

Regulating Wall Street

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Regulating Wall Street

*The Dodd-Frank Act and the New
Architecture of Global Finance*

VIRAL V. ACHARYA
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WILEY

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*To our outstanding colleagues and contributors,
who embraced this project
with relentless energy and enthusiasm*

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Foreword

This book continues the collaborative effort and scholarship of the New York University Stern Graduate School of Business faculty. I was amazed that part of the group that published the series of white papers that became the book *Restoring Financial Stability: How to Repair a Failed System*, published by John Wiley & Sons in March 2009, would have the energy and dedication to undertake this economic analysis of the complete Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. And I was amazed that they would do so in such a short period of time and with such a level of comprehension and clarity as to the issues to consider and evaluate, and also be able to provide new insights into methods that would lead to economically sound financial market reform. In the various sections, Acharya, Cooley, Richardson, Walter, and their colleagues at the Stern School not only consider the benefits and costs of the various sections of the Dodd-Frank Act, but also articulate clearly the Act's possible success in meeting the objectives, the likely consequences and unintended consequences, and the costs of the reforms in each of its sections. They should be commended for this effort.*

I was also amazed that this volume is not just an amplification of the original book but pushes academic and applied research to a new level. New work on measurement of systemic risk probabilities and costs, a new proposal for taxing banks differentially for systemic risk contributions, analysis of new forms of contingent capital, a clear discussion of the Volcker Rule and its consequences, and exploration of the likely effects of taking over entities to resolve failures—all these are thought-provoking. In the words of a scientist, “Why didn’t I think of many of the issues raised in the book?” For example, when the government takes over a bank, the bank must pay employees to stay to unwind it—they won’t stay on government salaries. Does the new financial protection agency help or hurt consumers—and does it mitigate systemic risk?

*I will refer to the “book” in my comments because it is a collaborative effort by so many on the Stern School faculty. I would worry that I was not giving proper credit or was incorrectly identifying the sources of the arguments and analysis.

Although others perhaps won't give the authors proper attribution (for all good ideas are copied freely), the arguments and analysis in this book will be used by bankers and other market constituents to make the case for forms of regulation that they deem appropriate and to point out to the regulatory bodies the unintended consequences of other regulations. Regulators, in turn, will use the book's structure and economic arguments to counter and to develop more appropriate regulations. With inputs and analyses from this book, along with the work of others, my hope is that a sensible balance will arise that will neither cripple the financial system nor create a false sense that the new financial regulatory architecture will prevent failures in the future.

In the summer and fall of 2008 the global financial system was in chaos. Since then, there have been myriad discussions, conferences, television shows, Internet discourses, books, and articles about the crisis, its causes, who was to blame, and the failures. There have been congressional hearings, commissions, G-20 meetings, government and central-bank proposals, et cetera. There was, and is still, anger directed at Wall Street, the bailouts, and the bonus awards, and against central bankers and legislative bodies for not acting sooner to constrain the excesses of the financial system or for promoting them. As the book discusses, although the independence of the Federal Reserve is intact, its wings have been clipped as a lender of last resort. Moreover, we might have lost the opportunity to examine whether an active monetary policy should target only inflation and not changes in asset prices and risk, or whether inflation-targeting policies exacerbated the crisis (as some suggest). And this crisis has had a direct effect on jobs and on those who have owned homes and had leveraged balance sheets. As the book suggests, although government support of housing, mortgage finance, the government-sponsored enterprises (GSEs), and the rating agencies should have been the core of the Dodd-Frank Act, 25 percent of this legislation is devoted to moving liquid over-the-counter interest rate swaps to clearing corporations, where, paradoxically, more than 50 percent of swaps among dealers are already cleared, a large increase occurring subsequent to the crisis. The book clearly addresses these issues of housing finance as well as what is left out of the Act.

The Dodd-Frank Act arose from anger and cries for retribution against Wall Street. I had hoped that the chaos would provide the opportunity to reflect, to understand, and to learn from the crisis, and that from that learning financial entities would change practices (such as in clearing swaps) on their own and that gaps in regulatory rules would be corrected or old rules would be adjusted to reflect modern realities. Understanding takes discussion, argument, effort, and, most important, time to gather data and to conduct analyses of that data. At 2,319 pages, the Act requires that 243 new formal rules be adopted by 11 different regulatory agencies, all within

a year and a half of its passage. This is a massive undertaking. It is shocking that so many failures in the system have now come to light. Or is it the case that Congress really could not pinpoint the causes of the crisis or know how to prevent future crises? Why did Congress fail to define the new rules precisely? Why did it pass on the actual rule-making responsibility to the agencies that will make new rules either to punish or to garner new jobs from Wall Street? And why, if these failures are now so important and devastating, do new requirements need to be phased in over such long time frames? Why are the rules so vague (such as transactions that include “a material conflict of interest” between the bank and its clients are prohibited)? And why might the Volcker Rule, which limits proprietary trading and constrains hedge fund and private equity investments to some extent, not actually be implemented, in part, for up to four years and perhaps as long as seven years? The book provides excellent discussions of these difficulties.

I am not sure that market failures and externalities (that were mispriced) were the only causes of the crisis. An important cause was also the poor infrastructure to manage financial innovations. If rules were insufficient for the Treasury or the Federal Reserve Bank to unwind failing institutions or too many agencies without expertise were watching over various financial entities, then the makeup and constitution of regulatory bodies should be changed. I am suspicious that this became important only after Lehman Brothers’ default caused a much larger mess than regulators expected. And I think that the Dodd-Frank Act buried only one agency.

Since successful innovations are hard to predict, economic theory suggests that infrastructure to support financial innovations will, by and large, follow them, which increases the probability that controls will be insufficient at times to prevent breakdowns in governance mechanisms. It would be too expensive to build all of the information links, legal rules, risk management controls, and so forth in advance of new product introductions. Too many don’t succeed in incurring large support costs in advance of market acceptance. For this reason, those financial innovations that grow rapidly are more likely to fail and to create crises—such as failures in mortgage finance, failures in subprime mortgage product innovations, failures to monitor mortgage originators, failures to provide mortgage bankers with the correct incentive systems, failures in adjustable-rate mortgages, failures in rating agency modeling of mortgage products and their synthetics, failures of investment banks in monitoring the growth of their mortgage products, and failures by those entities insuring mortgage products. There was a lack of infrastructure in place at large banks such as Citibank and with regard to credit default swaps at American International Group (AIG). Unfortunately, failures in mortgage finance tend to have vast consequences for homeowners as well as for the industries that service them.

Failures are expected. Some will be low-cost, whereas others will exact a large cost. And not all fast growing innovations fail. Before the fact, failures are hard to identify. Failures, however, do not lead to the conclusion that reregulation will succeed in stemming future failures. As this book clearly argues, while governments are able to regulate organization forms such as banks or insurance companies, they are unable to regulate the services provided by competing entities, many as yet unborn in the global community. Innovation benefits society, and innovation has costs. This crisis has caused many to conclude that the Dodd-Frank Act should have slowed down innovation to prevent too rapid growth, but it is hard to justify this conclusion, as the book's discussion of the role of government oversight and guaranteeing of systemic entities suggests.

The response to this dilemma is difficult. Infrastructure to support innovation is a business decision. The senior management of financial entities must decide when more resources are necessary to monitor and to understand innovation. They must decide whether the returns to innovation are worth the risks, including the risks of having incomplete information systems and controls; and they must decide whether the returns are measured correctly and whether the capital supporting innovation is sufficient. Financial entities are building entirely new risk systems in response to the crisis. Innovation risks are being incorporated into decision making from the outset. Measurement technologies are being built to provide senior management with the information they need to make informed decisions about product lines and their controls. In the past, risk management had been a reporting and a regulatory requirement within a bank. That is changing as risks and returns are being evaluated as part of the optimization process. That banks relied on the Bank for International Settlements to set risk rules is inappropriate. For example, their value at risk metrics, which rely on portfolio theory, did not allow for the possibility that liquidity shocks could result in asset prices around the world becoming highly correlated. The book goes to great length to model and discuss appropriate regulatory capital rules and their consequences that address some of these pitfalls of current rules.

We don't yet have a deep understanding of the intermediation process. Markets work because intermediaries are willing to step in and buy when sellers want to sell before buyers want to buy, and vice versa. Financial intermediaries provide liquidity or risk transfer services in mostly nontraded markets, and service the idiosyncratic needs of consumers, students, commercial or residential mortgage holders, corporations, pension funds, insurance companies, and others. The demand for intermediation services is not constant. The price of liquidity changes—increasing with lack of synchronicity in demand and supply, and becoming extreme at times of shock when intermediaries no longer have confidence in the value of

the underlying assets and rationally withdraw from the provision of intermediation services as a result of an inability to determine new valuations quickly. With a shock, liquidity prices and valuations change simultaneously; sometimes liquidity prices change much more than valuation changes or vice versa.

