2009 crisis episodes demonstrate, national authorities have strong incentives to apply domestic resolution tools instead of seeking a group-wide solution. On the one hand, such actions contribute to the protection of national depositors and maximize the assets available to national creditors. On the other hand, they might aggravate the liquidity problems within a group. Two options are being considered by the Commission for solving these issues. First, a single resolution authority will be created. This authority will be responsible for the resolution of cross-border banks. The second option is to create an efficient framework for coordination between national authorities and to implement a similar set of measures at the national level. The financial burden triggered by the insolvency of a cross-border bank should be equitably shared among different national regulators and in a transparent way. The Commission also proposes an integrated treatment of insolvent cross-border banks because a harmonized EU insolvency regime will allow for an efficient reorganization of cross-border credit institutions.

Several steps have been already taken towards the creation of a European supervisor. The European Commission has set up two proposals (one of them recently approved by the European Parliament) to establish two bodies: one to conduct micro-prudential supervision, the European System of Financial Supervisors (ESFS),[7,8] and one to conduct macro-prudential supervision, the European

[7] European Commission, 2009c, Communication 501/2009 on Establishing a European System of Financial Supervisors.

[8] European Parliament and Council 2010, Regulation on Establishing a European Supervisory Authority (European Banking Authority). See also regulations 41/2010, 42/2010, and 43/2010.

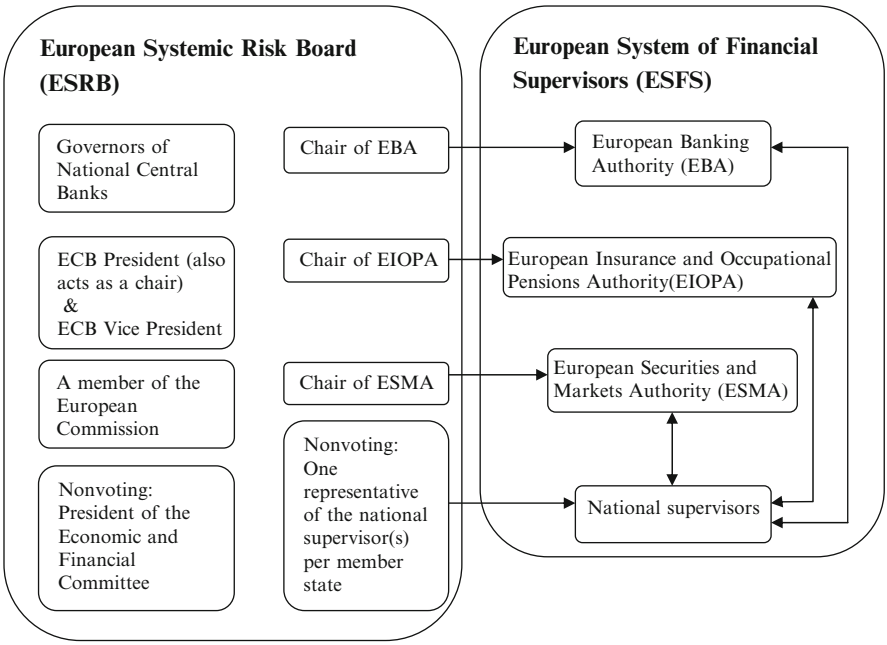

Fig. 6.3 The European system of financial supervisors

Systemic Risk Board (ESRB).[9] These two newly created bodies will have complementary roles. On the one hand, the ESRB's role will be to monitor and assess risks to the stability of the financial system. It will provide early warnings regarding systemic risks and make macro-prudential recommendations for actions to deal with these risks. On the other hand, the ESFS' role is to supervise individual financial institutions.

The ESFS is composed of national supervisors and the following three newly established European Supervisory Authorities (ESAs), which will constitute legal entities under EU law: the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA), and the European Insurance and Occupational Pensions Authority (EIOPA); see Fig. 6.3.

The regulation stipulates that the new ESAs take over all of the functions of the three financial services committees that were functioning until the end of 2010; namely, the Committee of European Banking Supervisors, the Committee of European Insurance and Occupational Pensions, and the Committee of European Securities Regulators. In addition, they have extra powers, including the following: securing coordination between national supervisors in emergency situations;

[9] European Commission, 2009b, Communication 499/2009 on Community Macro Prudential Oversight of the Financial System and Establishing a European Systemic Risk Board. See also regulations 39/2010 and 13694/2010.

facilitating communication, and mediating and resolving cases of disagreement between national supervisors; developing proposals for technical standards and ensuring that a single set of harmonized rules is applied by the national authorities of all EU member states; imposing temporary bans on some transactions and high-risk financial products (e.g., naked short sales of shares and government bonds); and supervising the activities of credit-rating agencies (by the ESMA). Having legal identity under EU law, the ESAs can, under certain circumstances (e.g., breaches of EU law by a financial institution and subsequent failure of the national regulator to implement the ESAs' recommendation), impose their decisions directly on an individual financial institution. They can require a necessary action to be taken such that the financial firm complies with its obligation under EU law. Any such intervention by ESAs will contribute to ensuring consistent application of EU rules. However, they will be subject to review by EU courts. Likewise, in situations when disagreements among national authorities cannot be resolved, the ESAs should settle the matter by making a decision considering the views of all national regulators involved. The ESAs will be also responsible for assessing the resilience of financial institutions by conducting EU-wide stress tests and by promoting risk evaluations.

The creation of ESAs was a necessary step in overcoming the existing shortcomings of financial supervision in the EU, like a lack of convergence among European countries on technical rules, and a lack of coordination between national supervisors in the case of failure of cross-border financial institutions. Coordination between national supervisors is much more important for the EU member states than in other parts of the world because they share a single market, there is increasing political and financial integration among member states, and, as a result, a higher number of financial institutions operate across borders. Although daily supervision of financial institutions will be conducted by national supervisors, the new ESAs will complement their supervisory activity by having a pivotal role in developing a common rulebook for financial service regulation and ensuring that supervisory activities are consistent for each cross-border financial institution.

The Commission proposal for creating the ESRB answers the necessity of having a proper system able to asses and prevent systemic risk in the EU. The ESRB will monitor both financial systems (e.g., areas such as the banking system, market infrastructure, and asset bubbles in various markets) and the macroeconomic environment and non-financial areas (e.g., global imbalances, growth, and inflation prospects) in order to identify those risks with potential impact on the financial system as a whole. A clear assessment of these various sources of risk and their potential impact on financial stability will make it possible to prioritize the function according to relevance and potential severity. Once a significant risk is identified, the ESRB will issue warnings and make recommendations on measures to be taken to contain such a risk. The recommendations will be either of a general nature or of a more specific nature and might be addressed to the national supervisors of countries where the risk was identified, to one or several ESAs, or to the EU Commission. The ESRB follows up on whether recommended measures are implemented or not, and the national supervisors are obliged to indicate which

steps were taken in addressing the risk and, if they do not agree with the ESRB's recommendation, an explanation should be provided. The ESRB is not allowed to intervene or to take direct action in order to mitigate the systemic risk. A critical aspect of the communication process is that the warnings and recommendations of the ESRB will be made public only after a careful assessment of the potential impact on public confidence, and after informing the Council of the EU. This will assure that self-fulfilling prophecies do not affect financial markets.

The ESRB consists of representatives of national central banks and national supervisors, the heads of the ECB and ESAs, and has the power to issue recommendations to both EU member states and to the ESAs. Nonvoting members of the ESRB include the president of the Economic and Financial Committee of the EU and representatives of the national supervisor(s) (one per each member state; see Fig. 6.3). The ECB provides the necessary analytical, statistical, administrative, and logistic support. Additional powers were given to the new body, such as the power to request any information it deems necessary. The ESRB may request the ESAs to provide information on individual financial institutions, and the national authorities and the EU Commission have the obligation to cooperate and to supply any information necessary for the fulfillment of the ESRB's tasks. Having access to such detailed information, the ESRB will have a clear mandate to pursue country analysis and to provide country-specific policy recommendations.

6.4 The Bank Bankruptcy Regime in Germany

As described above, bank bankruptcy regime characteristics in the EU vary widely despite the adoption of the Directive on Reorganization and Winding-Up of Credit Institutions (Directive 2001/24/EC) in 2001, with the main purpose being to facilitate the convergence in regulators' objectives and bank resolutions in the EU. Within the EU, the German bankruptcy and reorganization procedures deserve special attention due to some particular features of the German banking system. First, relative to the other EU countries, state-owned banks represent the largest part of the banking sector. Second, there are three deposit insurance schemes in place, one for each type of bank in the system (i.e., public, commercial, and cooperative). Third, the deposit insurance scheme for private banks is funded and administrated by banks that are organized in the German Bankers Association.[10] These deposit insurers provide substantial additional coverage for depositors on top of the mandatory but limited deposit insurance introduced in EU countries.

Like most other EU countries, Germany lacks a separate bankruptcy code for banks. Instead, the general bankruptcy law for corporations applies to banks and other financial institutions, with special rules being implemented in order to address

[10] See Beck (2001) for a description and evaluation of the most important characteristics of the German deposit insurance scheme.

the special features of banks. The primary legal basis for the supervision of banks is the Banking Act (KWG), which was passed in 1962 and has been amended extensively in recent years.[11] The German financial sector is supervised by the Federal Financial Supervisory Authority (BaFin) and by the Deutsche Bundesbank. Additionally, the deposit insurer has supervisory and regulatory power over its members (i.e., members might be subject to punitive actions or they even might be forced to leave the deposit insurance scheme, conditional on their risk-taking activities being considered too excessive). The Bundesbank has an investigatory function and closely cooperates with BaFin and the three deposit insurance schemes.

Triggers and responsibility: The BaFin is the supervisor that has the authority to initiate an insolvency procedure.[12] If the regulations of the Banking Act regarding adequate capital and liquidity have been violated and the bank is unsuccessful in correcting these problems, or if the incurred losses are very large,[13] the BaFin can revoke the charter of the bank and the bank is liquidated. The liquidator, whose task it is to distribute the proceeds among creditors and shareholders, is legally appointed in court. Nevertheless, the resolution decision is made by the BaFin in cooperation with the German Bankers Association.

Pre-insolvency intervention: If violations of prudential requirements are identified, the BaFin has the authority to appoint an observer, or to order changes in the organizational and management structure and the internal control system. The regulator can also impose restrictions on dividend payments, on management fees, and on certain business operations (e.g., certain types of loans and other investment contracts, acceptance of deposits).[14] These restrictions are implemented following a two-step approach. If a bank fails to comply with prudential standards, the supervisory authority makes a recommendation to the bank to correct the problem within a strict deadline. If the bank fails to take corrective action, the regulator can impose more rigorous sanctions, even taking control of the bank through provisional administration.

The objective: The banking authority should act according to the following three objectives; namely, preventing undesirable developments in the banking system that: endanger the safety of the assets entrusted to institutions, adversely affect the orderly execution of banking transactions, or substantially prejudice the economy as a whole.[15]

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[11] Banking Act (KWG), last amendment 1999, Federal Law Gazette, December, available at http://www.iuscomp.org/gla/statutes/KWG.htm.

[12] Banking Act Section 46b.

[13] Losses are considered very large if: (a) a bank loses half of its capital, reserves, and surplus, or (b) in each of the previous three years the bank has lost 10% of its capital, reserves, and surplus. See Banking Act Section 35.

[14] Banking Act Sections 45, 46.

[15] Banking Act Section 6.

Options of restructuring: Banks are subject to general court-administrated bankruptcy proceedings. The BaFin can temporarily close a bank or revoke a charter. Upon loosing its license, the bank is liquidated by a liquidator that is legally appointed in court. Prior to the initiation of insolvency proceedings, the BaFin does not provide restructuring techniques such as purchase and assumption agreements or bridge banks facilities. Nevertheless, the German Bankers Association may facilitate the restructuring of troubled members by providing funds from the private deposit scheme.

Repayment of claimants: Depositors are repaid directly by the deposit insurer. There is no public funding and banks' contributions to the deposit insurer are risk-dependent. The German deposit insurance scheme is characterized by unlimited coverage. As a result, market discipline by depositors is replaced by monitoring by peer banks. The appeals against certain regulatory measures are excluded by law. Thus, if the BaFin has revoked the bank's charter, this measure is implemented immediately.

Regulatory powers and legal stay: The BaFin has the power to impose a full or partial suspension of payments and a legal stay against creditor action. The BaFin leads the provisional administration and has the power to replace the management and to appoint provisional administrators.[16] According to the Banking Act, the Bundesbank is not allowed to provide lender-of-last-resort facilities. There is nevertheless a private liquidity supplier, the Liquidity Consortium Bank (LCB), which is responsible for injecting liquidity into solvent but illiquid banks. Because both the LCB and deposit insurance scheme for private banks are managed and funded by the banks, there is no conflict of interests between these two entities (i.e., the LCB has no incentives to lend to insolvent banks because the necessary funds are provided by the deposit insurance scheme).

