Regulating Wall Street: The Dodd–Frank Act

Matthew Richardson

In this article, I review some of the main findings described in *Regulating Wall Street: The Dodd–Frank Act and the New Architecture of Global Finance*, which I co-edited.[1] As such, this article is based on the work of 40 or so faculty members and PhD students at New York University's Stern School of Business (NYU Stern); I especially draw on the work in the volume of my co-editors, Viral V. Acharya, Thomas Cooley, and Ingo Walter. Moreover, in this article, where appropriate, I also mention and describe some of the updates to the implementation of the Dodd–Frank Wall Street Reform and Consumer Protection Act being performed by the various government agencies since passage of the act.

Because the financial crisis of 2007–09 started with a "bubble" in housing prices and was global in nature, the first narrative from analysts and academics focused on the low interest rate policy of the Federal Reserve in the years preceding the crisis and the global imbalance of payments due to the growth of emerging economies (see, for example, Taylor, 2009; Caballero and Krishnamurthy, 2009; and Portes, 2009). While these factors may have played a role in the formation of the crisis, it is generally understood that these factors were not the entire story. Rather, when analysts and academics peeled back the financial architecture of the United States and that of the global system, especially in Europe, they found gaping holes and noted that considerable parts of the architecture were broken (see, for example, Acharya and Richardson, 2009).

So, with the financial architecture in need of much improvement, the Dodd–Frank Act attempts to make the appropriate updates and repairs. Indeed, the Dodd–Frank Act reaches far and wide: In particular, the act consists of 849 pages, 16 titles, and 225 new rules across 11 agencies.[2] No one can accuse the act of not being all-encompassing. The fact the act is written this way, however, is not without some justification.

That said, one can also argue it is not well thought out in this regard. In a now infamous exchange between Federal Reserve Chairman Ben Bernanke and JPMorgan Chase CEO Jamie Dimon on June 7, 2011, the latter described a litany of changes to the financial system and asked whether any policymakers or regulators had studied the accumulated costs of such a buildup in financial regulations. Bernanke replied that there were many things wrong with the financial system, so many of these changes were needed; however, he did admit that no such analysis of the aggregate costs had been performed.[3]

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Let me consider just one example of many to illustrate this point. One of the widely accepted fault lines of the financial crisis of 2007–09 was the poor quality of loans, especially nonprime residential mortgages. How does the Dodd–Frank Act deal with this issue? Here lies the problem.

First, the act sets up the Consumer Finance Protection Bureau in title X to deal with misleading products and, more generally, predatory lending practices (see also title XIV, subtitles A and C). Second, in title XIV, subtitle B and title IX, subtitle D, the act imposes particular underwriting standards for residential mortgages and focuses on the residential mortgage market, creating preferential treatment for a new brand of mortgages, notably qualified residential mortgages. Third, in title IX, subtitle D, the act requires firms performing securitization to retain at least 5 percent of the credit risk, the motivation being that these firms had no "skin in the game." Fourth, in title IX, subtitle C, the act increases regulation of the rating agencies—with a focus on their underlying conflicts of interests with issuers of asset-backed securities, as well as on the reduction of regulatory reliance on their ratings—in an attempt to increase the transparency of the credit risk of the underlying pool of loans. Yet, with all of these new provisions, the act does not even address what we at NYU Stern consider to be a primary fault for the poor quality of loans—namely, the mispriced government guarantees in the system that led to price distortions and an excessive buildup of leverage and risky credit.

Of course, all of these provisions are aimed at improving the underlying quality of the loans. While one can make the argument that the underlying benefits overlap and the act's provisions are therefore substitutable (albeit with varying degrees of success), one cannot make the same argument with respect to the unintended costs of these provisions. These costs add up across all these enacted provisions, possibly drowning out the main benefit of improving loan quality. I think this is the point that JPMorgan Chase CEO Dimon was making to Fed Chairman Bernanke.

For example, consider some of the unintended consequences of the aforementioned provisions. First, the act abolishes the use of negative amortization loans, prepayment penalties for residential mortgages, and steering incentives for mortgage brokers (that is, payments to brokers for selling specific types of loans), among other items. The implied reason for these prohibitions is that these are standard tools and strategies used by predatory lenders. In some respects, this reasoning is justifiable. Yet, young urban professionals with substantial incomes in the future (such as lawyers, doctors, etc.) might find a negative amortization loan the most efficient way to buy a significant house; prepayment penalties are quite common elsewhere in the system, such as with commercial mortgages, and allow lenders to share in some of the upside of the underlying properties; and mortgage brokers who know the neighborhood well might be able to put together the best packages for borrowers. There are clear costs to imposing such restrictions.