Central bankers have always operated under the assumption that they provide collateral for good value to smooth out liquidity crises until markets work again. But, if this were true, no liquidity crisis would occur. Every intermediary would know of valuations, and as prices deviated from equilibrium values they would step in to reduce spreads and make large returns on capital. The uncertainty about what proportion of the price decline or increase was caused by changes in liquidity or fundamental value is extremely difficult to parse out quickly. Sometimes it takes a short time; sometimes it takes much longer. If it takes a long time, however, markets are chaotic; and as time expands, fundamental values continue to change.

I believe the economics of innovation and intermediation are key reasons why financial crises have such broad effects. Shocks affect intermediation across unrelated segments of the financial markets as shocks in one market are transmitted by intermediaries that reduce risk in one market in light of losses to other intermediaries, who in turn reduce risk in other markets.

The book discusses the consequences of rapid innovation and breakdowns in the intermediation process. Innovation affects compensation, for without measurement or adequate risk controls, senior management has difficulty discerning skill from risk taking. Innovation leads to seeming moral hazard issues. Lenders often don't spend resources in the short run to monitor instances in which others will step in to protect them. (For example, since AIG posted collateral to each of its counterparties and bankruptcy laws allowed them to seize the collateral in the event of AIG's default, the counterparties did not have to monitor the credit or the size of AIG's business. This was obviously true of government foreign debt holders, for example.) The true moral hazard in the system is that debt holders suffer little loss during a financial crisis. If they did, they would monitor or force management to monitor innovations.

The intermediation process must break down from time to time. This is the nature of markets. Markets work. In a sense the market breakdown can be considered a failure, but it is a failure only in that markets don't operate in times of crisis as they do when times are calm. The fact that markets work this way does not mean that regulators can do a better job of controlling markets. They watch the water from afar. The picture is far different up close.

As I read through the book's excellent discussion of the Dodd-Frank Act and its likely good or bad consequences, I was unable to discern whether

regulators had addressed the innovation questions and whether they understood the nature of the intermediation business. The book, however, does discuss moral hazard issues, compensation programs, and accounting issues—mark-to-market and information systems within the firm and how they affect other firms. It tackles the role of government and how the government leads to bad innovations such as the GSEs or the monopoly of the rating agencies. In this vein, the book also covers the new role of central clearing agencies for the over-the-counter derivatives markets.

The 2008 financial crisis and its aftermath will cause financial entities to learn on their own. And this learning will mitigate the consequences of future shocks.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 will take years to implement. The uncertainty about the form of these new rules will impede growth in our society. I am sure that I will return to this book regularly for its analysis as events unfold over the next number of years. Congratulations to the team for such a commendable accomplishment.

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Preface

In the fall of 2008, at the peak of the crisis, we launched a project among the New York University Stern School of Business faculty to understand what had gone wrong, what the policy options were, and what seemed to be the best course of action at the time. This resulted in a series of white papers authored by 33 members of the faculty. These were widely circulated among politicians and their staff members, as well as practitioners and academics worldwide. Taken together, the white papers were guided by a public interest perspective and intended as an independent and defensible assessment of the key issues by people who understand the theoretical concepts and institutional practice of modern finance and economics. The result was a book, *Restoring Financial Stability: How to Repair a Failed System*, published by John Wiley & Sons in March 2009.

Drawing on the insights gathered in that effort, it seemed logical to think about a second project that would focus specifically on the myriad reform proposals under discussion, provide an objective evaluation of their merits, add some new ideas to fill in the gaps or improve outcomes, and suggest their likely impact on the global financial system and economy as a whole. A total of 40 members of the Stern School faculty and doctoral students—virtually all participants in the first project and several new members as well—stepped up to contribute to this effort. First, we produced an e-book in December 2009 that addressed the U.S. House of Representatives financial reform bill. This was followed by the Senate bill in April 2010, requiring important modifications in our analysis. This had to be repeated when the two bills were reconciled in conference and finally signed by President Obama on July 21, 2010—all the while keeping a weather eye on developments in Basel, London, Brussels, and other centers of global financial regulation.

Along the way, we have read the entire Act and its predecessors in detail, debated it among ourselves and professional colleagues, and identified strengths and weaknesses through the lens of modern financial economics. We like to think our first project helped to shape some of the debate leading up to the Dodd-Frank legislation as we commented on various versions of the proposed reforms in congressional testimony, speeches, workshops, and other forums around the world.

At the end of the day, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 is the keystone of the financial reform structure in the United States and will be influential worldwide. It is more or less aligned to some basic principles agreed on in G-20 meetings of heads of state during and after the crisis, as well as to parallel developments in the Basel Committee on Banking Supervision, the European Union, and at the national levels in the United Kingdom, continental Europe, and elsewhere. This book presents a comprehensive and objective analysis of the various initiatives legislated or proposed by the Act, along with their implications for financial firms, markets, and end users going forward. There will undoubtedly be a number of further surprises, as well as unintended consequences of what has now been legislated. We have tried to anticipate and face up to as many of them as possible. We feel confident that we have provided readers with a coherent and rigorous framework for thinking about whatever may lie ahead for global finance.

We are grateful for the many comments we received from readers of our first book. They did much to sharpen our thinking and inform our effort in this volume to look ahead. Special thanks are due to Joanne Hvala, Jessica Neville, and the rest of the staff at the Stern School, who supported our efforts, to Sanjay Agrawal and Anjolein Schmeits for their diligent reading and copyediting of the manuscript, and to Philipp Schnabl and Kermit (Kim) Schoenholz who provided invaluable editorial input in addition to contributing to book chapters. And certainly not least, we confess admiration of the entire team at John Wiley & Sons, with a special nod to Pamela van Giessen, for their incredible professionalism and some amazing turnaround times to get our thoughts into print.

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CHAPTER 8

Resolution Authority

Viral V. Acharya, Barry Adler, Matthew Richardson, and Nouriel Roubini

8.1 OVERVIEW

With losses of 50 percent over the prior six months, by August 31, 1998, the largest hedge fund at the time, Long-Term Capital Management (LTCM), had just \$2.3 billion in capital remaining, yet still held over \$125 billion in assets on its balance sheet. In addition, it was the sixth largest player in over-the-counter (OTC) derivative positions, including \$500 billion of futures positions, \$750 billion of swaps, and \$150 billion of options. Conditions deteriorated over the month of September, until on Monday, September 21, 1998, LTCM's repo and OTC derivative counterparties demanded increasing collateral by widening the daily margins on these contracts. These extra cash demands put such a strain on LTCM that default was imminent. Over the next few days, through the prodding (and some would argue pressure) of the Federal Reserve Bank of New York, a group of LTCM's 14 major counterparties agreed to inject capital into LTCM—in effect, an out-of-bankruptcy reorganization of the fund.

Just a few weeks later, in testimony to the Committee on Banking and Financial Services of the U.S. House of Representatives, then president of the New York Federal Reserve Bank of New York, William McDonough, explained the reason for the government's participation in the process for winding down LTCM:

Two factors influenced our involvement. First, in the rush of Long-Term Capital's counterparties to close-out their positions, other market participants—investors who had no dealings with Long-Term Capital—would have been affected as well. Second, as losses spread to other market participants and Long-Term Capital's counterparties, this would lead to tremendous uncertainty about how far

prices would move. Under these circumstances, there was a likelihood that a number of credit and interest rate markets would experience extreme price moves and possibly cease to function for a period of one or more days and maybe longer. This would have caused a vicious cycle: a loss of investor confidence, leading to a rush out of private credits, leading to a further widening of credit spreads, leading to further liquidations of positions, and so on. Most importantly, this would have led to further increases in the cost of capital to American businesses.¹

Less than a year later, in an April 1999 report by the President's Working Group on Financial Markets, ironically made up of regulators who are now to sit on the Financial Stability Oversight Council as designated by the Dodd-Frank Act of 2010, the conclusion was that:

The events in global financial markets in the summer and fall of 1998 demonstrated that excessive leverage can greatly magnify the negative effects of any event or series of events on the financial system as a whole. The near collapse of LTCM, a private sector investment firm, highlighted the possibility that problems at one financial institution could be transmitted to other institutions, and potentially pose risks to the financial system. . . . Although LTCM is a hedge fund, this issue is not limited to hedge funds. Other financial institutions, including some banks and securities firms, are larger, and generally more highly leveraged, than hedge funds.

Along with recommendations on leverage, the April 1999 report especially highlighted what its drafters believed to be the inadequacy of the U.S. bankruptcy code to deal with large, complex financial institutions (LCFIs) that are highly interconnected to the international financial system. As one of the largest players in OTC derivatives, LTCM was considered a prime example. The report argued for two major reforms:

1. An expansion and improvement of existing law as to the right of counterparties to close out, net, and liquidate underlying collateral of OTC derivatives and repos in the event of a bankruptcy without regard to the bankruptcy code's automatic stay (or related provisions).² This expansion would eventually come into law in the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 (also known as the Bankruptcy Act of 2005).
2. Greater legal certainty for dealing with the bankruptcies of LCFIs when they are transnational in nature.