During the 2007–2009 financial crisis, the intervention actions targeting individual banks proved to be insufficient in Germany (as well as in the European Union and elsewhere around the world) to restore confidence in financial markets. Germany's response was the passage of the Financial Market Stabilisation Act in October 2008,[17] whose aims were to restore trust in financial institutions and to stabilize the financial sector by preventing further aggravation of the financial crisis. The major provisions of the act were centered around three main topics: (1) the establishment of the Financial Market Stabilisation Fund and the Financial Market Stabilisation Agency (hereinafter: the Fund and Agency, respectively),[18] (2) the measures to be taken by the Fund and the tasks to be performed by the

[16] Banking Act Section 46a.

[17] Act on the Establishment of a Financial-Market Stabilization Fund 2008, Federal Law Gazette, October, available at http://www.bafin.de/nn_720786/SharedDocs/Aufsichtsrecht/EN/Gesetze/fmstfg__en.html.

[18] See Sections 1 to 3 of the act.

Agency,[19] and (3) the amendments of some provisions of the Banking Act for a time period lasting until the end of 2010.

The Agency's main role is to administer the Fund and, by doing this, to prevent liquidity shortages and to improve the capital position of financial institutions. The Agency has a legal capacity and comes under the jurisdiction of the Federal Ministry of Finance. The Fund was created to provide support for financial institutions affected by the financial crisis and can issue guarantees up to a maximum of €400 billion. The state is fully liable for all obligations of the Fund. On top of the total volume of guarantees, the Fund may borrow €70 billion for equity injections and risk transfers (and this credit amount can be extended by an additional amount of €10 billion). Among the eligible beneficiaries of the Fund's resources, we find financial institutions incorporated in Germany (banks and non-bank companies as well), subsidiaries of foreign financial institutions, and special-purpose vehicles (SPVs) that assume the risk of financial companies.

There are three types of tools available for the Fund to mitigate liquidity problems of eligible financial institutions: (1) guarantees, (2) equity injections, and (3) risk transfers. The guarantees represent the main rescue package and are allowed to be issued to companies that are adequately capitalized in order to secure debt and other liabilities with maturities less than 36 months. The guarantees for a given institution cover the principal, as well as interest and connected claims, up to a maximum amount. SPVs can receive guarantees upon full disclosure of their risks and liabilities. The Fund may make investments in a financial company with a limit of €10 billion by acquiring either equity or hybrid instruments. However, preference is given for Tier 1 instruments with preferential dividend rights, and the investment can be made conditional on capital injections by the company's existing shareholders. Finally, the Fund can acquire risky positions from a financial company with a limit of €5 billion, at book value and in exchange for German government bonds. These risky positions can include any type of securities and also loans. The risk-transfer agreement should be accompanied by put and call options in order to allow the financial institution to share the underlying risk. Capital injection and assumption of risk can be implemented under strict requirements on beneficiaries: restrictions or abandonment of certain business operations in order to secure a sound and prudent business policy, review of remuneration systems, restrictions on dividends, and share buy-back programs.

An important amendment to the Banking Act is made with respect to the definition of overindebtedness as a reason to start an insolvency procedure. Under the current act, a financial company that is technically over-indebted, but is expected to be solvent or to be able to successfully restructure its activities, is no longer subject to an insolvency procedure. Another amendment allows financial institutions to transfer risk positions (e.g., structured securities) and business units

[19] See Sections 6 to 8 of the act.

into resolution agencies (called "bad banks") controlled by the Agency.[20] The transfer should take place at 10% discount of the book value, and the act establishes three separate models: (1) the special-purpose vehicle model, (2) the federal law resolution agencies model, and (3) the state law resolution agencies model. The first category of models differs from the other two categories considerably. The special-purpose vehicle model allows financial institutions to establish a SPV and to transfer distressed structured securities to this SPV. The SPV does not operate as a banking business, and hence does not require a banking license. Under the other two models, the role of the bad banks is assumed by sub-agencies of the main Agency (Aid-A).[21] Not only risk positions, but also nonstrategic business divisions of financial institutions may be transferred to these agencies, which have legal capacity. Although these agencies are not considered credit institutions or financial intermediaries under the Banking Act, and as a result are not subject to capital requirements, some provisions of the Banking Act are applicable (e.g., disclosure obligations, risk management, financial statements auditing, etc). SPVs can act as transferring entities under the federal/state law models, unlike under the SPV model. Whereas the SPV model is mainly designed for private-sector financial institutions, the federal and state law agencies models target public-sector banks (*Landesbanken* and *Sparkassen*). There is little difference between these last two models.

In the SPV model, the financial institutions that have transferred risk positions to an SPV receive in return debt securities that are guaranteed by the Fund. Under the federal and state models, the methods of transfer are more complex. Assets and business operations can be transferred either by asset deals or by reorganization. In addition, assumption of guarantees (similar with the SPV model) and other types of protection without legal transfer are permitted.

6.5 The U.S. Bank Bankruptcy Regime

The U.S. implemented a separate bankruptcy code for banks after the S&L crisis with the passage of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). There are several important differences between the bank bankruptcy and corporate bankruptcy regime (see Walter 2004; Bliss and Kaufman 2007, and the provisions of the Federal Deposit Insurance Act, 12 U.S.C. 1821–1825, for further details).

[20] Act on the Establishment of a Financial-Market Stabilization Fund—Amendment 2009, Federal Law Gazette, July, available at http://www.bafin.de/nn_720786/SharedDocs/Aufsichtsrecht/EN/Gesetze/fmstfg__en.html. See also Behrends et al. (2009), Gleske and Wolfers (2009), and Tiwisina and Zahn (2009).

[21] Aid-A comes from German *Anstalt in der Anstalt* 'agency within agency'.

Triggers and responsibility: In bank bankruptcy, a bank's regulator—either the Federal Deposit Insurance Corporation (FDIC) or Federal Reserve—initiates legal closure of the bank if the bank breaches regulatory requirements. In legal closure, the charter of a bank is revoked and the bank is placed into receivership of the FDIC.[22]

Pre-insolvency intervention: In bank bankruptcy, the Federal Deposit Insurance Corporation Improvement Act (FDICIA) implemented the prompt corrective action (PCA) provisions. The PCA provisions stipulate strict rules on the regulator to intervene when a bank becomes undercapitalized and before it becomes insolvent. The criteria for the bank to be deemed undercapitalized are based on capital and leverage ratios and are straightforward and easy to check. Depending on how undercapitalized the bank is, the regulator uses several mandatory and discretionary provisions such as suspension of dividends and management fees, restriction of asset growth and mergers and acquisitions, recapitalization orders, and/or restriction of deposit interest rates. If the bank becomes critically undercapitalized, the regulator is bound to put the bank in FDIC receivership within 90 days.[23]

The PCA provisions aim to prevent forbearance and gambling for resurrection in order to minimize losses to the deposit insurance fund and to strengthen the ex-ante and ex-post incentives of banks' risk-taking. Aggarwal and Jacques (2001) show that banks have increased capital ratios after the PCA implementation without increasing their risks.[24] Despite strict rules on closure, forbearance may still occur if the systemic risk is excessive. In the 2007–2009 financial crisis, the U.S. Treasury repeatedly recapitalized major players in the banking industry, including some systemically important institutions outside the banking industry. Under the current Dodd-Frank Act (see Section 6.6), a new agency is created that has the power to identify systemically important financial institutions and to bring these companies under the Federal Reserve's regulation.

The objective: The mandate of the FDIC receivership is to achieve the least costly resolution to the deposit insurance fund, subject to the legally mandated priorities of bank creditors. The public funds are therefore preserved as much as possible. There exists, however, the systemic risk exemption stating that the FDIC may bypass the low cost resolution if such a resolution would pose a threat for the financial stability or economy at large (see Section 6.6 for details regarding FDIC role as a receiver of systemically important financial companies).

Options of restructuring: The FDIC can be appointed as a receiver or as a conservator. Being appointed as a conservator is a rarely used option. As a conservator,

[22] This is different from corporate bankruptcy law. In the U.S., corporate bankruptcy creditors can force the management to initiate bankruptcy only upon failure to meet debt payments. Subsequently, the management prepares the reorganization plan or the bankruptcy court appoints the trustee that liquidates the corporation.

[23] In U.S. corporate bankruptcy, only the manager may initiate voluntary bankruptcy.

[24] However, several empirical studies indicate that the impact of regulatory supervision, including PCA, on banks' risk-taking is insignificant (Laeven and Levine 2009).

the FDIC has an option to rehabilitate a failing bank without revoking its license. The FDIC steps into the shoes of bank management but the bank continues to operate (e.g., there is no automatic stay on its obligations).[25] In the case of the FDIC being appointed as a receiver, the legal closure occurs. The senior management and shareholders are removed without the appointment of the court. The FDIC manages the bankruptcy process, including asset sales and repayment to creditors.

The FDIC as a receiver can typically employ one of two techniques: a deposit payoff or purchase and assumption transaction. In a deposit payoff, uninsured depositors are repaid by the FDIC or sold to a healthy bank. The FDIC then liquidates and sells off the assets and at least partially recovers the loss. The deposit payoff method is less frequently used because liquidation of bank assets is costly and because the FDIC needs to commit funds in advance to repay uninsured deposits, whereas the proceeds of liquidation may come with a substantial lag. However, the FDIC can also provide liquidity support in the assistance transaction without interference with bank operations.

In a purchase and assumption transaction, the FDIC searches for an acquiring bank that acquires some or all assets and liabilities of the failed bank. To facilitate the purchase and assumption transaction, some or all assets and liabilities of the failed banks may be transferred to the bridge bank (the bank under the ownership of the FDIC). This gives potential bidders sufficient time for a due diligence process and allows the FDIC to clean up the failed bank, achieve greater transparency, and sell for a higher price.

Repayment of claimants: The FDIC fully repays insured deposits as quickly as possible and steps into their shoes, becoming a claimant with the same priority as uninsured domestic depositors and a higher priority than general creditors. The payoffs to other claimants honor the absolute priority rule and proceed in the following order:[26] administrative expenses of the FDIC, deposit liability claims including claims of the FDIC, general or senior liabilities, subordinated obligations, and shareholder claims. Having the same priority as uninsured domestic depositors and following the least cost method of restructuring, the FDIC works also in the best interest of uninsured depositors.

Claimants have very limited rights to appeal decisions ex-ante, before the decisions are executed. There exists some but rather limited ex-post judicial review, with damages being the only remedies.

Regulatory powers and legal stay: The FDIC cannot enforce legal stays on contracts. More specifically, the FDIC cannot keep a contract in force and at the same time prevent counterparties to exercise the rights under the contracts such as liquidation of the collateral. However, the FDIC can unilaterally repudiate a contract creating a claim with a status of a general creditor. This approach largely

[25] Whereas the FDIA prevented counterparties from terminating a derivative contract in the case of an appointment of the FDIC as a conservator, the FDICIA has somewhat amended this stance. The counterparty now has at least netting rights if not also closeout rights (Bergman et al. 2003).

[26] The absolute priority rule may not be honored if the systemic risk exemption is evoked.

corresponds to the close-out mechanism in derivative contracts. However, the FDIC has power to prevent derivative contracts from close-out if they are transferred to a bridge bank and if they are not in default (and if they meet collateral calls).

Problems: Several problems with the current U.S. bank bankruptcy law may be identified. First, the FDIC may not have sufficient funds for restructuring a large bank. In such a case, the involvement of the U.S. Treasury is crucial. Political pressures may appear, including the adoption of too soft an approach to bank bankruptcy. In order to overcome this problem, the Dodd-Frank Act (see Section 6.6) establishes an Orderly Liquidation Fund from which the FDIC may borrow funds to carry out the restructuring of financial institutions.

Second, before the implementation of the Dodd-Frank Act (see Section 6.6), U.S. bank bankruptcy law was applied only to commercial banks, but not to investment banks and to bank holding companies (Wall et al. 2005). Because a failure of an investment bank might lead to contagion to other investment and commercial banks and might have negative externalities on the entire economy, it was crucial that the scope of regulation be expanded.[27] The prudential regulation and bank bankruptcy law should cover investment banks, the hedge funds industry, and the insurance industry. This was one of the main intentions of the new bill, which was passed in 2010. We describe the main provisions of the Dodd-Frank Act in the next section.

6.6 The Dodd-Frank Wall Street Reform and Consumer Protection Act

The passage of the Dodd-Frank Act[28] in July 2010 aims to restore confidence and accountability in the U.S. financial system and to prevent taxpayer-funded bailouts like those that followed the 2007–2009 financial crisis. The bill represents the greatest legislative change to financial supervision since the Great Depression of the 1930s, and introduces new rules on banks and other nonbank financial institutions. The main intention of the bill is to address the systemic risks posed by large financial groups whose failure would threaten the stability of the entire economy.

[27] The collapse of Lehman Brothers (bankruptcy on 15 September) created severe strains on confidence in the banking system at large. An injection of public funds was necessary on 17 September to stabilize AIG. Washington Mutual was placed into the receivership of the FDIC on 25 September. Subsequently, the government widely intervened with the injection of TARP capital (i.e., capital provided through the Troubled Assets Relief Program).

[28] Dodd-Frank Wall Street Reform and Consumer Protection Act (2010), available in the Library of Congress at http://thomas.loc.gov/cgi-bin/bdquery/z?d111:HR04173:@@@L&summ2=m&#major%20actions.

The bill's major provisions are centered around the following topics: (1) systemic risk regulation,[29] (2) orderly liquidation procedures for unwinding financial institutions,[30] (3) government oversight of complex financial instruments and opaque financial companies such as hedge funds, private equity firms, and credit-rating agencies,[31] (4) limitation in proprietary trading activities for banks,[32] (5) regulatory oversight and supervision of clearing and settlement systems,[33] (6) consumer protection,[34] and (7) rules on executive compensation and corporate governance.[35]

The act changes the existing regulatory structure and creates new agencies, such as the Financial Stability Oversight Council (hereinafter: Council).[36] The Council has the power to identify systemically important nonbank financial institutions and to bring these companies under regulation by the Federal Reserve. The Council is also supposed to make recommendations to the Federal Reserve for increasingly strict rules for capital, leverage, and liquidity for those companies that grow in size and complexity. The Council is required to promote market discipline and to harmonize prudential standards across agencies. If necessary, it must consult with the appropriate foreign regulators in exercising its oversight with respect to cross-border banks. In assessing the systemic impact of nonbank financial institutions, the Council has to consider quantitative factors such as leverage thresholds, degree of reliance on short-term funding, and degree of interconnectedness with other systemically important financial companies. A nonbank financial institution is subject to enhanced prudential standards if it is determined to pose a systemic threat. For this to happen, two-thirds of the voting members of the Council should vote in favor, including the Treasury Secretary. For bank holding companies, no Council determination is required. All banks with $50 billion or more in assets are automatically subject to enhanced prudential standards.

Another important new agency created is the Office of Financial Research, whose main role is to periodically collect, analyze, and disseminate information from both bank holding companies and nonbank financial institutions.[37] The aforementioned agencies are attached to the Treasury Department.

An important step forward in the act is the inclusion of off–balance sheet activities in computing capital requirements. This provision is aimed to address the problem of the shadow banking system, which has had an important role during the recent crisis in putting the financial system at risk.

[29] See Title I of the act.

[30] See Title II of the act.

[31] See Titles IV, VII, and IX (Subtitle C) of the act.

[32] See Title VI of the act.

[33] See Title VIII of the act.

[34] See Titles IX and X of the act.

[35] See Title IX (Subtitles E and G) of the act.

[36] See Title I, Subtitle A, Section 111 of the act.

[37] See Title I, Subtitle B of the act.

The act also requires large, complex financial companies to prepare and submit plans for their rapid and orderly resolution. If such plans are not submitted, the regulator can impose higher capital requirements and restrictions on growth and activity, as well as divestment. The content of these "living wills" will help regulators understand the structure of the company and the ownership structure, as well as to identify the counterparties and to whom the collateral of the company is pledged. The act requires the Federal Reserve, in consultation with the Council and the FDIC, to establish requirements for early remediation of financial distress and, on the other hand, it rules out taxpayer funding of bailouts and instead requires shareholders, creditors, or other large financial firms to fund these costs. Limits on capital distributions, on acquisitions, and on asset growth should be imposed on financial companies that are identified as being in the initial stages of financial distress, while stricter measures such as capital-raising requirements, limits on transactions with affiliates, management changes, and asset sales should be imposed on financial companies in the later stages of financial decline.[38]

The remediation and mitigatory actions on financial distress proposed by the new legislation are reminiscent of the PCA provisions of bank bankruptcy law. However, the act implements the pre-insolvency mechanism using a three-step approach. As previously detailed, first a limited set of restrictions is enforced on the distressed financial company and, second, once the financial condition of the company declines, a more stringent set of requirements is imposed. The third and final step of early remediation is implemented upon the finding of the Fed, with approval of two-thirds of the Council, that the financial company poses a "grave threat" to financial stability. At this stage the Fed has the power to take action such as restrictions on the ability to offer a financial product, termination of activities, selling assets, or transfer to unaffiliated entities. The act restricts the Federal Reserve's emerging lending to individual companies. Any lending should be approved by the treasury secretary, and loans cannot be made to insolvent companies. Lending programs must be broad-based and collateral must be sufficient to protect taxpayers' money.

The act attempts to balance the goals of the bankruptcy and customer protection laws with the goals of preserving or restoring financial stability and public confidence. In order to achieve this, the bill sets up a new orderly liquidation authority[39] that will replace the Bankruptcy Code and other applicable insolvency laws for liquidating financial companies. Most large financial companies that fail (except for those that are members of the Securities Investor Protection Corporation or are a SEC-registered broker dealer) will be resolved through the bankruptcy process and the Treasury Secretary will have the authority to appoint the FDIC as a receiver of these financial companies. This will place the FDIC in the shoes of the financial company to work out the company's claims with very limited judicial review.

[38] See Title I, Subtitle C, Section 166 of the act.

[39] See Title II, Section 201 of the act.

The FDIC is authorized (1) to entirely or partially transfer the assets or the liabilities of the financial company to a third party at a fair value, (2) to provide financial assistance to the troubled financial company (e.g., by making loans, or purchasing debt or assets, and by guaranteeing obligations), (3) to establish a bridge financial company, and (4) to liquidate the failed financial institution in an orderly fashion. In taking such actions, the FDIC should comply with some mandatory conditions such as: to ensure that unsecured creditors bear losses in accordance with the priority of claim provisions, to remove the management/board members responsible for the company's failure, to ensure that each creditor receives at least the same amount as it would have received in liquidation under Chap. 7 of the Bankruptcy Code, to coordinate with the foreign authority if the financial company has assets or operations in a foreign country, to meet all margin, collateral, and settlement obligations of the financial company with a clearing organization, and not to take an equity interest in or become a shareholder of the troubled financial company.[40]

The act stipulates that the duration of the FDIC's role as a receiver can be a maximum of 3 years, with the possibility of two 1-year extensions. It also provides that the FDIC cannot be made liable for unresolved claims after the termination of the receivership. Because the FDIC's obligations as a liquidator are extended under the Dodd-Frank Act, an additional source of funds, independent of the FDIC's Deposit Insurance Fund, will be created. The Orderly Liquidation Fund will be established within the Treasury and the FDIC may borrow funds from it to carry out its mission under the orderly liquidation authority.[41] The capitalization of the fund will be done by collecting risk-based assessment fees on financial companies considered to have a systemic impact in the case of failure, and periodical reevaluation of the eligibility of any financial companies to be subject to such fees will be implemented.

New restrictions on complex financial products are imposed in the Dodd-Frank Act in an effort to make these products more transparent. Bank holding companies are required to spin off riskier types of derivatives into separate affiliates that would not receive taxpayer assistance in the case of default. Other important provisions are: (1) mandatory clearing through regulated central clearing organizations and mandatory trading through either regulated exchanges or swap execution facilities (the act provides a role for both regulators and clearing houses to determine which contracts should be cleared), (2) rules for increased market transparency, and (3) new categories of regulated market participants such as swap dealers. Hedge funds and private equity advisors are required to register with the SEC as investment advisers to disclose information about their trades and portfolios necessary to assess the systemic risk. The bill addresses the conflict of interests embedded in credit-rating agencies' activities (i.e., the issuer-pay business model), the absence of accountability, and the lack of internal controls. A new Office of Credit Ratings is created within the SEC. The office is required to examine annually the Nationally

[40] Title II, Section 206 of the act.

[41] Title II, section 210 of the act.

Recognized Statistical Ratings Organizations (NRSRO) and to disclose to the public the results of its examination. The office also has the authority to fine an agency if it fails to produce accurate ratings, and even to deregister the agency if bad ratings persist over a sustained period. The act requires full disclosure of rating methodologies and prohibits compliance officers (i.e., those individuals in charge of making sure that the rules and principles set by regulators are respected, and that the agency's employees are complying with internal policies and procedures) from working on ratings, methodologies, marketing, or sales.

The Volker provision seeks to limit banks' proprietary trading activities, and investment in and sponsorship of hedge funds and private equity firms. It also demands nonbank financial companies, which are systemically important for holding additional capital and for complying with certain quantitative limits on such activities. However, the Volker rule is not enforced until 2 years after enactment. The liquidity runs by wholesale lenders during the recent financial crisis forced massive distressed liquidation, which was not predicted by the standard risk models. Because most short-term funding was directed towards risky long-term investments and trading activities, this provision complements the role played by capital requirements in mitigating the risk of insolvency. It recognizes in fact that high capital ratios cannot by themselves insure against all losses and reduce the systemic risk.

Another important section of the bill deals with the payment and clearing systems. The bill creates two classes of clearing and settlement systems named designated clearing entities and financial market utilities. The organized stock and futures exchanges belong to the former category, while those systems that will be defined by the Financial Stability Oversight Council as systemically important belong to the latter. Nevertheless, the new structure that will be put in place under the new law is not fully described and there is still a lot of uncertainty regarding which systems will be considered to have systemic importance.

The legislation creates an independent consumer bureau within the Federal Reserve to protect borrowers against abuses in mortgage, credit cards, and some other types of lending (Bureau of Consumer Financial Protection).[42] The bureau has very broad power and a substantial budget. Among other duties, it has the power to write rules for consumer protection governing all financial institutions.

The bill also introduces a range of reforms regarding the governance of financial companies. Among them, the directors and officers of these companies are held personally liable for monetary damages in any civil actions by the FDIC if negligence is proved under applicable state law. The FDIC has the authority to recover from any current or former senior executive any compensation received in the last 2 years prior to the date when the FDIC is appointed as receiver, if it is proved that the executive is responsible for the failure of the company. The act gives shareholders a say on executive pay and golden parachutes (i.e., bonuses to the dismissed

[42] Title X, Subtitle A, Section 1011 of the act.

management). Companies should provide shareholders, not less frequently than once every 3 years, with a nonbinding vote to approve the compensation of executives, and, if this is the case, to approve payments made in connection to a mergers and acquisitions transaction.

The main impact of the Dodd-Frank Act will be felt by large, complex financial institutions. Nevertheless, smaller institutions will also face a more complicated regulatory framework. One main concern regarding the new regulatory and supervisory structure is that it requires extensive coordination and consultation before regulations can be promulgated and implemented (Eisenbeis 2010). This is more than evident at the level of newly created Financial Stability Oversight Council, whose ten members, nine of them representing different agencies, with different missions and interests, might find it difficult to achieve the two-thirds vote for systemically important designations. Another concern is that, by creating the Bureau of Consumer Financial Protection, the Federal Reserve will have its reputation tied to the bureau's activities because the Federal Reserve has no ability to influence or control the regulations promulgated by this bureau (Eisenbeis 2010). Finally, systemically important markets (such as the tri-party repo market) or the existing implicit government guarantees for the shadow banking system (i.e., Fannie Mae and Freddie Mac are systemically important financial companies with access to guaranteed debt) remain unaddressed under the new act (Acharya 2010).

The comparison among U.S. corporate bankruptcy law, U.S. bank bankruptcy law for systemically unimportant banks, and systemically important financial companies is summarized in Table A.1 in the Appendix.

Now we turn to the UK bank bankruptcy law. There exist several differences between the U.S. bank bankruptcy regime and the UK one. The most prominent one is that the UK regulators have even stronger special power in resolving bank failures.[43]

6.7 Bank Bankruptcy Regime in the UK

When Northern Rock suddenly collapsed, the UK did not have a special bank bankruptcy regime in place.[44] The UK Treasury was able to nationalize it in February 2008, after it obtained temporary rights to resolve failed financial

[43] The Banking Act 2009 even grants the government power to modify legislation by order, and that the change can have retroactive effect.

[44] Campbell (2008) argues that the FSA could petition the court for the appointment of administrator of the Northern Rock through the Insolvency Act 1986 in a similar way as in the case of Barings Bank in 1995. Campbell (2008) further argues that there is no evidence that an administrative process would be faster and more decisive than a judicial procedure (see also Walker 2008). However, Lastra (2008) argues that modification of corporate bankruptcy law would not be sufficient and the move towards a separate bank bankruptcy law is needed.

institutions by the temporary Banking (Special Provisions) Bill. In February 2009, a new permanent Banking Act 2009 was introduced and implemented a special resolution regime (SRR) to deal with failing banks (see Banking Act 2009, c 1., HM Treasury 2009 and Avgouleas 2009 for more details).

Triggers and responsibility: The SRR is triggered by the failure to satisfy threshold conditions and the inability of the bank to act to satisfy them in the near future. Threshold conditions pertain to capital requirements, liquidity and leverage ratios, and perceived inability to repay debt.[45] In the UK, the responsibility for bank restructuring is scattered among different authorities. The Financial Service Authority (FSA) identifies that the threshold conditions have been breached. The Bank of England (BoE) provides liquidity and manages operations in the SRR. The Treasury makes decisions concerning public finances.

In the UK, the triggers leave substantial discretion in the hands of the regulator. This is in sharp contrast to the U.S. bank bankruptcy procedure, in which the quantitative rules for starting bank bankruptcy are strictly and transparently defined.

Objective: Under the SRR the authorities should act according to the following five objectives: protection of the stability of the UK financial system, protection of public confidence in the stability of the UK banking system, depositor protection, protection of public funds, and avoidance of any interference with property rights in contravention of a Convention right (with the meaning of the Human Rights Act 1998). The objectives are not listed in a hierarchical order but their importance is considered on a case-by-case basis.

The objective set is much broader than in the case of the U.S. bank bankruptcy procedure, in which the FDIC should follow the least costly solution at the systemic risk exception.