With respect to the first point, some have argued that the provisions dealing with financial contracts in the Bankruptcy Act of 2005 actually increased the systemic risk in the system; for example, see Edwards and Morrison (2004) (predicting such increase), Miller (2009), Faubus (2010), Roe (2010), and Tuckman (2010), among others. That is, the legislation designed to address the failure of LTCM may actually have made matters worse. The arguments are complex and discussed in some detail in this chapter. And with respect to the second point, while the Bankruptcy Act of 2005 repealed Section 304 of the bankruptcy code in favor of a new Chapter 15 of the code to deal with international bankruptcy issues in a more consistent and predictable manner, these changes were not sufficient to deal with LCFIs that operated in multiple jurisdictions.

Just 10 years later almost to the date of the LTCM reorganization, the words quoted from McDonough's testimony and the April 1999 report would ring true again with the implosion of a massive real estate bubble and consequent collapse or near collapse of LCFIs with vast interconnections throughout the global economy. The names of these firms are familiar and include Bear Stearns, Lehman Brothers, Merrill Lynch, Fannie Mae, Freddie Mac, American International Group (AIG), and Citigroup, among others. The prospect of failure by these and other institutions led to a wide-scale freezing of capital markets and runs on various types of institutions, causing credit markets to falter. While there was only a single set of losses to be borne when the bubble burst, no one knew where these losses would rest and thus failure appeared to be around every corner. Put another way, the demise or threatened demise of large, interconnected firms imposed significant systemic risk. Over the next six months, regulators worldwide engaged in recapitalizing these and other firms in their respective financial sectors, but the panic and uncertainty caused by the failures of these institutions prevailed as stock markets worldwide and economies in terms of gross domestic products (GDPs) fell off a cliff, with drops not seen for decades.

In the section that follows, we describe the types of systemic risk that arose during the recent financial crisis, and the implications this risk has for designing the resolution of failed financial institutions in the future.

8.2 THE FINANCIAL CRISIS OF 2007 TO 2009

The fear of systemic risk in the LTCM episode and the emergence of this risk in the 2007 to 2009 financial crisis show that the failure of a significant part of the financial sector—one large institution or many smaller ones—can lead to a reduction in credit availability, and this adversely affects the real economy. And like the LTCM failure demonstrated, systemically important

companies can generally be defined as financial intermediaries that are not only commercial banks taking deposits and making loans, but also include investment banks, money market funds, mutual funds, insurance firms, and potentially even hedge funds, whose failure poses a systemic risk or externality to the financial system. This externality can come through multiple forms, including counterparty risk on other financial institutions, asset liquidations that can produce a depressing effect on asset prices, liquidity hoarding that raises funding costs in interbank markets even for safe firms (inducing them in turn to hoard liquidity too), and an information contagion effect resulting in a significant reduction in overall market liquidity.

With respect to counterparty risk, the failure of a highly interconnected firm can have a ripple effect throughout the system. For example, consider the over-the-counter derivatives market. The main reason for systemic risk in OTC markets is that if bilaterally set collateral and margin requirements in OTC trading prove insufficient, the loss is not just to the two firms immediately affected by the transaction. That is, bilateral requirements do not take account of the counterparty risk externality that each trade imposes on the other firms in the system, which might fail if their counterparties fail.³ Put simply, to contain counterparty risk externality, it is necessary to know what else is being done by firms other than the transaction at hand, but such knowledge is simply unavailable in opaque OTC markets. This, in turn, allows systemically important exposures to be built up without sufficient capital to mitigate associated risks.

The prime example in the current crisis is AIG, which built up a \$500-plus billion of one-sided credit default swap (CDS) exposure on the AAA-rated tranches of securitized products. These positions were established with little or no capital support. Because all the trades were in the same direction, once the trades lost value, it meant that AIG's failure would be passed on throughout the financial system. Chapter 9 of this book, "Systemic Risk and the Regulation of Insurance Companies," provides a case study of AIG and documents in detail the magnitude of the counterparty exposures.

The second, and related, way systemic risk can enter the market is through spillover risk that arises as one institution's trouble triggers liquidity spirals, leading to depressed asset prices and a hostile funding environment, pulling others down and thus leading to further price drops and funding illiquidity, and so on, causing a death spiral. In essence, fire sales of assets generate a pecuniary externality on other financial firms.

Consider the plight of a weak—potentially insolvent—financial firm. If such a firm is not immediately subjected to prompt corrective action or resolution, the firm can hoard liquidity, anticipating that it would struggle to raise liquidity in markets when it needed it. If such firms are an important part of interbank markets (for example, in payment and settlement systems),

then liquidity can get trapped in a few pockets of the financial system rather than finding its way to the most valuable user, as would be the expected normal-time function of interbank markets. What is worse, such hoarding of liquidity—and induced stress in interbank markets—can force safer firms to hoard liquidity, too. The result is a strong reluctance of financial firms to transfer liquidity to each other that can disrupt financing of long-term projects in the real economy. Acharya and Merrouche (2008) document such severe funding stress in the UK interbank markets, showing in particular that settlement banks that had experienced substantial capital write-downs were hoarding more liquidity on days of greater payment activity, and charging higher interbank rates for releasing their liquidity—even when secured by UK gilts—to other (safer) settlement banks.

The flip side of hoarding is banklike runs to which financial institutions operating in the shadow banking system are subject. Such runs have a contagious aspect to them. The new model of banking relied heavily on the short-term, wholesale funding market and was especially vulnerable to such contagion risk. Examples that illustrate this point are (1) the volume of repo transactions going from \$2 trillion daily in 1997 to \$6 trillion a decade later in 2007, and (2) money market funds accumulating over \$4 trillion in assets compared to the \$8 trillion of deposits in the banking sector. Since these funds are rolled over on a short-term basis, sudden withdrawal of these funds due to uncertainty about a financial institution's health can cause the institution to fail. When a particular institution fails in this manner, uncertainty about the health of similar institutions can lead to a wide-scale run, and therefore otherwise well-capitalized firms can face runs on their short-term liabilities, causing a systemic crisis.

Two examples of the crisis surrounding Lehman Brothers' bankruptcy filing on September 15, 2008, illustrate this risk:⁴

1. When Lehman Brothers filed for bankruptcy, debt it had issued collapsed in price. One of the largest money market funds, Reserve Primary Fund, was highly exposed to Lehman Brothers short-term paper and the next day "broke the buck"; that is, the fund's net asset value (NAV) fell below par. Since money market funds offer stable NAV and investors can redeem anytime at par value, there was an immediate run on the Reserve Primary Fund, causing it to shut down. Its failure, however, opened up the possibility that other money market funds were similarly exposed, causing a run on money market funds. Since money market funds are a primary source for the commercial paper market, this run opened the possibility of capital shortfalls at many financial institutions that needed to roll over commercial paper. (Chapter 10, "Money Market Funds," discusses this episode in some detail.)

2. With the Lehman bankruptcy on September 15, 2008, the repo market on even U.S. government debt, federal agency debt, corporate debt, and federal agency mortgage-backed securities came to a near halt and settlement fails of primary dealers skyrocketed. The run on the repo market may be interpreted as large withdrawals from the broker-dealer shadow banks in the repo market. In practice, this pushed otherwise solvent firms, like Morgan Stanley, to the verge of bankruptcy, and questionable firms, like Merrill Lynch, to be acquired. Chapter 11, “The Repurchase Agreement (Repo) Market,” describes the run on repos.

The preceding discussion highlights the problem of having an LCFI fail and go into bankruptcy. The analysis therefore suggests that any regime set up by the government to deal with the insolvency of LCFIs must follow four basic principles:

1. The counterparty risk of the LCFI must be contained. While the hope is that this risk is mitigated through ex ante prudential regulation (including the imposition of capital requirements, margin rules, and limitations on risky investments, each as provided for by the Dodd-Frank Act), the question arises what happens if this regulation fails.
2. There needs to be a procedure for dealing with a large amount of illiquid assets. As mentioned above, forced asset sales of financial institutions can have a catastrophic effect on the system.
3. The regime should identify insolvent firms promptly as they can become pockets where financial resources of the economy can get trapped, potentially creating funding problems even for otherwise solvent firms.
4. There must be well-defined rules for what happens to the liabilities of the financial firm when it fails, otherwise a run on most of the firm’s liabilities will occur. A general reduction in uncertainty about the insolvency process, and greater transparency, will also contain the system-wide run.

The preceding chapters—Chapter 5, “Taxing Systemic Risk”; Chapter 6, “Capital, Contingent Capital, and Liquidity Requirements”; and Chapter 7, “Large Banks and the Volcker Rule”—strongly argued for legislation that charges the LCFIs a premium for the government guarantees they receive and a tax for the negative externality of the systemic risk they produce. In other words, the first line of defense against systemic risk is to have LCFIs internalize these costs and thereby to encourage them to be less systemically risky in order to avoid these costs. As described in Chapters 5 to 7, the Dodd-Frank Act on the whole does not take this approach.

Instead, the Dodd-Frank Act places its emphasis on the ability of a resolution authority to wind down financial institutions in a credible way so as

to precommit to no future bailouts of financial firms. Without the too-big-to-fail guarantee, the creditors of these institutions will impose market discipline and financial firms will engage in less risky activities. So the theory goes.