Options of restructuring: The BoE has three stabilization options to restructure the failing bank (but its action is not limited to them): transfer to a private-sector purchaser, transfer to a bridge bank, and transfer to temporary public-sector ownership. The least intrusive stabilization option is transfer to a private-sector purchaser. This includes a partial or whole-bank transfer; however, it requires a willing acquirer. A bridge bank may be appropriate when no acquirer is available and when a stable platform is needed to restructure the failing bank assets and liabilities, making it more transparent for sale to a private purchaser. Temporary public ownership is the most intrusive option, in which the Treasury takes control and ownership of the failing institution. It is useful when the Treasury has already injected a significant amount of public money into the bank to guarantee systemic stability of the financial system.[46]

[45] The Banking Act 2009, c 1, S 7, states the condition as: "the bank is failing, or is likely to fail, to satisfy the threshold conditions (within the meaning of section 41(1) of the Financial Services and Markets Act 2000 (permission to carry on regulated activities))."

[46] The Treasury may even bring the parent of the failing bank (i.e., a holding company) under temporary public ownership.

To wind up the failing bank, the BoE can use the bank insolvency procedure or the bank administration procedure. In both procedures, the BoE acts to maximize the return to creditors with a particular concern for the timely repayment of insured deposits. However, under the bank administration procedure the main objective of the BoE is to keep the residual bank to continue providing crucial services and facilities to the purchaser or bridge bank even though the residual bank is insolvent.

The powers of the authorities: The authority (The BoE or the Treasury in the case of temporary public ownership) may use share transfer instruments to transfer the ownership of securities of the failing bank and/or property transfer instruments to transfer the property, rights, and liabilities of the failing bank to the private-sector purchaser, the bridge bank, or public-sector ownership. The authority may also use reverse transfer instruments to reverse the transfers performed; however, several restrictions are in place. The share transfer instruments give power to the BoE or the Treasury to substantially change the contract of the director of a failing bank or even remove him from the management.

Two characteristics of the SSR transfer instruments were the most heatedly debated. First, partial transfers allow the authority to transfer only good assets /liabilities to the bridge bank, leaving bad assets in the residual bad bank. This "cherry picking" may be detrimental to the uninsured creditors left in the residual bank. In addition, partial transfers allow the regulator to break set-off and netting agreements, leading to substantial exposures of the counterparties. As a result of pressures from the industry (HM Treasury 2008), the Banking Act 2009 allows for some protection of creditors (they should be no worse off than in immediate bank insolvency; see below) and protection for net-off agreements with specific carve-outs. For example, the authority may carve out bonds, medium-term notes, commercial papers, retail deposits, and loans if such contracts were included in set-off and netting calculations.

Second, property transfer instruments override the existing contracts and legislation. This problem is particularly acute in the case of a foreign property where, for example, partial transfer in the SRR could involve the foreign branch of a UK-incorporated bank even though such a branch may fall under the jurisdiction of the foreign court.

The issues of succession and continuity are also important for uninterrupted continuation of a bank's core business. The provisions in the Banking Act 2009 maintain continuity of legal relationships for property transfers under the stabilization options. The transferee is thus treated legally as the same person as the transferor. This is crucial for keeping branch leases, IT, and other infrastructure service contracts intact. In addition, bank creditors are not allowed to terminate their contracts (e.g., loan agreements, bond issues, or ISDA master agreements for derivative contracts) only due to the initiation of the SRR or due to a share transfer or property transfer mechanisms.

Repayment of claimants: Insured depositors should be promptly repaid by the deposit insurer (Financial Services Compensation Scheme) or transferred to another financial institution. Other creditors of the failing bank are protected with the no-creditor-worse-off objective: each creditor should be no worse off compared to the

hypothetical counterfactual of a whole-bank liquidation. The value of the bank under the hypothetical situation of its liquidation is assessed by an independent evaluator.

6.8 Brief Comparison of U.S., UK, and German Bank Bankruptcy Law and Assessment

One of the main differences between the U.S. and UK bank bankruptcy law is in the approach towards systemic risk. Bank bankruptcy law should prevent the negative effects of bankruptcy from spilling over to other banks or to the real economy. In the U.S., the bank in receivership is legally closed and its charter is revoked under the Bankruptcy Code.[47] However, its operations are not terminated. It is the role of the FDIC to prevent termination of operations that may lead to systemic risk. Examples pertain to the treatment of insured deposits and derivative contracts: the FDIC may sell the insured deposits to a healthy bank and repudiate derivative contracts to avoid their termination and payoff. The Dodd-Frank Act establishes a new Orderly Liquidation Authority, which is responsible for all financial companies that present a threat to systemic risk and not only for banks. The new authority will replace the Bankruptcy Code and will address the moral hazard problem created by those situations when shareholders, management, and unsecured creditors are protected from the consequences they would have suffered in liquidation under the Bankruptcy Code.

In contrast, under the UK bank bankruptcy law, the failing bank that enters the SRR is not legally closed. The BoE can move systemically important contracts to a new bank (either a bridge bank, private-sector purchaser, or temporary public-sector ownership). Such a transfer does not present an event of default and on its own cannot trigger the default and consequent termination of the contracts. Only the residual bank is then liquidated. The regulator therefore prevents the liquidation of contracts and assets that will lead to fire sales and impose systemic concerns.

Table 6.2 summarizes the main provisions of bank bankruptcy laws in the U.S., UK, and Germany. What can be seen is that all three bank bankruptcy laws contain mitigation of systemic risk as an explicit objective. There are other objectives (such as minimizing public funds exposure, protection of depositors, and respecting the priority rules) written in the laws.

Evaluation: Systemic risk needs to be explicitly mentioned in bank bankruptcy law as the most important objective. However, safety measures need to be installed

[47] This is the usual situation; however, the FDIC can be appointed as a conservator and can chose to rehabilitate a failing bank without revoking its license. The FDIC can also provide unconditioned liquidity provision through assistance transactions if this is necessary due to systemic concerns.

Table 6.2 Comparison of U.S., UK, and German bank bankruptcy laws

	U.S. bank bankruptcy law for systemically unimportant banks	U.S. bank bankruptcy law (Dodd-Frank Act's provisions) for systemically important financial companies	UK bank bankruptcy law	German bank bankruptcy law
Objective	Minimize losses to the FDIC at the systemic risk exception	Address the systemic risks posed by large financial groups and prevent taxpayer-funded bailouts	1. Protect the stability of financial systems 2. Protect public confidence 3. Protect depositors 4. Protect public funds 5. Avoid interfering with property rights	Prevent undesirable developments in the banking system that: 1. Endanger the safety of the assets entrusted to institutions; 2. Adversely affect the orderly execution of banking transactions; 3. May substantially prejudice the economy as a whole Prevent liquidity shortages and improve the capital position of financial institutions
Pre-failure intervention	Prompt corrective action by the regulator	Early remediation and mitigatory actions by the regulator	In the scope of standard regulatory supervision	The regulator makes a recommendation to the bank to correct the problems within a strict deadline if the bank fails to comply with prudential standards
Trigger	Failure to comply with the regulatory standards (with the most critical one of being undercapitalized)	Failure of systemically important financial companies to comply with enhanced regulatory requirements (e.g., risk-based capital, leverage, liquidity, credit exposure reporting, resolution plans)	Failure to satisfy threshold conditions (capital requirements, liquidity and leverage ratios, and perceived inability to repay debt)	Violations of regulatory standards regarding adequate capital and liquidity and a bank's failure in correcting these problems following the regulator's recommendations

(continued)

Table 6.2 (continued)

	U.S. bank bankruptcy law for systemically unimportant banks	U.S. bank bankruptcy law (Dodd-Frank Act's provisions) for systemically important financial companies	UK bank bankruptcy law	German bank bankruptcy law
Options in bankruptcy	1. Purchase and assumption (loss sharing transaction, bridge bank)	1. Purchase and assumption	1. Transfer to a private-sector purchaser	1. Restructuring by the depositor insurance scheme or by the private liquidity supplier
	2. Deposit payoff	2. Liquidation	2. Transfer to a bridge bank	2. The provisional administration procedure
	3. Assistance transactions		3. Transfer to temporary public-sector ownership	3. The bank insolvency procedure
			4. The bank insolvency procedure	4. The bad bank procedure
			5. The bank administration procedure	
Creditor stays	Less general, major exception is insured depositors		Entering SRR does not present a legal event of default	The regulator can impose a full or partial suspension of payments and a legal stay against creditor action
The treatment of claimants	Insured deposits are repaid (or transferred to a healthy bank)	There is no priority rule for any deposit claims over the claims of the general creditors	Insured deposits are repaid (or transferred to a healthy bank). Other claimants should obtain at least the amount they would in liquidation	Unlimited depositor protection is offered by the deposit insurer
	Absolute priority rule is honored	Amounts owed to the U.S. have priority over the claims of general creditors		
	The FDIC has the same priority as uninsured deposits			
The roles in bankruptcy	The FED (or the FDIC) initiates bank bankruptcy, the FDIC is in charge of restructuring	Under the new orderly liquidation authority, the Treasury Secretary has the power to appoint the FDIC as receiver; the determination of the	The FSA initiates the SRR. The BoE leads it in consultation with the Treasury in the case of involvement of public funds	The BaFin initiates the insolvency procedures and leads the provisional administration

(continued)

Table 6.2 (continued)

	U.S. bank bankruptcy law for systemically unimportant banks	U.S. bank bankruptcy law (Dodd-Frank Act's provisions) for systemically important financial companies	UK bank bankruptcy law	German bank bankruptcy law
		financial institutions covered is made by the Treasury Secretary, upon the recommendation of two-thirds of the Fed board and two-thirds of the FDIC board		The BaFin makes the resolution decision in cooperation with the German Bankers Association representing the deposit insurer
	Management is ousted		Management may be removed	Management may be removed
Structure of process	Administrative	Administrative	Administrative	Administrative
	Limited ex-post judicial review and appeal	Limited ex-post judicial review and appeal	Limited ex-post judicial review and appeal	Appeals against regulatory measures are excluded by law
			The government can modify bankruptcy legislation by order with a retroactive effect	

to preclude the regulator from abusing the systemic risk objective for other purposes or when it is not necessarily needed.[48] Minimizing the exposure of public funds is somewhat less (but still) important. It shields taxpayers from the losses that others have created. More importantly, it prevents spillovers from banking failures to sovereign defaults and currency crises. It is also important to respect priority rules (and property rights) as much as possible. This lowers the cost of funding for banks in the ex-ante sense when banks are stable.

Pre-failure intervention is most explicitly determined in U.S. bank bankruptcy law. The UK and German bank bankruptcy laws see prudential regulation as a tool to be used instead of pre-failure intervention. The U.S. case demonstrates the importance of clear triggers for pre-failure interventions that force the regulator to act when a bank is approaching distress but is still solvent.[49]

In U.S. bank bankruptcy law, the trigger for a bank insolvency proceeding is precisely determined by hard and easy computable accounting ratios. In UK and German bank bankruptcy law, the trigger for bank bankruptcy is more vaguely defined and also depends on the perception of the regulator.

Evaluation: Pre-failure intervention is crucial for disciplining banks in the ex-ante and ex-post sense (i.e., before and after being in distress). Pre-failure intervention also imposes discipline on the regulator to intervene in a timely manner. The trigger for pre-failure intervention and for bank bankruptcy should be clearly defined (to force the regulator to intervene in a timely manner). At the same time the regulator should have room for leeway if a distressed bank is trying to carve its accounting numbers to escape intervention.

All three bank bankruptcy laws give numerous options to the regulator in the case of bank bankruptcy. The regulator has the power to move (or sell) assets and/or the deposit book, repay (insured) deposits, and, as a final resort, liquidate the failed bank.

Evaluation: The regulator needs to have the authority to remove management and shareholders of a failing institution and to restructure its assets and liabilities. The regulator needs to be able to move assets and liabilities (either to the healthy purchasing bank or to a bridge bank). The regulator needs to have the authority to decide whether (and when) to remove the bank license.

An automatic stay is limited in all three bank bankruptcy laws. For example, all three bank bankruptcy laws allow for special treatment of insured deposits. All three bank bankruptcy laws also allow for closeout netting of financial derivative contracts that effectively exempt financial derivative contracts from an automatic stay.

Evaluation: Overriding an automatic stay may lead to unequal treatment of (early vs. late withdrawing) creditors. However, exempting insured deposits from

[48] For example, under the Dodd-Frank Act of U.S. bank bankruptcy law, the Fed needs the approval of two-thirds of the Council that the financial company poses a "grave threat" to financial stability.

[49] Clearer triggers will be implemented through Basel III requirements on Minimum Common Equity Capital Ratio, Minimum Tier 1 Capital and Liquidity Coverage Ratio, http://www.bis.org/press/p100912.htm.

an automatic stay is crucial for preserving public confidence at large and preventing systemic risk. Uninsured creditors also need to be dealt with carefully if a systemic crisis is on the horizon. The regulator should have the authority (as is the case in all three bank bankruptcy laws) to partially repay uninsured creditors while giving them an option for further proceeds from restructuring in the case of too low initial repayment. This constrains liquidity costs and potential disruption to systemic stability.

The roles of regulatory bodies in the three bank bankruptcy laws differ. In the U.S. and Germany, the same regulator triggers and leads the restructuring. In the UK the FSA triggers SRR but the BoE leads the restructuring. The question is whether such separation is suitable. The question is also which regulator should be in charge of restructuring: the deposit insurer, the lender of last resort, or the central bank in charge of monetary operations.

Evaluation: A potential conflict of interests between different regulators may arise and the legislature should study them carefully considering the institutional settings in each country.

In all three bank bankruptcy laws, the structure of the process is administrative with limited ex-post judicial review and appeal.

Evaluation: Limited judicial oversight is necessary to allow for timely intervention and prevention of systemic risk. Giving the powers to the regulator instead of to the court seems to be reasonable due to the additional knowledge needed to contain a systemic crisis.

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Chapter 7
Optimal Design of Bank Bankruptcy Law and the Bank Failures from the 2007–2009 Financial Crisis

This chapter first gathers together our proposals for optimal bank bankruptcy law. Subsequently, it reviews several cases of bank failures from the 2007–2009 financial crisis. The cases demonstrate the need for bank bankruptcy law and give the first and admittedly imprecise evidence for the validity of the proposals that we make.

7.1 Optimal Design of Bank Bankruptcy Law

We now lay out a condensed framework for an efficient bank bankruptcy framework. Three groups of proposals emerge. The first group describes the main characteristics of optimal bank bankruptcy law.[1] The second group contains proposals to change the institutional setting in order to mitigate repercussions of bank failures (or even prevent them altogether). The third group suggests how to limit systemic risk by focusing on a single type of systemically important contracts (e.g., insured deposits, financial derivative contracts).

Proposal 1: *There is a need for special bank bankruptcy law.*

The prevailing thinking before the 2007–2009 financial crisis was that prudential regulation should stop banks from entering distress (e.g., by imposing sufficiently high capital requirements to cushion the losses) and that consequently banking failures can be prevented. Whereas prudential regulation is needed to contain the ex-ante moral hazard of banks, it does not eliminate the possibility of bank failure.[2]

[1] The De Larosiere report, 2009 and Reorganization and Winding-Up Directive, 2001/24/EC propose a three-step approach towards intervention by financial authorities that includes pre-insolvency intervention and a reorganization procedure (and consequent liquidation).

[2] The history of the financial crisis is extensive and there is no indication that we have seen its end; see Reinhart and Rogoff (2008).

M. Marinč and R. Vlahu, *The Economics of Bank Bankruptcy Law*,
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Corporate bankruptcy law is ill-suited for bank bankruptcy. To deal with special features of banks, special provisions need to be written into corporate bankruptcy law or special bank bankruptcy law should be in place. Due to several differences between corporate and bank bankruptcy law, in our view a special bank bankruptcy law is better suited to deal with the special features of banks than the special provisions under the scope of corporate bankruptcy law.

Bank bankruptcy law should be in place before bank bankruptcy occurs. Ad hoc interventions are sometimes necessary but may lead to inefficient outcomes. The reason for this is that the political process of accepting the legislation is time consuming and necessitates (at least some) political consensus. In the case of bank distress, however, the regulator cannot wait. Immediate regulatory actions need to be taken to restore confidence and to prevent contagion and consequent systemic crisis.

Once the need for bank bankruptcy law is established, its main characteristics should be depicted.

Proposal 2: *An explicit objective of bank bankruptcy law should be to prevent systemic banking crisis.*

The regulator has to have clear objectives in bank bankruptcy law. One of the reasons for the existence of bank bankruptcy law is precisely the prevention of a systemic banking crisis. By explicitly outlining this objective, the regulator obtains clear guidelines to respond to various threats to systemic stability that may derive from an individual bank bankruptcy.

The potential problem of the systemic stability objective is that systemic risk is hard to identify and quantify. It is difficult to answer when the failure of an individual financial institution (or, e.g., a "haircut" for bank creditors) presents a threat to systemic stability. Systemic stability also largely follows from public confidence in the stability of the financial system at large. Hard quantifiable measures for systemic risk could be defined,[3] but some discretion could also be given to the regulator to respond to the threats against systemic risk. Safety measures should be defined to preclude the regulator from overusing the systemic stability objective.[4]

An important part of preserving public confidence is prompt repayment of insured deposits. It is important that the government has the reputation of being able to cover the costs associated with the deposit insurance scheme. This also sets the need for the following sub-proposal.

[3] The regulator could use different quantifiable systemic risk measures. See Section 5.1 and the discussion around Footnote 81.

[4] For example, the Dodd-Frank Act requires a two-thirds majority vote of the Financial Stability Oversight Council when deciding that the financial company poses a "grave threat" to financial stability. Only then can the Fed take drastic measures such as restrictions on the ability to offer a financial product, terminate activities, sell assets, or transfer assets to unaffiliated entities.

Proposal 2a: *Additional objectives should include minimizing costs for taxpayers and respecting priority rights.*

Bank bankruptcy law should minimize the exposure of public funds to bank failures. This is important for containing potential spillovers between bank failures and sovereign defaults. In particular, costly bank failures can make the levels of public debt unsustainable and may trigger sovereign defaults and currency crises, leading to additional pressure on the stability of the financial system.

The last objective of bank bankruptcy law is to respect the priority rights of different bank claimants. This objective gives investors a level of certainty regarding their expected returns from investing in different bank claims. Consequently, the cost of funds for banks should decrease.

In our opinion, the objectives in the case of bank bankruptcy law should be ranked in importance. The most important objective is to preserve systemic stability. A somewhat less important objective is to minimize protection of public funds and the least important (but of course still important) is to respect priority rights. Clear priorities set the way for how the regulator should act in times of a severe financial crisis.

Proposal 3: *A pre-insolvency phase should exist.*

A pre-insolvency phase gives the regulator time to put a weak bank on the right track. It serves as a commitment device for the regulator to intervene in a weak bank in a timely manner. Timely intervention can preclude insolvency of a bank and makes bank shareholders (and not bank creditors) responsible for bank losses. By insulating bank creditors from losses, the threat of systemic crisis is mitigated. Hence, a pre-insolvency phase goes hand in hand with the main objective of bank bankruptcy law: mitigation of a systemic crisis.

Timely intervention represents a credible threat of the regulator to intervene in the weak bank. It is easier to intervene once the problems are still containable. Consequently, banks anticipate timely intervention and refrain from excessive risk-taking.

A pre-insolvency phase also serves as a mechanism to preclude a weak bank from gambling for resurrection. A pre-insolvency phase should prohibit weak banks from paying out dividends, excessively remunerating bank management, or pursuing risky investment strategies (e.g., mergers and acquisitions).

A pre-insolvency intervention similar with those used by German or U.S. financial authorities should be implemented. This early intervention is dedicated to address a possible bank (nonbank financial institution) failure at an early stage. It should consist of prompt corrective actions in the form of recommendations to correct the problem that was identified by the regulator, in a strict deadline and under increased supervision, and of restrictions regarding certain activities. Among the useful early intervention tools that the banking regulator should have are: the request for a capital increase or for the conversion of contingent capital into equity, the suspension or temporary reduction of management compensation, the divestment of certain risky activities with a negative impact on the bank's overall soundness, limits on lending activities, and the possibility to require a reduction

in wholesale funding. Quantitative assessment based on detailed criteria should trigger intervention by the financial authority.

Proposal 3a: *In a pre-insolvency phase, corporate governance control should be shifted gradually to bank creditors.*

The distressed bank creditors could already obtain partial control through corporate governance mechanisms in the pre-insolvency phase. The creditors should have a member appointed on the board of directors of the failing bank. This gives the creditors access to information about bank governance and prevents potential risk-shifting problems such as dividend payments and payment of bonuses of a bank in the pre-insolvency phase.

Although creditors should be in the pre-insolvency phase, given control through corporate governance mechanisms, this does not limit the responsibility of the regulator. The regulator should have the necessary tools to mitigate excessive risk-taking by the distressed banks, but such tools need not be implemented through corporate governance mechanisms.

It is important that a pre-insolvency phase is implemented for any systemically important financial institution. Clear rules should be in place to determine which financial institutions are systemically important.

When multiple regulators are involved in the process of supervision and intervention, a clear and effective framework should be established between them in order to that assure coordination and full sharing of information are as perfect as possible. Otherwise, a single authority should lead the bank reorganization and liquidation process in order to avoid inefficiencies and delays.

Proposal 4: *The regulator should lead the restructuring and not the court.*
Proposal 4a: *The regulator should have greater power than the court has in corporate bankruptcy.*

The regulator is better suited to deal with bank bankruptcy than the court because of its additional knowledge about the systemic stability of the banking system. In addition, an administrative procedure led by the regulator can be faster. Hupkes (2003) argues that in those countries where the financial authority has unlimited power to implement a clearly defined reorganization procedure (e.g., Canada, the U.S., and Japan), the reorganization process is faster and more efficient because the financial authority has better information than a court about a bank and about its systemic role with respect to other financial institutions. We can also argue that the judicial procedure might not necessarily take into account the financial linkages and contagion threat, which is a special feature of banks as economic entities.

Proposal 5: *Bank bankruptcy law should be less debtor-friendly than corporate bankruptcy law.*
Proposal 5a: *The regulator should have the authority to remove management and shareholders (and to impose a "haircut" on bank creditors), and to transfer contracts.*

A critical ingredient for increasing economic efficiency through bank bankruptcy law is to enable financial authorities to take rapid action without the approval of a bankruptcy court being necessary, or the consent of shareholders or creditors. Bank bankruptcy law should give stronger power to the regulator compared to the power that the court has in the case of corporate bankruptcy. The regulator needs authority to deal with bank bankruptcy in an expedited manner and contain (potential) bank runs or contagion to healthy banks: (1) The regulator needs power to swiftly remove bank management and shareholders in the case of bank bankruptcy; otherwise, bank management can oppose timely restructuring. (2) The regulator also needs power to transfer assets from a failed bank in order to separate bad assets from good ones and increase transparency. Separation of bad assets from good ones also achieves better focus either in normal bank operations or in restructuring of bad loans.

Proposal 6: *An automatic stay may be overridden.*

In order to prevent systemic crisis, an automatic stay (i.e., a debt freeze) cannot apply to all creditors. In particular, insured depositors should be dealt with in a matter of a few days. They can be either paid out by the deposit insurer or transferred to a healthy bank. Freezing uninsured deposits may prove to be problematic because it can propagate a liquidity shock to otherwise healthy financial institutions. The regulator should have the power to impose a "haircut" on uninsured creditors and then latter compensate them (if the proceeds of the asset sales are sufficient).

Proposal 7: *The regulator needs to have tools for efficient reorganization.*

A reorganization procedure should be implemented and, if unsuccessful, the final step of closing the insolvent financial institution must be taken. Optimal reorganization and the winding-up processes can be implemented only if a comprehensive set of tools is available to financial authorities. In Section 3.2.3 we identify the following efficient tools: liquidation, acquisition by a private-sector purchaser, purchase and assumption agreement (e.g., bridge bank creation, a good bank–bad bank tool, assisted sale to a private-sector purchaser), and nationalization (see also Cihak and Nier 2009, and Hupkes 2003).

Proposal 8: *Financial institutions should construct living wills. Regulators should combine living wills to obtain a living will for the entire financial system.*

Interconnections within a large financial institution and its connections with other financial institutions are frequently of an opaque nature. A failure of a large financial conglomerate may therefore create severe damage to various business units inside the failed financial conglomerate and to interconnected financial institutions. Such damage may be previously completely unanticipated by the regulator and other market participants. Writing living wills would lower uncertainty in the case of bank failure and allow market participants to anticipate their losses. Living wills will help in identifying all systemically important activities and in facilitating a split of financial institutions in the event of insolvency. Therefore, the bailout of financial institutions can be avoided, even for large and systemically

important ones (Avgouleas et al. 2010; Claessens et al. 2010). Moral hazard will be eliminated by reducing the expectations for a government bailout (particularly for too-big- and too-complex-to-fail financial institutions), since creditors, shareholders and other counterparties are aware of the fact that losses will be imposed on them. Feldman (2010) identify three main attributes that need to be considered in order to make these resolution plans credible. First, the regulator should prepare them, and not the financial institutions. This is a natural way of addressing financial institutions' lack of incentives to spend resources to plan for their demise. Second, resolution plans should trigger changes in the financial institutions' activities before they are in the worst possible scenario. Finally, regulators should ask experts to assess the effectiveness of the living wills, and to disclose any changes in activities imposed on financial institutions.

What is even more important is the ability of the regulator to create a big picture of the systemic stability of the entire financial system. The regulator should create simulations of a failure of each (major) financial institution and its consequences for systemic stability. The regulator should also make such simulations public knowledge to increase transparency of potential measures in the case of a systemic crisis.

Proposal 9: *A restructuring fund should be established.*

To expedite restructuring and prevent systemic crisis, the regulator needs to have funds available for the intervention (e.g., insured deposits need to be repaid). For this purpose, banks should establish a restructuring fund that they should contribute to in times of economic growth. Such a restructuring fund would also act countercyclically.

An ex-ante established cross-country restructuring fund would also contribute to more efficient restructuring of a cross-country financial institution. An ex-ante burden sharing agreement would prevent coordination problems between multinational regulators and allow for their mutual timely intervention.