Nevertheless, it is a balancing act for a resolution authority to handle both moral hazard underlying the too-big-to-fail problem and the resulting systemic risk that might emerge when an LCFI fails during a crisis. On the one hand, a credible resolution authority that makes creditors, and not taxpayers, pay for the losses of an LCFI has the potential for removing the too-big-to-fail subsidy and making LCFI debt financing more market-based. On the other hand, if an LCFI does run into trouble in a crisis, such a resolution authority—usually designed in the aftermath of a previous crisis—may not be equipped to handle the exact form of systemic risk that emerges next time.

To understand this trade-off, consider depository institutions. Although subsidized by FDIC deposit insurance priced at below market rates,⁵ a number of large deposit institutions, such as Washington Mutual, were not likely viewed as being too big to fail and their long-term debt generally reflected higher spreads than their too-big-to-fail counterparts. As an illustration, Figure 8.1 graphs the CDS premiums of three firms that effectively failed during the financial crisis—Washington Mutual, Wachovia, and Citigroup—during the period January 1, 2007, through the date of Lehman’s bankruptcy filing

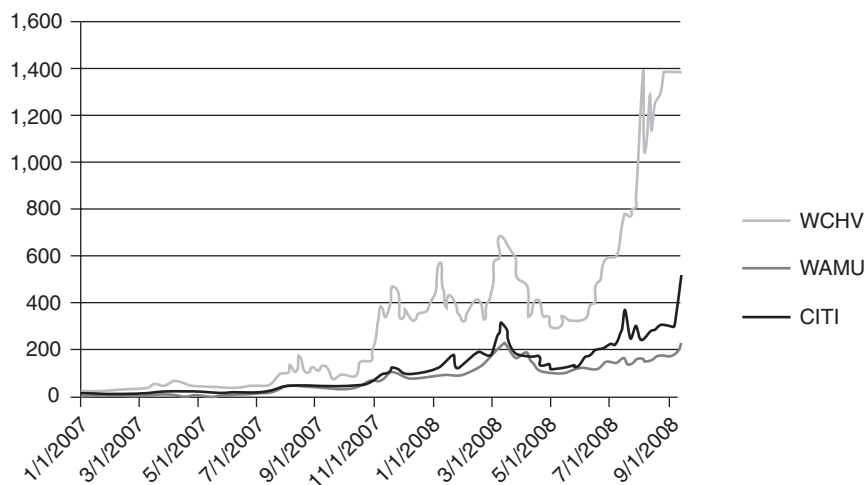


FIGURE 8.1 Credit Default Swap (CDS) Spreads of Failing Financial Firms, January 2007 to September 2008
Source: Bloomberg.

on September 15, 2008. The latter two firms, especially Citigroup, many considered too big to fail, and differences between their CDS spreads and Washington Mutual's seem to reflect this point. Ex post, market participants judged the situation correctly and Citigroup was bailed out during the crisis while Washington Mutual entered receivership. As a thought exercise, imagine a world in which Citigroup's CDS spreads looked like Washington Mutual's and bankruptcy of Citigroup was viewed as highly likely. How much additional systemic risk would have been created? The failures of Lehman Brothers and AIG suggest that the systemic risk level may have been so great that a credible commitment to allow failure would have been impossible. So even if an ex ante commitment not to bailout a failed firm would prevent firms from growing too big to fail, the inability of government to make such a commitment leaves rescue as an option, which is, in turn, anticipated by market participants.

Having highlighted this difficult trade-off, we describe in the next section the specific details of the resolution authority outlined in the Dodd-Frank Act and, in particular, evaluate the legislation with respect to the efficiency of the process and its ability to mitigate moral hazard and systemic risk.

8.3 THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT OF 2010

The question at hand is whether the Dodd-Frank Act serves the stated purpose, the elimination or containment of systemic financial risk. The discussion here largely focuses on this issue. A central objective of the legislation is to bring large nonbank financial institutions such as bank holding companies and insurance holding companies within the Federal Deposit Insurance Corporation (FDIC) insurance model. The FDIC is a government entity that guarantees deposits at member banks and savings and loan institutions. If an insured deposit-taking institution fails, it is taken over by the FDIC, which pays the guaranteed deposits and oversees disposition of the institution's assets. To expand the FDIC insurance model, the proposed legislation would extend the reach of the FDIC itself. The Dodd-Frank Act would create an orderly liquidation authority (OLA).

In this section, we break our analysis into four components: (1) a general description of the OLA and its implications, (2) the powers and process of the OLA, (3) the funding of the OLA, and (4) the treatment of qualified financial contracts, such as swaps, repos, commodity and forward contracts, and certain other OTC derivatives, given their role in generating systemic risk.

General Implications for Covered Financial Companies within the Orderly Liquidation Authority

Before describing how a financial institution becomes a covered financial company (CFC) within the orderly liquidation regime, it is important to point out that the Dodd-Frank Act institutes major changes for how financial institutions can (or for that matter cannot) access the Federal Reserve Bank's lender-of-last-resort function. Chapter 2 of this book, "The Power of Central Banks and the Future of the Federal Reserve System," provides a detailed analysis, so we just briefly review the argument here.

As described in that chapter, the Fed used its emergency lending powers (i.e., loans to nonbanks) throughout the financial crisis, most notably with respect to Bear Stearns and AIG. The Dodd-Frank Act greatly limits this possibility by prohibiting loans to failing financial firms unless the lending is systemwide. Moreover, innovative programs designed to create liquidity would now need Treasury approval, which could slow the process and create some uncertainty. Our view is that, with respect to the trade-off between creating moral hazard and reducing systemic risk, the legislation gets this wrong.⁶

While access to the lender of last resort allows firms to hold less liquid assets and therefore increases moral hazard on that one dimension, this would appear to be a small cost against the benefit of allowing the Fed to provide liquidity to solvent but illiquid institutions. An appropriate charge for this access could also mitigate the perverse incentives of LCFIs.

With respect to a resolution authority, the Dodd-Frank Act considers financial companies quite broadly, including bank holding companies, systemically important nonbank financial companies, such as large hedge funds, supervised by the Federal Reserve under the Dodd-Frank Act, and generally any similar company engaged primarily in finance activities. In terms of what happens when such a financial institution fails, the presumption is that the institution would go through normal bankruptcy or other applicable insolvency law.

However, upon the recommendation of the Federal Reserve Board (by a two-thirds vote) and a similar vote by the FDIC (or, in some cases, the Securities and Exchange Commission for broker-dealers or the director of the Federal Insurance Office for insurance companies), the secretary of the Treasury could determine that the financial institution should be subject to the OLA. Such financial institutions are designated CFCs. The secretary would have to establish a number of conditions, including that the CFC had defaulted on its obligations or was about to and that failure of the company under procedures outside the OLA (such as under the bankruptcy code) would seriously undermine the stability of the U.S. financial system.

If the board of the CFC does not acquiesce to an orderly liquidation, the Treasury secretary must petition the U.S. District Court for the District of Columbia. If the District Court does not find that the secretary's petition is "arbitrary and capricious," the petition must be granted. All of this must take place within 24 hours of the petition being filed. Further appeals are possible. Once appointed as a receiver, the FDIC would have broad powers to manage the CFC's affairs, including the authority to transfer or sell assets and to satisfy claims. The FDIC would not be able to use any funding, however, unless an orderly liquidation plan has been approved by the Treasury secretary.

The Dodd-Frank Act is clearly a way to formalize the somewhat ad hoc process that took place with respect to Bear Stearns and AIG, and might have taken place with respect to Lehman Brothers, Citigroup's bank holding company, or other such institutions. At first glance, the Act sets up high hurdles for the OLA to take control of a financial firm. For instance, there has to be widespread agreement among the relevant regulatory agencies and the Treasury secretary, and there is judicial review. In the midst of a financial crisis, it is hard to imagine that these will be roadblocks. Looking forward, however, there are several major concerns.

First, to repeat the fears mentioned earlier with respect to the Dodd-Frank Act's restriction of the Fed's emergency powers to provide liquidity support to a nondepository institution during a crisis, regulators may wait too long to intervene—this despite the authority to initiate an OLA prior to a CFC's collapse, if there is a mere danger of default—and have no choice but to put the bank holding company or similar financial firm through the OLA liquidation process. This seems like a very risky proposition in terms of systemic risk.

Second, while there has been a clear attempt to expedite the CFC determination process (e.g., 24-hour judicial review), the procedure—a two-thirds vote by the relevant regulators, the determination by the Treasury secretary, and the approval of the CFC's board, without which there is the judicial review in the U.S. District Court and potential appeals to the U.S. Court of Appeals and the Supreme Court—may not be sufficiently fast to contain the ensuing run on liabilities that can be pulled immediately.

In sum, because of the uncertainty underlying the OLA process, it seems possible that prior to the OLA determination:

- Runs on these and other short-term liabilities will occur in anticipation of such determination, creating a self-fulfilling OLA event.
- Holders of the firm's longer-term debt and equity will try to sell their holdings in secondary markets, putting pressure on the financial firm's position in capital markets.