Proposal 10: *In the case of derivative contracts banks may opt for closeout with or without netting; however, closeout netting should be allowed only under closer regulatory scrutiny.*

One way of implementing this proposal is to impose different capital requirements on exposures from financial derivative contracts that are traded through organized exchanges and ones that are traded over the counter. However, such regulation may lead to fewer innovations in financial derivatives markets.

Alternatively, a bank could decide whether it wants to use netting for the over-the-counter financial derivative contracts. With netting, capital requirements should be higher than without netting. Such an option would be particularly valuable in the case of over-the-counter derivatives. In the case of trading through organized exchanges, closeout netting could still be allowed because there the major counterparty risk could be cleared through the central clearing providers.[5]

[5] However, regulators should evaluate the systemic effects of a failure of such a central clearing provider.

Proposal 11: *Prudential regulation should be strengthened. Establishing crude measures on much higher minimum capital requirements may be optimal.*

Capital adequacy frameworks such as Basel II have gone too far at stipulating complex formulas for determining minimum capital requirements that financial institutions should abide with. In the (over)simplistic theoretical framework, the well-known Modigliani Miller theorem shows that the capital structure does not matter. The question is therefore whether the social benefits of high bank leverage outweigh the additional costs to society incurred by high bank leverage. In our opinion, the answer is no (see also Admati et al. 2010). Substantially higher capital requirements will absorb losses and hence would prevent bank failures and consequent negative externalities to the economy at large. In line with this proposal, new adopted Basel III rules on capital adequacy (to be implemented from 1 January 2013) have more than doubled minimal capital ratio (i.e., from 2% to 4.5%) and directed banks to hold excess capital as conservation and countercyclical buffers (adding up to an extra 5%), whit some countries (e.g., Switzerland) requiring systemically important banks to hold additional capital beyond the BIS' standards (e.g., total capital of 19% of risk-weighted assets).

Proposal 12: *Deposit insurance schemes and bank bankruptcy laws should be harmonized across countries (as much as possible).*

Putting banks in different countries on an equal level playing field with respect to capital regulation is seen as a major accomplishment of the Basel I and Basel II capital frameworks. However, banks are still competing in countries with different deposit insurance schemes, different (and sometimes even conflicting) rules for the priority of bank claimants, and different failing bank governance rules. Different rules may facilitate regulatory arbitrage and push banks towards avoidance though legislation and cherry picking of the most suitable legislation.

We now evaluate our proposals in light of several failure cases from the 2007–2009 financial crisis.

7.2 The Northern Rock Collapse

Northern Rock started as a building society (i.e., a residential mortgage lender owned by its savers and borrowers) and decided to go public on the stock market in 1997. In a short period of only 9 years, Northern Rock's total assets grew from £17.4 billion to £113.5 billion and, as a result of this remarkable growth, at the onset of financial crisis it became the fifth-largest mortgage lender.[6] In September 2007, Northern Rock experienced a classic bank run that, complemented by a nontraditional business model that relied heavily on securitization and short-term funding from wholesale markets (instead of retail deposits, a more stable and long-term

[6] See Northern Rock Annual Reports for 1998 and 2007.

source), made it the first important casualty of the 2007–2009 financial crisis. The bank was nationalized by the British Government in 2008 and subsequently split into an asset-management company and a banking unit in 2010.

The Northern Rock collapse highlighted the pervasive effects of maturity mismatch on a bank's balance sheet and how the new business model employed by this mortgage provider made it vulnerable to adverse developments in wholesale markets. It also challenged the traditional approach to capital regulation because regulatory capital linked to the riskiness of a bank's assets ignores the negative spillover effects generated by the failure of a financial institution, or by the collapse of the market for a specific type of assets. This failure has demonstrated that, once public confidence is lost, the depositors' coordination failure and a subsequent bank run are very likely, making public statements by national authorities futile. Deficient supervision and lack of timely intervention by banking authorities during the pre-insolvency phase were demonstrated in the Northern Rock case (see Proposals 2 and 3).

The business model employed by Northern Rock mainly consisted of three parts: heavily borrowing on a short-term basis, both from domestic and international investors (i.e., 75% of its funding came from wholesale credit markets); extending the funds through mortgage lending to customers; and, finally, repackaging and reselling these mortgage loans (i.e., a securitization process). However, following to the closure of three investment funds managed by BNP Paribas in August 2007, as a result of problems in the U.S. subprime mortgage market, the market for securitized products dried up, together with the short-term funding market and interbank lending. The bank was faced with the impossibility of raising funds in the money market in order to repay its short-term loans. The UK's Financial Services Authority and the Bank of England were informed in mid-August about the bank's funding problems. The option of selling Northern Rock to another UK bank was discussed, with Lloyds TSB ready to acquire Northern Rock. The deal did not materialize, mainly because the acquirer demanded a large loan from the Bank of England in order to finalize the transaction, a solution that was rejected on the grounds that the authorities should not fund the acquisition of one bank by another. To be able to replace its funds, Northern Rock asked for and received liquidity support from the Bank of England on 14 September 2007. However, this action (which was made public) increased the uncertainty among depositors regarding the bank's financial health, and triggered a bank run and the collapse of the share price on the stock market.

To calm the markets, the British government and the Bank of England announced that all deposits held at Northern Rock would be guaranteed.[7] This action contained the run and stopped the depositors' withdrawals. The Bank of England also announced an injection of liquidity into money markets to bring down the cost of borrowing in the interbank market and extended the guarantee to cover

[7] *BBC News*, 17 September 2007.

existing unsecured wholesale funding.[8] Finally, after two unsuccessful bids to take over the bank by private institutions (i.e., one made by a consortium led by the Virgin group, and the other one made by the investment company Olivant), neither being able to fully commit to repayment of the taxpayers' money, which amounted to £28.5 billion in January 2008, the bank was nationalized on 22 February 2008. In line with our Proposals 2a, 3a and 7, the regulator needs to have tools for efficient reorganization and winding-up, which should lower the costs for taxpayers.

The run on Northern Rock and the subsequent bailout announcement had significant effects on the rest of the banking system. Goldsmith-Pinkham and Yorulmazer (2010) show that the composition of the liability side of the balance sheet and funding characteristics of banks can be critical sources of bank failures and spillover effects. They use event-study methodology and find that UK banks that relied on short-term wholesale funding were heavily affected by the Northern Rock episode. Many other banks were affected, Northern Rock not being the only UK bank to rely extensively on non-retail deposits. As Shin (2009) argues, crucial for the bank's demise was the extent to which it relied on such funding, and the fact that institutional creditors themselves were facing constraints in their rollover decisions.

7.3 The Lehman Brothers Bankruptcy

The Lehman Brothers group was a nonbank global financial services firm that consisted of 2,985 legal entities, operating throughout the world. Lehman faced huge losses from mid-2007 to mid-2008 as a result of large positions in the subprime mortgage market and other lower-rated securitized mortgage tranches. On 15 September 2008, the firm filed for bankruptcy protection under Chapter 11, with a total debt of $613 billion and assets worth $639 billion. Lehman's bankruptcy was the largest failure in U.S. history, and the first investment bank collapse since Drexel Burnham Lambert.

Lehman's bankruptcy demonstrated the perverse effect of leverage based mainly on short-term funding. Lehman had accumulated large positions in real-estate related products, most of these positions being financed with borrowed funds in the tri-party repo market. The leverage ratio at the end of 2007 was 31:1, making the firm extremely vulnerable to minor declines in the mortgage market.[9] Although the firm enjoyed a steady and high stream of profits up to mid-2007, it incurred huge losses during the continuing subprime mortgage crisis. As a result, the share price plummeted and the firm's assets were devalued by credit-rating agencies. A private solution to the imminent failure was sought with state-controlled Korea

[8] See Bank of England, Financial Stability Report, 22 October 2007, for a detailed timeline of the Northern Rock crisis.

[9] See Lehman Annual Report for 2007.

Development Bank, and later Barclays and Bank of America, considering acquisition of the financial group. However, none of these deals went through.

In the days following the bankruptcy filing, the group was split and sold to different entities as follows: North American investment banking unit and trading divisions were bought by Barclays, Nomura Holdings purchased the units in the Asia-Pacific region, as well as investment banking and equities units in Europe and the Middle East, and the investment management unit was sold to its management, making it the fourth-largest private employee-controlled asset-management firm globally. In late 2010, a new business called LAMCO was created in order to manage Lehman's remaining assets and operations such as real estate, private equity, corporate debt, and derivatives assets. Skeel (2009) argues that the Lehman experience suggests that investment banks are more likely to be sold than reorganized, with Chapter 11 proceedings being effective for achieving this goal.

A critical aspect of Lehman's bankruptcy consists of the fact that Lehman, like all other investment banks, was not subject to the same regulation applied to commercial banks. The firm was supervised by the Securities and Exchange Commission, but many of the international units were subject to foreign regulation in their host country. This episode demonstrates that, for large cross-border financial institutions, the existence of a framework for orderly resolution is extremely important, and also the existence of emergency funds that can provide liquidity such that a firm's orderly liquidation can be achieved without causing any damage to the firm's key operations or to ongoing trading commitments (see Proposals 1 and 9). In the Lehman case, the Federal Reserve provided liquidity by swapping lower-quality assets in exchange for loans to a group of Wall Street firms, which in turn agreed to provide capital such that the failing Lehman could seek an acquirer (Sorkin 2008). Cooperation among different regulators supervising different entities of the group was also required during Lehman debacle because different entities of the cross-border firm entering insolvency proceedings may end up with separate national proceedings: the holding company of the Lehman group filed for bankruptcy in the U.S., whereas in the UK PricewaterhouseCoopers was appointed as administrator of the British subsidiary, and in Japan the branch was subject to court reorganization. In line with our Proposal 12, a harmonization of bankruptcy laws across countries would have helped in restoring quickly public confidence and in reducing the negative spillover effect of Lehman's failure.

Another special feature of the Lehman bankruptcy consists in the fact that the group successfully evaded the brokerage exclusion when it filed for bankruptcy. The bankruptcy code excluded brokerage firms from Chapter 11, troubled brokerages being liquidated under Chapter 7. However, Lehman managed to put the holding company in Chapter 11, while foregoing bankruptcy for brokerage subsidiaries, with the main goal being a quick sale of the brokerage operations to Barclays. They were allowed to do so (and also to impose an automatic stay on contracts and their underlying collateral), even though the brokerage subsidiaries did not file for bankruptcy and the contracts should have been allowed to be

executed.[10] This episode demonstrates that the special treatment given to derivatives and other financial contracts should be abolished because this will allow for the efficient and rapid winding up of large nonbank financial firms (see Proposal 10).[11]

7.4 The Fortis Bank Bankruptcy

The Belgian-Dutch financial group Fortis was one of the largest businesses in the world by revenues at the onset of the financial crisis in 2007.[12] As a result of serious liquidity problems, the company was nationalized by the Belgium government in late 2008 and subsequently sold in parts to the Dutch government and French financial group BNP Paribas.

The Fortis collapse (one of the largest failures during the financial crisis) highlighted the need for stronger cooperation between different national regulators and for harmonization of bank bankruptcy laws across countries (see Proposal 12). The cross-border implications of a large bank failure, the negative impact of shareholders' power on timely restructuring, and conflicts of interests between national regulators were demonstrated in the Fortis case.

Fortis, as a member of a consortium formed together with Royal Bank of Scotland and Spain's Santander, won a hostile bidding war against the top management of Dutch bank ABN AMRO (supported by Barclays Bank) in October 2007 and took over the Dutch bank. Fortis issued extra shares to finance the amount of €24.2 billion, as part of the €70 billion ($110.4 billion) deal. The takeover, the largest ever in banking history, came at an unfortunate time, just 2 months after the eruption of the credit crisis in the U.S. subprime mortgage market, which put a lot of pressure on banks' finances. As a result, 1 year later, in June 2008, Fortis announced a new share issue and cancellation of dividend payments, measures taken in order to strengthen the bank's capital position, which was seriously affected by the write-downs linked to the U.S. mortgage market. However, the elimination of dividends came amid repeated statements by the bank's officials, who assured shareholders that the year's dividend would not be affected by either the acquisition of ABN AMRO or by the turmoil in the U.S. mortgage market. The Fortis share price dropped continuously in September and reached a 15-year low, driven down by liquidity concerns.

On September 28, following large withdrawals by business and institutional clients and the collapse of interbank lending, the Belgian government had to step in

[10] Skeel (2009) provides a detailed discussion of the brokerage exclusion from Chapter 11.

[11] Counterparties to repurchase transactions, credit default swaps, and other derivative contracts enjoy certain exemptions from the Bankruptcy Code provisions, such as the avoidance of an automatic stay.

[12] See Fortune Global 500 (2007).

and inject capital in order to stabilize Fortis. The joint intervention together with the Netherlands and Luxembourg helped Belgium bail out its largest bank and saved Fortis from bankruptcy. A total of €11.2 billion ($16.3 billion) was injected, with Belgium, Luxembourg, and the Netherlands investing €4.7 billion, €2.5 billion, and €4 billion, respectively. Each Benelux member received a 49% stake in Fortis banking business in their respective countries as part of the plan.[13] At the same time, the integration of ABN AMRO business units into Fortis was stopped and the intervention plan stipulated that the ABN AMRO would be sold to the Dutch government.

The coordinated intervention worked well, at least at the first glance. However, it did not calm down the markets and also revealed the long debate between Belgian and Dutch regulators over the issue of who should be the main supervisor for the Belgian-Dutch company. Because the company's headquarters were located in Belgium, the Belgian regulator was the main supervisor of the group's activities, although, after acquiring ABN AMRO, the size and the importance of business units located in the Netherlands have been increased considerably.

In early October, the Belgian government decided to sell the entire banking-insurance group to the Dutch government and to French BNP Paribas. The decision came under market pressure, with significant withdrawals and falling stock prices following the first stabilization attempt, which forced the national banks of Belgium and the Netherlands to provide extensive emergency credit. As part of the new deal, the Dutch government acquired banking and insurance activities of Fortis in the Netherlands, including ABN AMRO business units still held by Fortis, at a steep discount (i.e., €16.8 billion). One may claim that Dutch authorities took advantage of this situation and regained control over banks assets located in the Netherlands.[14] In fact, the Belgian and Dutch authorities assessed the situation differently (i.e., with the Belgium part being interested in saving the group as a going concern and the Dutch counterpart mainly interested in the situation of Fortis units located in the Netherlands) and this complicated the resolution process. On the other hand, the French financial group agreed on acquiring 75% of Fortis Bank together with 100% of Fortis Insurance Belgium. However, Fortis shareholder groups opposed to the agreement signed by the Belgian government and BNP Paribas, and the Brussels Appeal Court suspended the transaction and ordered that the Fortis deal should have shareholder approval. The finalized deal between the Belgian and the Dutch governments was also affected by the ruling although the transaction took place under Dutch law.

After months of arduous negotiations, Fortis shareholders agreed in the end on a transaction under which the French BNP Paribas acquired 75% of Fortis Bank from the Belgian government, together with only 25% of Fortis Insurance Belgium.

[13] See Van der Staare and Meera (2008).

[14] See Beck et al. (2010) and Dewatripont and Rochet (2009).

The acquisition created the largest eurozone bank in terms of deposits (e.g., €540 billion in total).

This episode revealed that banking authorities in Belgium (and the Netherlands) did not have sufficient legal power to respond to banking distress in a timely and efficient manner. The regulators could not override the rights of shareholders, not even in an urgent situation in which financial institutions needed to be stabilized rapidly (see Proposals 4 and 4a). Although an efficient solution for timely restructuring was immediately designed, implementation was not possible due to the court decision, which ruled against the selling of different business units to BNP Paribas. The shareholders' action was also successful because the bankruptcy threat was not credible. The government was not able to let the bank go bankrupt, leaving the shareholders without anything, because of the disastrous impact on financial stability such an action would have had.

In addition, Belgium's financial resources proved insufficient in a time of crisis, and this demanded international cooperation at an unfortunate moment, when national regulators can be expected to pursue national objectives and to ring fence for the assets within their reach. The existence of a cross-country restructuring fund (see Proposal 9) would have mitigated the liquidity problems by providing a temporary guarantee on Fortis' funding sources to insure sufficient liquidity, in order to buy time for implementing a viable restructuring plan, and to avoid ad hoc intervention with unforeseen inefficient outcomes.

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Chapter 8
Conclusions

This book explores in detail the principal features of corporate bankruptcy law and subsequently examines the specific characteristics of banks and the functions that they perform in an economy, highlighting the need for a special insolvency regime for financial institutions.

There are several principles guiding the design of the optimal bank bankruptcy law. First, there is a need for a separate bankruptcy law for banks because of negative externalities of bank failure and opaqueness, and the asset-substitution problem of bank operations and bank liquidity provision. Traditional corporate bankruptcy law is not concerned with the systemic impact of bank failure on the entire financial system with severe repercussions on the real economy; corporate bankruptcy law is only concerned with value maximization for firm claimants. Problems at one bank can spread quickly to other banks in the system. Hence the regulators should be able to take swift action to limit contagion effects, and they need appropriate tools to do this. To prevent asset substitution in the failing bank, the banking authorities should have the power to remove the existing management and shareholders and also to impose restrictions on bank activities.

Second, a pre-insolvency phase should exist with a carefully developed and transparent trigger for bank bankruptcy. Once a bank fails to comply with a regulator's recommendations, the banking authorities will start the insolvency procedure that would allow for the restructuring of the failing bank. Clear objectives should govern this process, namely: stability of the entire financial system should be assured by mitigating the negative externalities that one bank failure may create by lowering the cost for public funds and the use of taxpayers' money, and by protecting property rights to lower the cost of future funds.

Third, the responsibility for triggering bank bankruptcy should be clearly defined. This is critical in those situations when bank activities are supervised by several regulators with different individual objectives. Information-sharing agreements between different authorities and supervisory cooperation between them during the pre-insolvency phase, as well as shared responsibilities during the resolution process, should be implemented.

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Fourth, effective bank bankruptcy law should enhance market discipline. The existence of an efficient legal framework to solve troubled banks in an orderly way, which allows for unsecured creditors to bear losses in time of distress, may offer a credible cost-effective alternative to capital infusion by banking authorities.

Fifth, there is a strong demand for convergence of bank insolvency regimes across countries, such that the failure of a cross-border bank can be addressed in an effective manner. While an international treaty governing insolvency procedures for cross-border banks throughout the world is desirable, this is an unrealistic solution for the near future. Nevertheless, an effective mechanism for sharing losses, supervisory duties, and responsibilities during the resolution process between national authorities should be implemented in order to make the costs associated with the failure of a cross-border bank less dramatic.

Finally, successful restructuring should prevent distortions in competition and should also preserve confidence in the stability of insured deposits by putting in place clear governance mechanisms and by limiting legal stays, respectively.

However, bank bankruptcy law should be aligned closely to corporate bankruptcy law to prevent potential regulatory arbitrage. As evidence from financial crisis of 2007 has shown, banks escaped regulatory standards and supervision by being involved in securitization through special-purpose vehicles. Thus, if excessive differences between corporate and bank bankruptcy regimes exist, banks may try to circumvent the special bank insolvency regime.

The introduction of a special bank bankruptcy regime can provide an efficient framework for restructuring and liquidation of an insolvent bank while maintaining financial stability and reducing moral hazard and the fiscal cost associated with bank failures. Banking regulators throughout the world can use the lessons from the recent financial crisis to deal with the demanding task of designing a proper and efficient bank bankruptcy regime.

Chapter 9
Appendix

This appendix reviews the design of U.S. corporate bankruptcy law, discusses several critiques, and proposes suggestions of how to reform corporate bankruptcy law.

9.1 Design of Bankruptcy Law: U.S. Corporate Bankruptcy Law

We review the design of U.S. corporate bankruptcy law and evaluate its effectiveness in light of the economic principles mentioned above.

9.1.1 Liquidation Under Chapter 7 Versus Continuation Under Chapter 11

U.S. bankruptcy law prescribes two ways of managing corporate distress, either through liquidation defined by Chapter 7 or through reorganization defined by Chapter 11.

Chapter 7 is a creditor-friendly chapter. The existing management of the corporation is ousted. The court appoints a trustee that organizes the sale of the corporation as a whole or in parts. After bankruptcy is initiated, an automatic stay is triggered in which debt repayment ceases until bankruptcy is resolved. Then creditors are repaid by the proceeds of the sales following the absolute priority rule.[1] Strictly following the absolute priority rule means that shareholders are usually left empty-handed.

[1] Bankruptcy-related costs have the highest priority. Preferred debt (unpaid wages, deferred taxes), senior debt, junior debt, and preferred equity follow in the line. Common equity has the lowest priority.

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Chapter 11 aims at preserving the core business of the firm on the condition that this yields higher returns for the firm's creditors and shareholders than liquidation under Chapter 7. Reorganization commences through structural bargaining between the debtor and his creditors. The manager sells redundant assets and proposes a debt restructuring plan giving each class of creditors a mix of cash or shares/debt in the restructured corporation. The plan has to achieve the support of each class of creditors (including shareholders). In addition, the court has to confirm the plan and check that each creditor's class obtains at least what the creditors would obtain in liquidation. If an agreement is not reached, the court may either: (i) use "cram-down" to confirm the plan, (ii) allow creditors to propose their own reorganization plans, (iii) replace the manager, or (iv) sell the firm as a going concern (using the absolute priority rule).

In theory, under Chapter 11 creditors should obtain the same (or higher) returns than under Chapter 7. In practice, however, reorganization takes time, during which the value of the corporation may diminish, potentially leading to substantial losses for creditors. The deviation from the absolute priority rule occurs especially under Chapter 11 because senior creditors are willing to compensate junior creditors and shareholders to reach their consent on reorganization, anticipating that a potential court intervention would be too long and costly.

Creditors can initiate involuntary bankruptcy under Chapter 7 if their claims are in default.[2] The management can initiate bankruptcy voluntarily either in anticipation of default or for strategic reasons. Insolvency is not required for a voluntary filing. Management can usually convert involuntary Chapter 7 cases into more debtor-friendly Chapter 11 procedures.[3] This makes the majority of bankruptcy cases management-initiated.[4]

The ability of the debtor to initiate bankruptcy under Chapter 11 makes U.S. bankruptcy law very debtor-friendly. It gives substantial power to the existing manager and shareholders in restructuring the insolvent corporation.[5] On the one hand, this increases the probability of successful reorganization and also improves

[2] At least three creditors with at least $10,000 of noncontingent claims in aggregate have to file for involuntary bankruptcy of a corporation with at least seven creditors (11 U.S.C. § 303).

[3] Bris et al. (2006) show that reorganization under Chapter 11 preserves assets better than liquidation under Chapter 7 at no difference in costs and duration of the process.

[4] The number of Chapter 11 filings has dropped. In 1990, there were 36,394 Chapter 7 filings and 18,282 Chapter 11 filings. In 2008, there were 30,035 Chapter 7 filings and 9,272 Chapter 11 filings (see the statistics on http://www.uscourts.gov/bnkrpctystats/bankruptcystats.htm). However, the number of large Chapter 11 cases has increased; see LoPucki (2003).

[5] In reorganization under Chapter 11 the manager retains his position; however, his fiduciary responsibility shifts to one of a trustee, working to repay creditors, with the interest of existing shareholders as residual at best. In past U.S. bankruptcy procedures, debtors had even stronger powers. The Bankruptcy Act of 2005 limited some of them; for example, it has reduced the use of key employee retention plans, and it has limited the time given to existing management to produce a reorganization plan. For an international comparison of bankruptcy laws, see Altman and Hotchkiss (2006, p. 58).

the optimal timing of filing for bankruptcy. On the other hand, it may distort the ex-ante effectiveness of debt contracts (e.g., through incentives of the manager) or even allow for strategic default.

Under U.S. bankruptcy law, the manager can voluntarily initiate bankruptcy even though the corporation is solvent. The manager can speed up bankruptcy by arranging a prepackaged reorganization plan. The prepackaged arrangement uses the formal bankruptcy procedure in which the consensus between creditors can be lower than 100%.[6] This eliminates the minority hold-out problem apparent in out-of-court restructuring, where unanimous consent among creditors is needed. One of the key ingredients to a successful prepackaged restructuring of a large corporation is the ability to raise new equity (Salerno and Hansen 1991). Raising equity serves as a signal that the firm has a viable core business and that its main problem is having too much debt.

9.1.2 The Evolution of Chapter 11: DIP Financing, Asset Sales, and Tax Claims

In times of reorganization, the corporation has to obtain necessary means to continue its viable core business. The corporation can obtain post-petition financing, known as debtor-in-possession (DIP) financing, to finance its daily operations. The DIP loan has a super-senior status that strips the seniority status from existing loans and allows new financing.[7] DIP financing is important in this sense because it allows for continuation of a viable business. However, DIP financing has increasingly undertaken an initially unforeseen role. In large reorganizations, it acts as a governance lever through which creditors take control over the company (Skeel 2004).

Even though in theory Chapter 11 is debtor-friendly, in large reorganizations senior creditors are increasingly able to control bankruptcy: usually equity is completely wiped out and creditors are able to exercise control over management (Baird and Rasmussen 2003).[8] The super-senior status of the DIP financier and substantial cash needs of the distressed corporation give substantial power to the

[6] Two-thirds of the voting creditors from each class in amount and more than 50% in number need to confirm a plan.

[7] The trading partners to the corporation in bankruptcy are also given priority status for the goods and services sold in the vicinity of the filing for bankruptcy.

[8] Ayotte and Morrison (2009) report that in 2001 70% of CEOs were replaced within the two years before the bankruptcy was initiated. They show that shareholders were compensated in at most 12% of Chapter 11 filings. Bharath et al. (2007) show that deviations from absolute priority rule in Chapter 11 filings declined to 9% in the period from 2000 to 2005 compared to 22% in the period from 1990 to 2005 and compared to 75% before 1990.

DIP financier.[9] DIP financing is usually structured as a revolving credit agreement with several covenants that include profitability targets and deadlines for filing restructuring plans. If these covenants are breached, the DIP financier can generally seize the collateral without court approval. The DIP financier gradually obtains control over managers' decisions through appointments on a board of directors or even through asset purchases. The fight for control over the distressed firm between the manager/shareholders and creditors therefore becomes less important. Instead, the fight occurs between senior creditors and junior creditors, who use trade claims, organize themselves in creditors' committees, and file objections.