- Runs on similar financial firms may occur, essentially leading to the regulators having no choice but an OLA determination for a significant part of the financial sector.

While any insolvency procedure is subject to these problems, the Dodd-Frank Act provides little guidance on how the OLA will address them. This is significant because, after all, the main concern is the systemic risk of LCFIs, not their individual risk. Uncertainty inherent in the process, counterparty risk contagion, and resulting fire sales when an LCFI fails should have been addressed systemwide in the legislation. The Act does require that certain systemically important financial institutions prepare customized resolution plans to be implemented should they fail, so-called living wills. As we explain in Section 8.4, we propose that in response to this obligation firms adopt capital structures divided into priority hierarchies of tranches (e.g., debt and equity in the simplest case), along with a mechanism through which junior tranches would be sequentially eliminated to restore the firm to solvency for the benefit of senior tranches when a firm becomes unable to pay all of its obligations. Such living wills, if properly structured, could provide a truly orderly transformation of distressed financial institutions and thus limit the spread of a financial crisis. But, as we also explain, this would be only one part of the solution, since to contain the spread of the crisis when unavoidably even senior tranches of firms must take some losses, temporary liquidity assistance—such as lender-of-last-resort facilities of the central bank or emergency lending from a resolution authority—would also be necessary.

Powers and Process of the Orderly Liquidation Authority

The Dodd-Frank Act is fairly clear on its stated goal for the OLA applied to financial institutions:

It is the purpose of this title to provide the necessary authority to liquidate failing financial companies that pose a significant risk to the financial stability of the United States in a manner that mitigates such risk and minimizes moral hazard. The authority provided in this title shall be exercised in the manner that best fulfills such purpose, so that—(1) creditors and shareholders will bear the losses of the financial company; (2) management responsible for the condition of the financial company will not be retained; and (3) the Corporation (FDIC) and other appropriate agencies will take all steps necessary and appropriate to assure that all parties, including management, directors, and third parties, having responsibility for

*the condition of the financial company bear losses consistent with their responsibility, including actions for damages, restitution, and recoupment of compensation and other gains not compatible with such responsibility.*⁷

In trying to achieve these goals, the Dodd-Frank Act shapes the OLA on the receivership model of the FDIC (though specialized alternative provisions apply where the CFC is a broker-dealer or insurance company). Consistent with the FDIC's current and continuing role in resolving depository institutions, the FDIC would have the power to take over the assets and operate the CFC, including the power to transfer those assets or liabilities to a third party or bridge financial company. It is worth noting here that the essence of the Act's receivership model is also consistent with the bankruptcy process. In each case a financially distressed firm becomes subject to the supervision of an administrator—the FDIC or a bankruptcy judge, respectively—and in each case the administrator oversees the operation of the firm and the disposition of its assets. There are differences, however, in the way creditors are paid, for example, and in the procedures applied.

Take, for instance, the order of payments to creditors, which generally follows state law priorities under the bankruptcy code. Under the Act, the FDIC would be able to cherry-pick among obligations (paying some out of priority order or treating obligations with similar priorities differently) under the proviso that no creditor gets less than what it would have received in a liquidation under the bankruptcy code,⁸ and subject to certain provisions for qualified contracts. (See the discussion in the following pages.)

Beyond priority, under the provisions of Title II of the Dodd-Frank Act, the OLA's procedures do in some cases follow those prescribed by the bankruptcy code. For example, secured debt, contingent claims, preferential payments, and fraudulent conveyances are treated under the OLA largely as they would be treated under bankruptcy law. But not all provisions are the same under the FDIC receivership model and the bankruptcy code. For example, the settlement of qualified contracts is subject to a stay of up to one business day after the commencement of an FDIC receivership but not subject to the stay at all under the bankruptcy code. And setoffs, which are generally honored under the bankruptcy code, are subject to alteration under FDIC receivership.

There is the potential for a mismatch between the insolvency regimes, and even where the substantive rules are effectively identical, the implementation of them under the new law may be uncertain. In general, at least initially, there could be great uncertainty as to how the new statute would be interpreted, and uncertainty can be costly.

One wonders, moreover, whether the FDIC has the institutional capacity to deal with dissolution of covered firms, which are by definition large and

complex. The FDIC has been a receiver for banks and savings and loan associations, which are simpler by comparison, in that as the deposit insurer and holder of the depositors' claims by subrogation, the FDIC is the natural location for the firm's assets. This is not a reason to have the FDIC administer the insolvency of CFCs. By contrast to the OLA, the bankruptcy code, while imperfect and also subject to some uncertainty, has well-established provisions tested by litigation. And the bankruptcy courts are experienced with the management of large cases—Enron, General Motors, and Lehman Brothers recently among them.

That said, it is indisputable that LCFIs are in an important respect special. By definition, the failure of these firms presents significant systemic risk and it is unclear whether the current bankruptcy process can handle such risk, if for no other reason than the fact that the creditors' focus is on the LCFI in question and not the financial system as a whole. In addition to the discussion here, see, for example, Morrison (2009). Furthermore, despite the speed at which recent bankruptcy cases have been resolved, there is a concern that the bankruptcy process might be too slow to deal with LCFIs, whose funding is fragile, whose creditworthiness is essential for dealing with numerous counterparties, and whose complexity might place them at the center of the financial system with, as the current crisis showed, many unintended consequences.

Some experts, notably Jackson (2009), therefore, have argued for a revision to the bankruptcy code for systemically important (and possibly even all) financial institutions, termed Chapter 11F.⁹ The basic premise of bankruptcy reorganization, and, to be fair, one that the Dodd-Frank Act recognizes, is that it:

follows (for the most part) non-bankruptcy priority rules—"the absolute priority rule"—with useful predictability, sorts out financial failure (too much debt but a viable business) from underlying failure, and shifts ownership of residual claimants, through the certainty that can be provided by decades of rules and case law. (Jackson 2009, 217–218)

In recognizing the shortfalls of the current bankruptcy code, Jackson (2009) suggests a number of modifications:

- In order to address the issue that creditors' incentives may differ from those of the system, the relevant government agency would be able to file an involuntary petition to place the LCFI into Chapter 11F, subject to judicial review.
- Assuming the petition were granted, the case would be assigned to special masters who have experience with financial institutions and

bankruptcy law. There would be a single bankruptcy proceeding for LCFIs as entire entities as opposed to having some parts (such as the bank holding company) administered in bankruptcy, and other parts (like the depository bank) administered by the FDIC outside of bankruptcy. Expedited procedures would be employed where necessary.

- Qualified financial contracts would be divided into two types: (1) Those for which underlying collateral is cash-equivalent would receive safe harbor treatment and the exemption from bankruptcy's automatic stay (and related provisions), and (2) all others would be subject to the stay (and related provisions). (See later in this chapter for a detailed discussion of this important topic.)
- If there is a need to inject capital into the LCFI, the relevant government agency could provide debtor-in-possession (DIP) financing, which would be subject to the normal rules of priority.

The trade-offs between FDIC receivership and bankruptcy, in addition to forbearance and living wills, are discussed further in Section 8.4. The general point is that the inadequacy of the current bankruptcy code to deal with LCFIs does not imply that the code should be scrapped and be replaced by FDIC-like powers for the OLA. The FDIC generally deals with very specific and narrowly defined institutions. The bankruptcy code, and years of practice under it, is broader in its design and reach.

Funding and Financial Implications of the Orderly Liquidation Authority

As a receiver, the FDIC would be authorized to draw on what the Dodd-Frank Act calls the Orderly Liquidation Fund. This fund would be housed in the U.S. Treasury. Originally, in the proposed bill, this fund was to be financed ex ante by risk-based assessments of covered financial institutions; the more systemically interrelated the institution, the larger the assessment. In the signed law, however, this provision was dropped. Instead, the FDIC will issue debt securities to the Treasury and will repay the borrowings from:

- Creditors who receive funds in the OLA process that are greater than what they would have received in normal liquidation under the bankruptcy code.

And, if this is not sufficient, the FDIC will repay from:

- Ex post assessments on bank holding companies with total assets of \$50 billion or more and on any nonbank systemically important financial institution.

As described earlier, in its mere imposition of the FDIC as a receiver, the OLA process is unremarkable. Outside the process, a failed nonbank financial company would land in bankruptcy, and a bankruptcy court, perhaps aided by a trustee rather than the FDIC, would oversee the liquidation of the firm (assuming that reorganization were not possible). And, as noted, the intended process of liquidation under the OLA largely mimics the same process under the bankruptcy code. Specifically, the OLA adopts numerous provisions modeled on the bankruptcy code, including provisions that address secured debt, contingent claims, voidable preferences, and fraudulent conveyances, among other issues. What most importantly distinguishes the OLA from the otherwise applicable bankruptcy regime is the ability to borrow against the Treasury's Orderly Liquidation Fund.

The receiver's use of the fund is discretionary. Perhaps the FDIC will use the fund as intended, just as a source of finance for the failed CFC, supplying the company with liquidity but retaining for the fund assets equal in value to the new loans extended. If so, however, the OLA might not, by itself, offer a significant containment of the risk that the failure of a large, interconnected financial company might undermine the financial system. If such a company has failed because it lacks assets to pay its obligations, and it is not subsidized in receivership, then the company's counterparties will not be paid in full and the risk of contagion remains.

One might expect, therefore, that the FDIC as a CFC receiver will use the Orderly Liquidation Fund not merely, as the fund's name suggests, to achieve an orderly liquidation, but rather will use it as a bailout source for creditors. That is, to prevent contagion effects the FDIC might be expected to satisfy counterparty claims that could not be paid from the assets of the CFC even if liquidated in a leisurely fashion, removed from the crisis.

Bailout (what we call "forbearance" in the following pages) might indeed stem contagion and we argue that the federal government should have greater authority to make loans when the risk of systemic failure is great. But, depending on the size of the risk, bailout has a potentially unacceptable cost. Even if systemically important financial institutions were heavily regulated, as the Dodd-Frank Act provides with its provisions for the imposition of minimum capital requirements, for example, the incentives created by insurance tend to encourage the very sorts of risk the legislation aims to avoid. For evidence of this, one needs to look no further than the collapse of already insured deposit-taking institutions in the recent financial crisis. For more evidence, consider the savings and loan debacle of the late 1980s, where insured and regulated (albeit insufficiently regulated) deposit-taking institutions failed spectacularly and at great cost. Insurance creates moral hazard.

Who would foot the bill for the moral hazard that insurance creates? The answer, at first blush, is the creditors themselves. If credible, the

claw-backs in the Dodd-Frank Act would help realign incentives. The question remains whether systemically risky liabilities (i.e., those primarily short-term in nature such as uninsured deposits, foreign deposits, interbank loans, etc.), which are protected during a financial crisis, can be clawed back afterward. If this is the case, then, by rational expectations, a bailout will have no effect. The moment it seems remotely possible that a financial institution will be subject to the OLA, there would be a wide-scale run on the systemically risky liabilities of the company and likewise institutions.

The second source of funding for the bailout is the financial industry itself. But the ex post fund assessments would essentially require that prudent financial companies pay for the sins of the others. This would be bad enough even from merely an ex post perspective once a crisis has begun, as the costs to the financial system could be substantial, and would weigh against the ability of the system to provide credit. Ironically, an illiquid financial system is the very evil the proposed legislation is intended to avoid. But it gets worse. The Act's plan for successful financial institutions to pay the creditors of failed institutions leads to a free rider problem. This will encourage even well-managed banks to take excessive risk. The "heads I win, tails you lose" proposition just gets passed around in the financial sector, creating an even more risky and fragile financial system, making a crisis more likely in the first instance.

Chapter 5, "Taxing Systemic Risk," called for a quite different approach. In that chapter, we argued that the optimal policy was to (1) charge the LCFI for any government guarantees it receives, and (2) tax the systemic risk produced by the LCFI. With respect to (1), if there are liabilities that are deposit-like and subject to runs, and these will be effectively guaranteed in a financial crisis, then this should be made explicit and the LCFI should be charged a premium as such. These premiums would go into a fund similar to the one for FDIC-insured deposits. All other liabilities would be subject to a bankruptcy mechanism. As outlined in the next section, we prefer a living will design, but other approaches like the aforementioned Chapter 11F are also possibilities. For (2), the taxes would go into a systemic risk fund but not be used to bail out failed financial institutions. The purpose of such a fund would be to let these institutions fail and instead pay for the systemic costs of such a failure. In other words, the fund would be used to support solvent financial institutions and, for that matter, non-financial corporations impacted by a systemic crisis. In many ways, this feature should be the differentiating aspect of the resolution authority as it addresses the unique characteristic of LCFIs, namely systemic risk. Of course, such a systemic risk fund could be administered independent of the bankruptcy process.

Treatment of Qualified Financial Contracts

The difficulty in writing insolvency law for systemically important financial institutions is perhaps no better exemplified than by the issue of how to treat qualified financial contracts (QFCs). QFCs cover swaps, forwards, repo transactions, and some other OTC derivative contracts, and are essential for the inner workings of LCFIs. In fact, one could argue that what differentiates LCFIs from other financial institutions is their presence in the market for QFCs.

The current version of the bankruptcy code, enacted in 1978, initially provided a safe harbor from the automatic stay (and related provisions) of bankruptcy for commodity and forward contracts. To reflect the growth in the OTC markets, from 1978 through the most recent major bankruptcy reform in 2005, the safe harbor exception has been broadly expanded to cover repurchase agreements, cross-netting provisions, credit swaps, interest rate swaps, and margin loans among other arrangements (Krimminger 2006). The safe harbor clause allows the counterparty to the failed financial institution to terminate the QFC and take control of what it is owed from the failed institution's assets.

Tuckman (2010) provides an excellent discussion of the advantages and disadvantages of the safe harbor clauses for QFCs, and we briefly review these later in this subsection. See also Edwards and Morrison (2004), Jackson (2009), Miller (2009), Faubus (2010), and Roe (2010), among others. The original motivation for the QFCs' special status in the bankruptcy code was to reduce the systemic risk in the financial system. Because derivatives are hedged (or used as hedges) continually, tying up a counterparty's derivative positions in bankruptcy would make it difficult to manage risk going forward, leading to wide-scale risk exposures for leveraged institutions. Moreover, if the underlying collateral is tied up, the loss in potential liquidity for the counterparty might also have serious consequences. Either of these problems, coupled with uncertainty about when the failed institution's derivatives would be cleared, could cause the derivatives market to freeze. Chapter 11 of this book, "The Repurchase Agreement (Repo) Market," provides a detailed discussion of these issues as they pertain to repos.

As the aforementioned articles have argued, however, the reduction in systemic risk due to QFCs avoiding the automatic stay (and related provisions) in bankruptcy is replaced by another form of systemic risk involving fire sales of QFCs and liquidity funding spirals. Specifically, consider the sale and repurchase or repo agreements. Many repo financiers are money market funds subject to restrictions on average maturity of their investments. When they face default on a repo of a long-term asset such as mortgage-backed security (MBS), their (typically overnight) role as a lender in a repo

financing gets translated into being the holder of a long-term asset. As a result, the financier may be forced to liquidate the asset upon a repo counterparty's failure. Similarly, counterparties of a failing firm in a derivative contract might need to reintermediate the contract right away, as it might be serving as a hedge of some underlying commercial risks. Then, due to counterparties all liquidating the repo collateral at once, or terminating and replacing their derivative positions at the same time, money markets and derivatives markets can be destabilized due to the pure number of trades and multiple participants. In the current crisis, there was considerable angst that a bankruptcy of LCFIs like AIG, Merrill Lynch, or Citigroup would have forced large amounts of mortgage-backed derivatives to be sold on the marketplace. Given widespread exposure to these securities by other financial institutions, these losses would have caused a funding liquidity issue, causing even more sales and losses, leading to a death spiral of large parts of the financial system.

An equally strong argument against the safe harbor is that it creates regulatory arbitrage within the system. Specifically, counterparties can build up large concentrated exposures without much consequence, and, because most QFCs can be transformed to mimic the underlying asset, there exist two classes of claims with essentially the same economic purpose, yet subject to different rules and thereby having different implications for ex ante risks. By way of example, consider again a repo against an AAA-rated MBS. If the MBS is held on the *banking* book of an LCFI, it gets treated as a long-term holding subject typically to capital requirement against one year's potential credit risk. If the MBS is instead on the *trading* book as an available-for-sale security that is being rolled overnight in repo markets, then it would be treated as being sold and repurchased each day, so that it would be subject to only one day's market risk as far as its capital requirement goes. The transformation of a long-term asset holding to overnight holding is primarily due to the repo financier having the right to take over the asset in case of the LCFI's failure. However, as explained before, in many cases repo financiers themselves cannot own these assets in the long run and must liquidate them upon the LCFI's failure. Effectively, the migration of the MBS from the banking to trading book lowers the capital requirement against it throughout the system since no institution is holding capital for the scenario in which there is systemic illiquidity and someone must hold the asset for the long run (most likely someone who incurred a huge illiquidity discount in its fire sale). Such distortions push counterparties toward designing complex products that can help shift assets from the banking to the trading book, which are then financed using short-term repos in the shadow banking system, away from the monitoring of regulators and at substantially lower capital requirements. The effective outcome is tremendous liquidity in repo markets for these products in good times, with systemic stress and fragility

when the products are anticipated to experience losses. The expansion of safe harbor to repo transactions with underlying mortgage-based assets in the Bankruptcy Act of 2005 has been cited as one of the reasons for the growth in mortgage-based derivatives over the period from 2005 to 2007.

The Dodd-Frank Act essentially treats QFCs the same way the FDIC treats them in receiverships not covered by the Act. That is, at the end of the first business day after a receivership commences, as a general matter counterparties would be able to exercise their rights against the CFC such as to terminate, net out, set off, and apply collateral with respect to all their QFCs. So, although the provision of a safe harbor under the Act is not identical to that of the bankruptcy code, QFCs still generally benefit from special protection. An exception is that until the end of the first business day after commencement, the FDIC would be allowed to transfer all (and only all) of the QFCs between the CFC and a given counterparty.