The proportion of Chapter 11 cases that resulted in asset sales (either piecemeal liquidation or a going-concern sale) increased. LoPucki (2003) shows that during the 1980s going-concern sales accounted for less than 20% of Chapter 11 cases filed by large corporations. In 2002, however, they already accounted for 75% of the cases. This can be attributed to more pronounced creditor control. Ayotte and Morrison (2009) show that asset sales were more frequent if senior creditors were oversecured. If senior creditors were undersecured, asset sales were less frequent and the bankruptcy process was longer and contained more characteristics of traditional reorganization. This shows that enhanced creditor control did not eliminate inefficiencies. In particular, fights between different creditor classes may lead to inefficient continuation versus liquidation decision.

It is instructive to further analyze asset sales under Chapter 11, also called Section 363 sales.[10] An asset sale is initiated by the debtor-in-possession or bankruptcy trustee. It proceeds after the court notice and hearing and has a cleansing effect on assets sold: it eliminates creditors' liens, encumbrances, or interests.

The main difference between Chapter 11 asset sale and liquidation under Chapter 7 is that under Chapter 7 control is transferred to the trustee of the bankruptcy court, who usually has limited knowledge about the particular business. The trustee's main task is to oversee and liquidate assets of the bankrupt firm rather than manage it. Although sales of a business as a going concern can be performed, the incentives to do so under Chapter 7 are poor. In Chapter 11, control resides with the debtor. Business relationships are seen as ongoing.[11] Hence, Section 363 under Chapter 11 allows for higher probability of a sale of a business as a going concern.

The objective of Section 363 sales is to maximize the value of the sale. Consequently, the court demands that a bidding process take place. Interestingly, the proposed purchaser can be incentivized to undertake substantial costs in performing due diligence through two mechanisms. A breakup fee can be offered if the proposed sale is not undertaken at no fault of the buyer. A topping fee can be

[9] Dahiya et al. (2003) show that corporations with DIP financing more frequently exit the bankruptcy procedure successfully. They also show that DIP financing rose from 7.4% in 1988 to 48% in 1996, was more likely present in large corporations, and decreased the time the corporation was in bankruptcy.

[10] 11 U.S.C. § 363.

[11] The chances to recover accounts receivable are higher under Chapter 11 than under Chapter 7.

offered, in which the difference between the initial bid of the buyer and the successful one is partially compensated.

A different mechanism is at work in small reorganizations under Chapter 11. In small reorganizations, the tax collector seems to be the central figure in bankruptcy due to the priority of tax claims. After the tax collector is paid, usually nothing is left for other ordinary creditors. The relation between the management and the tax authority therefore seems more important than the relation between the management and creditors (Baird et al. 2007). The small business owner-manager is personally liable for tax obligations, such as unpaid payroll taxes and sales taxes; these obligations are not discharged in bankruptcy. Baird et al. (2007) show that Chapter 11 serves as a forum for negotiation between the small business owner-manager and the tax authority.

Chapter 11 provides a platform for the reorganization of a distressed business as a going concern. In the case of large reorganizations, creditors have increasingly been able to take control and asset sales have become common. Small reorganizations are substantially influenced by the personal liability of the manager-owner with respect to the tax claims.

9.1.3 Coordination Problems in U.S. Corporate Bankruptcy Law

U.S. bankruptcy law aims to mitigate coordination problems between creditors through the use of an automatic stay. In both Chapter 7 and Chapter 11, an automatic stay is imposed on debt repayments, meaning that debt repayments are frozen and jointly repaid at the end of the bankruptcy process. Bankruptcy filing also allows for recovery of a preference (i.e., payment of an existing debt within certain time periods before the commencement of bankruptcy) or potential fraudulent transfers. The presence of an automatic stay and recovery of preferences mitigates the benefit of early collection of debt and prevents a race to collect debt. However, there are some exceptions to legal stays. The secured creditors may try to liquidate the collateral. If the court prevents this, the corporation has to pay the interest on the secured debt. More importantly, large classes of derivative contracts and repurchase agreements are exempt from an automatic stay.

9.2 Proposed Reforms of U.S. Corporate Bankruptcy Law

Several reforms of U.S. corporate bankruptcy law have been proposed (Hart 2000; Bebchuk 1988). We briefly discuss three aspects of U.S. corporate bankruptcy law that need to be examined and potentially improved. We also discuss how bankruptcy law should be amended to ameliorate the impact of a systemic crisis.

9.2.1 Shift of Control

As emphasized in Section 2.2.2, Chapter 11 has recently become less debtor-friendly and control over a bankrupt firm often shifts from a debtor to its creditors. However, control shifts through indirect mechanisms often not intended for this purpose (e.g., through post-petition financing). The question is whether indirect mechanisms of transition of control are more efficient than more direct mechanisms such as automatic debt for equity swaps.

The shift of control through DIP financing may be beneficial because the DIP financier usually has knowledge about the firm's operations and restructuring process whereas an automatic debt for equity swap would give control to every creditor regardless of his interests in the ownership of the firm. The problem is also that the shift of control will only occur after a corporation has substantial liquidity problems and is forced into searching for DIP financing.

DIP financing may spur excessive continuation. In order to guarantee smooth operation of a bankrupt firm, a DIP financier obtains a super priority over all other claims of the firm. This super priority makes viable even lending to the firm without long-term prospects. DIP financing also lowers the priority of other creditors, especially if the old loan can be renewed under DIP financing terms, effectively increasing the ex-ante cost of debt and its availability.

The question is why U.S. bankruptcy law does not remove the manager immediately after entering Chapter 11. Control could be transferred to the previously selected creditor (similarly to the floating charge creditor case under the UK bankruptcy law) or to the creditors committee. Such a change of control may be valuable for larger companies, where creditors are residual owners. In the case of a small corporation, however, where the tax claims with personal liability of a manager are more important, giving control to creditors is less plausible.

In the case of an economic crisis, favorable terms given to a DIP financier will act as a measure to promote continuation. The adjustment of bankruptcy law that eases access to DIP financing therefore acts as a mechanism to limit the level of costly liquidation and to promote smooth restructuring in the depressed industry. However, as the economic crisis deepens, DIP financing can simply dry up. In this case, a direct mechanism of change of control is necessary.

Hart (2000) argues that the main inefficiency is inherent in Chapter 11 because the corporation in bankruptcy needs to do two things at the same time: reorganize its assets and restructure its liabilities. He suggests that decoupling these two decisions is crucial for improving the effectiveness of bankruptcy law.

In Hart's view, the effective solution consists of some form of automatic debt-equity swap in which the existing shareholders are immediately removed and debtholders become new shareholders. New shareholders can then appoint new management that would lead the reorganization or would liquidate the firm (Aghion et al. 1992; Bebchuk 1988, 2000).

Even though debt-equity swaps allow for swift resolution of bankruptcies, several implementation problems may occur. Debt of different priorities has to be

treated differently. However, this is difficult because the value of the bankrupted firm is not precisely known. Bebchuk (1988, 2000) proposes an option approach in which first shareholders' and junior debtholders' stakes are completely eliminated and the senior debtholders obtain all shares in the reorganized corporation. Subsequently, junior debtholders and shareholders can buy senior debtholders out if they think they have been underpaid.

The drawback of automatic debt-equity swaps is that each creditor obtains an ownership stake in the bankrupt firm. Dispersed ownership can exacerbate governance problems, especially if creditors are not specialized in firm management. Creditors may want to sell their stake of the firm at short notice. In the case of an economic crisis, selling at depressed prices will result in heavy losses for creditors.

To summarize, DIP financing serves as an important mechanism for transfer of control from shareholders and management to DIP financiers. Favorable DIP financing terms can also ameliorate economic crises. However, if an economic crisis deepens, automatic debt-equity swaps are necessary. Nevertheless, this may spill over problems from bankrupt corporations to the banking sector. Banks with equity instead of debt on their balance sheets will have problems with paying fixed obligations (e.g., deposits). Restructuring the banking sector is therefore necessary after automatic debt-equity swaps.

9.2.2 Asset Sales

Another possibility is to auction the bankrupted corporation and let the new owners decide on how to restructure (or liquidate) the corporation (Roe 1983). The proceeds of the auction can then be distributed to debtholders and shareholders according to the absolute priority rule. Thorburn (2000) finds evidence that the Swedish auction-based bankruptcy system is even more effective than U.S. Chapter 11 reorganizations. That is, bankruptcy auctions in Sweden are quicker, cost less, and trigger fewer deviations from absolute priority than reorganizations under Chapter 11. Survival rates of bankrupted firms and recovery values of creditors are comparable.

U.S. bankruptcy law already allows for auction-like sales either through Chapter 7 or through Section 363 sales under Chapter 11. However, both Chapter 7 and Chapter 11 proceedings regularly take two years to wind down, which is considerably longer than the average completion time of 2.4 months for Swedish auctions. Bris et al. (2006) discuss the reason for this discrepancy. The Swedish bankruptcy law imposes restrictions on the maximum duration of bankruptcy, whereas Chapter 7 of U.S. bankruptcy law does not impose any time limit. In addition, the Swedish trustees improve their reputation and future employment options if they handle bankruptcy cases quickly. In contrast, the speed is irrelevant for the performance measurement of U.S. trustees.

Although the sales under Section 363 of Chapter 11 can be performed more quickly, incentives for such sale are lower. Under Chapter 11, usually the remaining

Table 9.1 Comparison of U.S. corporate and bank bankruptcy law for systematically unimportant banks, and the Dodd-Frank Act's provisions for bankruptcy of systematically important financial institutions

	U.S. corporate bankruptcy law	U.S. bank bankruptcy law for systemically unimportant banks	U.S. bank bankruptcy law (Dodd-Frank Act's provisions) for systemically important financial companies
Objective	Maximize the value of a firm (in reorganization or in liquidation)	Minimize losses to the FDIC at the systemic risk exception	Address the systemic risks posed by large financial groups and prevent taxpayer-funded bailouts
Pre-failure intervention	Voluntary by the manager	Prompt corrective action by the regulator	Early remediation and mitigatory actions by regulator
Trigger	Failure to pay debt	Failure to comply with the regulatory standards (with the most critical one of being undercapitalized)	Failure of systemically important financial companies to comply with enhanced regulatory requirements (e.g., risk-based capital, leverage, liquidity, credit exposure reporting, resolution plans)
Options in bankruptcy	Liquidation/ reorganization	1. Purchase and assumption (loss-sharing transaction, bridge bank) 2. Deposit payoff	1. Purchase and assumption 2. Liquidation
Creditor stays	Yes, partial exceptions may be secured debt and financial contracts	Less general, major exception is insured depositors	
The roles in bankruptcy	Management leads reorganization, a trustee of the bankruptcy court leads liquidation	The FED (or the FDIC) initiates bank bankruptcy, the FDIC is in charge of restructuring Management is ousted	Under the new orderly liquidation authority, the Treasury Secretary has the power to appoint the FDIC as the receiver; the determination of the financial institutions covered is made by the Treasury Secretary, upon the recommendation of two-thirds of the Fed board and two-thirds of the FDIC board
The treatment of claimants	Absolute priority rule in liquidation	Insured deposits are repaid (or transferred to a healthy bank)	There is no priority rule for any deposit claims over the claims of the general creditors
	Negotiation in reorganization (creditors should obtain the same or more than in liquidation)	The absolute priority rule is honored The FDIC has the same priority as uninsured deposits	Amounts owed to the U.S. have priority over the claims of general creditors
Structure of process	Ex-ante judicial review and appeal	Administrative Limited ex-post judicial review and appeal	Administrative Limited ex-post judicial review and appeal

manager is in charge of restructuring. Such a manager may not have incentives to promptly sell the firm on the market. A danger is that the manager may sell the company cheap to a favorable creditor and reward himself at the loss of other creditors. It is the role of a judge to identify whether the price offered is fair. Without a careful judge, a 363 sale will just bypass the vote of creditors required in a regular process under Chapter 11.

Cash auctions may be less effective when the entire industry is in a downturn and several bankruptcies occur at the same time due to low prices and potential suboptimal asset utilization (Acharya et al. 2007; Shleifer and Vishny 1992). The evidence from the Swedish auctions shows that salebacks can prevent fire sales in times of industry distress (Thorburn 2000). Eckbo and Thorburn (2007) also show that the fire-sale effect is low if the firm is auctioned as a going concern.

To reduce the fire-sale effect, U.S. trustees may be required not only to oversee and liquidate assets of the bankrupt firm, but also to manage it themselves or employ the manager. Such action increases the sale of the firm as a going concern and lower the fire-sale effect. To lower the administrative burden and the direct bankruptcy costs (e.g., lawyers' fees, etc.) the period in which the firm is permitted to be in Chapter 7 and Chapter 11 should be shortened.

9.3 Summary and Comparison Between U.S. Corporate and Bank Bankruptcy Laws

Table 9.1 presents a summary of the main characteristics of U.S. corporate bankruptcy law, U.S. bank bankruptcy law for systemically unimportant banks, and U.S. bank bankruptcy law for systemically important banks as described by the Dodd-Frank Act's provisions.

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