Exceptions to the safe harbor clause like those in the Dodd-Frank Act make some sense to the extent the systemic risk of financial institutions might vary from one situation to the next. Faubus (2010), Jackson (2009), and Tuckman (2010) all argue for a narrowing of the safe harbor provision, albeit differently than the Dodd-Frank Act. If one takes as given the presence of systemic risk, then the following seems reasonable:

- QFCs that are liquid should keep the exemption. Liquid QFCs will cause less systemic risk in a fire sale situation, yet still allow counterparties to manage their risk without the uncertainty generated by the bankruptcy of a LCFI. Moreover, in order to get the exemption, counterparties will have an incentive to trade in liquid QFCs.
- QFCs that are illiquid—or potentially illiquid (such as repo contracts on MBSs)—would be subject to the ordinary rules of bankruptcy including the automatic stay. The systemic risk underlying fire sales would be avoided, especially given that complex, illiquid transactions are more difficult to unwind. Of course, this would come at the cost of general liquidity of the counterparties and impact their ability to manage risk. To the extent regulators impose capital and liquidity standards, QFCs subject to the stay should apply higher liquidity standards to the counterparty.

8.4 LOOKING FORWARD: WHAT IF A LCFI FAILS? RECEIVERSHIP, BANKRUPTCY, LIVING WILLS, AND FORBEARANCE

Putting aside the question of whether the existence of a resolution authority is sufficient to induce market discipline and mitigate moral hazard, there is

a major problem with the resolution authority proposed by the Dodd-Frank Act. The Act focuses on the individual risk of the institution and not the systemic risk imposed on the sector and the economy. So even if, and it is a big if, market discipline is restored, there will still be too much systemic risk present, and, more important, no way for the OLA to manage this risk. Specifically, the Act provides no real authority to the OLA to provide liquidity support to the financial system in a crisis. Rather, it is clear that the Act does the opposite—no prefunding, the ability to borrow funds from the Treasury for expenses generally associated only with liquidating the CFC, and so on. And the Fed's emergency powers that allow it to be a lender of last resort to nonbanks is greatly narrowed.

The discussion in Section 8.3 provided a detailed comparison of a bankruptcy regime compared to the FDIC-receivership model of the OLA. It seems worthwhile extending this discussion to other approaches for resolving the distress or failure of LCFIs, such as regulatory forbearance and living wills. At one end of the spectrum, while bankruptcy helps resolve the affairs of insolvent institutions and provides discipline, it may not work well in dealing with liquidity problems and systemic risk during a crisis. At the other extreme, blanket regulatory forbearance achieves almost the opposite outcome, simply blunting systemic spillovers during a crisis but at the cost of not addressing insolvency issues and fostering severe moral hazard. On balance, we prefer the idea of a living will, which offers a market-based solution that prevents moral hazard, but avoids the potentially severe costs of bankruptcy.

Table 8.1 summarizes the abilities of different resolution mechanisms to handle some of the main economic issues underlying the failure of an LCFI.¹⁰

Consider first the strategy of regulatory forbearance, which is largely what the government used to address the financial crisis in the fall of 2008. At its most zealous use, the idea is to provide government aid to an insolvent bank or other financial institution, in effect throw good money after bad, subsidize the bank or institution, and hope that it earns its way out of trouble. This is sanctioning private profit taking with socialized risk. Although unseemly, this solution deserves a fair hearing even if it has potentially exacerbated the moral hazard distortions of government bailouts.

In particular, there may well be a positive externality to spending taxpayer money to save a few systemic institutions so that the entire system can be saved. Many would argue that the approach was successful in preventing a complete financial and economic disaster in September and October 2008. Furthermore, forbearance helped stabilize the system, as the economy seems to be working through its troubles in 2009 and 2010.

That said, at the heart of the debate between forbearance and more drastic action like receivership or bankruptcy liquidation is the question of

TABLE 8.1 Different Resolution Approaches and Their Relative Merits

Resolution Mechanism/ Economic Issue	Bankruptcy	Forbearance	Receivership	Living Wills
Minimizes taxpayer losses	Yes	Yes (if liquidity crisis, though some moral hazard) No (if solvency crisis)	No (if liquidity crisis) Yes (if solvency crisis)	Yes
Deals with insolvent institutions	Yes	No	Yes	Yes
Deals with ex post systemic risk	No (unless the bankruptcy code is reworked, e.g., Chapter 11F)	Yes	Yes (uncertainty about priority of claims might cause systemic risk to emerge)	Could lead to contagious failures unless government funding is introduced
Manages failed institutions during resolution	Yes	Yes	May stretch government skills and resources	Yes
Deals with ex ante moral hazard	Yes	No	Greater flexibility of receivership might suggest implicit bailouts	Yes

whether a financial crisis is a pure panic—one of fear and illiquidity—or one of fundamentals and insolvency. By their nature, fear and illiquidity are temporary states of the world. As risk aversion reverts back to more normal levels and markets open up, a bank’s or financial institution’s general condition is likely to improve. This would suggest that forbearance is the natural strategy. Forbearance avoids both the sudden impact of a bank failure causing systemic risk and the deadweight losses associated with the bank failure itself.

For economists specializing in the field of banking, however, the forbearance approach has a familiar, less auspicious ring. In Japan’s lost decade of the 1990s, Japanese banks kept lending funds to bankrupt corporate firms so as not to write down their own losses, which resulted in the government supporting insolvent banks supporting insolvent firms. This unsustainable progression has often been described as the primary cause for Japan’s lost decade of zero growth.

And one cannot ignore the fact that forbearance creates moral hazard. With forbearance and its fond memories, the financial sector is likely to continue in the future to take asymmetric one-way bets. Exploiting rules of regulatory capital requirements, the financial sector will load up on securities that offer small spreads, albeit at the cost of low-probability, but significant, tail risks, the so-called carry trades. Of course, these trades offer spreads because of market credit risk, liquidity risk, and funding risk, all of which showed up during the current crisis. Managed funds buy up the debt of financial institutions under the assumption that these firms are too big to fail, although, in theory, these funds should be the ones imposing market discipline on the behavior of financial firms, not pushing them to become bigger and more unwieldy. The moral hazard from forbearance is thus ultimately one of lack of sufficient market discipline and risk-sensitive pricing from creditors of the financial sector.

In comparison to forbearance, receivership and bankruptcy regimes place their emphasis on mitigating moral hazard.¹¹ Section 8.3 provided a detailed discussion, and we simply review the arguments here. It is certainly true that a receivership approach allows for greater flexibility than standard bankruptcy to deal with systemic risk. But the orderly liquidation authority of the Dodd-Frank Act is, to say the least, a suboptimal receivership model. The OLA lacks the flexibility to provide funding outside its narrow scope, yet its new, untested procedures provide creditors less certainty as to outcome than would the bankruptcy code. Better legislation would leave the bankruptcy code and the bankruptcy courts to handle the demise of covered firms. Consistent with Jackson's (2009) proposal for a Chapter 11F, a financial institution's bankruptcy could be initiated by a Treasury petition to a qualified panel of judges, a process similar to that under the Dodd-Frank Act. But the result of a successful petition would be the commencement of a bankruptcy case under the bankruptcy code, not an FDIC receivership. The bankruptcy case once commenced need not be ordinary, however. The Orderly Liquidation Fund could exist as a source of capital to financial institutions in bankruptcy, that is, as a debtor-in-possession (DIP) lender much in the same way the Treasury served as a DIP lender in the Chrysler and General Motors cases. That is, one could advantageously strip away the process portions of the orderly liquidation authority and leave its only truly unique element, the Orderly Liquidation Fund.

There would be an additional benefit to segregating the Orderly Liquidation Fund, if it is to exist, from the OLA. As an entity devoted to the prevention of systemic financial crisis, rather than a mere liquidation facilitator, the fund could lend not only to failed firms but struggling ones, perhaps to prevent their failure. Put another way, the fund could focus on liquidity

rather than liquidation and a crisis might be prevented earlier rather than later when it is more expensive to address. It is in this sense, moreover, that the Dodd-Frank Act misses the mark by not assessing systemically risky institutions up front. In order to avoid the charge, firms would organically choose to be less systemically interconnected, but, to the extent systemic risk remained, the prefunding could be used to support solvent financial institutions and the real economy at large.

Finally, there is a provision of the Dodd-Frank Act that suggests an alternative to the use of the OLA or the ordinary bankruptcy process when a financial institution fails. The bill requires that certain systemically important financial companies file, in advance of failure, with the Federal Reserve Board and FDIC an acceptable financial distress resolution plan (a plan that has come to be known as a financial institution's living will or funeral plan). While the legislation requires a description of the firm's assets and obligations, and provides that the plan should facilitate bankruptcy resolution, it does not offer great detail on what a financial distress plan must include to receive approval. There is, however, a developed academic literature on just such an arrangement. Significantly, the sort of living will suggested in the literature can accomplish an orderly liquidation in automated fashion, more quickly and more surely than would be possible under either the OLA or the bankruptcy code.

The academic concept of a corporate living will is, in essence, to divide a firm's capital structure into a hierarchy of priority tranches. In the event of an uncured default (after ample opportunity for cure) on a firm's debt obligation, the equity of the firm would be eliminated and the lowest-priority debt tranche would be converted to equity.¹² If elimination of the lowest-priority debt tranche created enough liquidity to pay the firm's remaining debt obligations, then there would be no need for further restructuring. If obligations to the higher debt tranches remained in default (after opportunity for cure), the process would repeat until either all defaults were cured or the highest-priority tranche was converted to equity. Only at the point where a firm defaulted on its most senior obligations, after the elimination of all junior debt, would holders of those senior obligations have reason to foreclose on collateral, as elimination of the junior debt classes would, until that point, provide liquidity that could stabilize the firm and perhaps stem any run on the firm's assets.

Significantly, in no case would there be a need for a judicial valuation or determination of which obligations were or were not entitled to satisfaction. The prospect of default-driven transformations of the tranches from debt to equity would provide firms eternal solvency—or at least solvency until a class of secured claims was impaired—and without the need for bankruptcy

restructuring beyond simple adherence to the prescribed capital structure or, to use the terminology of the current debate, without need for bankruptcy beyond simple adherence to the firm's living will. Therefore, although the Dodd-Frank Act envisions living wills as blueprints for the bankruptcy process, a living will with the automatic conversion features we favor would largely eliminate the need for that process. Such an automated mechanism could uniquely provide the speed of resolution that financial markets require, particularly in time of systemic crisis.

There are potential drawbacks to the living will concept, however. For the proposal to be effective, the transformation, or winding down, of the firm must be triggered by an easily verifiable signal such as default on obligations rather than a difficult one such as inherent asset value. The key to the proposal, after all, is to provide swift rescue and payment of those obligations still in-the-money despite the firm's inability to make good on all its obligations. Such a transformation, or winding down, runs the risk that a firm in financial crisis will eliminate an interest that might have later proven to be valuable in a traditional bankruptcy reorganization, where time and the debtor's continued search for liquidity might resolve the crisis. But there are costs, too, to a traditional reorganization, including uncertainty and the potential paralysis of the financial markets that has led to the recent proposal that regulated financial institutions have living wills. Moreover, the market has recently shown an appetite for the idea, or something like it; Lloyds Bank, for example, issued reverse convertible debt, which would be transformed into equity in the event the firm failed to maintain a specified capital requirement. Chapter 6, "Capital, Contingent Capital, and Liquidity Requirements," provides a detailed analysis of various debt-to-equity schemes, which, of course, are related to the living will concept.

Living wills such as the one proposed here could quickly resolve a failed firm's affairs, freeing all but its impaired obligations (which would be transformed or eliminated) to trade at solvency values. This result limits the scope of a firm's failure and reduces the extent to which a firm's insolvency can spread through the financial system. In other words, the instant transformation of the lower-priority tranches will restore the higher-priority tranches to in-the-money status, which would cabin the contagion to the lower tranches. Thus, even though living wills are primarily focused on resolving distress of individual firms, they would not be entirely powerless in dealing with contagion. Nevertheless, some impairment of a firm's obligations would remain unavoidable under living wills, so ultimately living wills are limited in their ability to stem contagion completely. For instance, a living will unaccompanied by a subsidy—such as favorable loans in advance of default offered by the Orderly Liquidation Fund or similar entity—would not entirely

eliminate the contagion from a firm's failure if key assets such as unsecured overnight funds were not paid and were transformed or eliminated as a result of default. In such a scenario, central-bank or government-sponsored liquidity will ultimately be needed for a more complete remedy for contagion. But absent such subsidization, which imposes taxpayer and moral hazard costs as outlined earlier, or in conjunction with such subsidization where such costs are acceptable, the living will solution may be the best available option.

8.5 SUMMARY

We have been critical of the orderly liquidation authority (OLA) provided by the Dodd-Frank Act primarily because it lacks the flexibility to have the government provide needed finance in the next financial crisis, because the funding of the OLA will exacerbate moral hazard, and because the resolution of covered financial companies' (CFCs') insolvencies may not be as orderly or certain as is possible. This does not imply that we altogether oppose the new Act. The resolution authority cannot be considered in isolation. There are provisions that we admire, including the Act's proposal for a new Financial Stability Oversight Council that would, through the Federal Reserve Board, have the authority to constrain the activities of systemically important companies. The prescribed forms of potential constraint usefully include the imposition of capital requirements, as observed earlier, and restrictions on risky investments (the so-called Volcker Rule). The provision of oversight is designed to prevent financial distress of large, interconnected firms in the first place rather than to manage their demise, and there is merit in this proposed reform, though we would also include direct ex ante assessments on systemic risk imposed by these firms.

There are, moreover, provisions of the new Act that address the failure contagion problem more effectively than the OLA would in isolation. The Dodd-Frank Act, for example, provides for the regulation of critical payment, clearing, and settlement functions. Effective clearing standards could go a long way toward easing systemic risk when a large, interconnected firm failed. As noted, part of the reason for the cascade of distress in the recent financial crisis was that no financial institution could be sure whether its counterparty was the bearer of a crippling loss, and thus virtually every financial institution was suspect. Such uncertainty would not exist to the same extent if a chain of offsetting obligations could be collapsed instantly, revealing the identity of a single obligor and obligee; if the revealed obligor is insolvent, its counterparties would face a problem, of course, but the

location of the risk would be confined to that obligor. Central clearing is particularly appropriate for plain-vanilla derivatives that have hitherto remained over-the-counter and needlessly opaque with respect to exposures across financial institutions.

In sum, the Dodd-Frank Act of 2010 takes some steps in the right direction, but also some in the wrong direction. And a number of opportunities for more complete reform were missed.

NOTES

1. There is not universal agreement either at the time of LTCM's collapse or even after subsequent reflection that LTCM was systemically risky. For example, Furfine (2001) finds that levels of unsecured borrowing by LTCM's counterparties were not greatly affected leading up to LTCM's collapse. Interestingly, he documents a possible increase in the too-big-to-fail effect after the LTCM rescue.
2. Exemption from the automatic stay allows a counterparty on a derivative to close out, net, or liquidate a position even after a bankruptcy petition is filed. The bankruptcy code also extends the exemption to other provisions, such as those for voidable preferences, constructively fraudulent conveyances, and ipso facto clauses, that might otherwise permit a debtor in bankruptcy to claw back assets if acquired by a counterparty prior to or in the event of bankruptcy.
3. See Acharya and Engle (2009), which introduces the notion of counterparty risk externality, and Acharya and Bisin (2010) for its formal modeling.
4. See Summe (2009) for a discussion of the Lehman Brothers bankruptcy and its implications for various insolvency frameworks.
5. As described in Chapter 5, because the FDIC insurance fund was viewed as well capitalized, many FDIC-insured institutions were not charged at all from 1995 to 2005.
6. The Dodd-Frank Act also allows the FDIC, in consultation with the Treasury secretary and by two-thirds vote of the FDIC and Board of Governors, to create a systemwide program to guarantee obligations of solvent depository institutions and holding companies for a fee that offsets projected losses and expenses. However, in addition to these procedural hurdles, the creation of such a program requires a determination that a liquidity crisis is underway, and so any relief may come too late.
7. HR 4173, Title II, "Orderly Liquidation Authority," Sec. 204, "Orderly Liquidation of Covered Financial Companies."
8. Even though the Dodd-Frank Act provides this flexibility, the intent is generally to "ensure that unsecured creditors bear losses in accordance with the priority of claim provisions" (HR 4173, Title II, Sec. 206, "Mandatory Terms and Conditions for Orderly Liquidation Actions"). After postreceivership financing, and subject to exceptions such as priority above ordinary unsecured claims for lost setoff rights and special rules in the case of a broker-dealer CFC, the order

- of priority for unsecured claims or junior interests includes (1) expenses of the receiver, (2) amounts owed to the U.S. government, (3) specified wages, salaries, or commissions of ordinary employees, (4) specified obligations to employee benefit plans, (5) other general or senior liabilities of the CFC, (6) obligations subordinated to general creditors, (7) wages, salaries, or commissions of senior executives or directors, and (8) interests of shareholders and the like.
9. It should be pointed out, however, that other experts view receivership as the only viable option to deal with these issues (e.g., Hoenig, Morris, and Spong 2009).
 10. Acharya, Richardson, and Roubini (2009) discuss the various approaches in dealing with LCFIs during the financial crisis in early 2009. Parts of this section are based on that discussion.
 11. A hybrid model is that of government- (or central-bank) assisted sales, wherein there is some forbearance in the form of creditor or asset guarantees in order to facilitate a purchase. Many transactions by the FDIC, especially in the midst of a crisis, resemble this hybrid model. Bear Stearns's resolution in March 2008 is another leading example. As such, almost all of its properties in terms of efficiency are also hybrid between the extremes of forbearance and receivership.
 12. See, for example, Adler (1993) and Merton (1990).

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