Second, title XIV of the Dodd–Frank Act applies minimum underwriting standards for mortgages. One of its more important clauses is that "in accordance with regulations prescribed by the Board [of Governors of the Federal Reserve System], no creditor may make a residential mortgage loan unless the creditor makes a reasonable and good faith determination based on verified and documented information that, at the time the loan is consummated, the consumer has a reasonable ability to repay the loan, according to its terms, and all applicable taxes, insurance (including mortgage guarantee insurance), and assessments." While most would agree that higher lending standards would improve the securitization process, it is not clear that a presumption of loan repayment is realistic. Surely, some loans, even mortgages, may be economically viable, even if there is a significant chance of default. Of course, the interest rate underlying the loan should reflect the probability of default. Indeed, this is the basis for the market's pricing of credit risk. Loan originators might be straitjacketed by the direct stipulation of underwriting standards—that is, those precluding the origination of loans that could be made inherently less risky through innovative contractual and monitoring mechanisms or simply different credit terms, such as requiring a higher down payment. In other words, such a provision may restrict worthwhile mortgage credit from being provided to the marketplace.

Third, the guiding principle behind title IX, subtitle D—namely, that securitizers should have skin in the game—appears to be reasonable and is a natural outcome of aligning incentives between investors and the securitizers. That said, to my knowledge, there has been no empirical study of the extent to which securitizers had skin in the game before the crisis. The legislation therefore may be based on a generally false premise, though it may have been true in some specific cases. Forcing all securitizers to have skin in the game for the majority of pooled assets clearly pushes securitization to the larger firms that have better access to funding. Given the problems that emerged in the recent financial crisis, is this a good thing? Moreover, one would suspect that many innovative, custom-made securitizations that would have normally taken place will now fall by the wayside.

And even if a lack of skin in the game was a source for the failure of securitization markets, there needs to be a well-constructed argument for why the private sector cannot solve the issue. I would argue that the best line of reasoning in this respect is the existence of mispriced government guarantees in the financial system, such as deposit insurance, too-big-to-fail subsidies, and government-sponsored enterprise (GSE) debt subsidies. Of course, a more direct attack of the problem would call for either the dismantling or appropriate pricing of government guarantees. This issue is further discussed in the next section of the article.

Fourth, title IX, subtitle C of the Dodd–Frank Act introduces some much-needed reform of the rating agencies. These reforms include the removal of regulatory reliance on ratings; some possible mechanisms to explicitly deal with the conflict of interest between raters and issuers of asset-backed securities; the increased likelihood of litigation damages; and a much-heavier-handed approach to the supervision of rating agencies. The purpose of such reforms is to improve the quality of the ratings for loans and asset-backed securities, which regulators and investors consult. This, in theory, would then lead to higher-quality loan standards overall. In other words, the goal is the same as the other parts of the Dodd–Frank Act. Of course, there are consequences to the act's provisions for rating agencies. For example, with the removal of regulatory reliance on the ratings, the act comes squarely up against capital regulation being put forth in the new international banking supervision accord Basel III.[4] Moreover, this point aside, the Securities Exchange Commission (SEC) suggested new rules on April 11, 2011, to deal with the new provision to remove regulatory reliance on ratings—namely, to put more of an onus on the financial institutions to demonstrate their creditworthiness. But hasn't this been argued as one of the leading problems with Basel II and its application in the recent financial crisis? That is, it has been argued that self-regulation does not work well given the misaligned incentives of the financial sector.

I hope the point comes across that the accumulation of the Dodd–Frank Act's provisions might be overkill in a respective cost–benefit analysis. The question we need to ask is, which of the provisions best improves underwriting standards at the lowest cost to the system?

The rest of this article will focus on three major aspects of the Dodd–Frank Act, which my colleagues and I argue in our *Regulating Wall Street* book are positives. These parts of the act are 1) the measurement and regulation of systemic risk; 2) the resolution of failing large, complex financial institutions (LCFIs); and 3) the regulation of some major and very systemically important markets, in particular over-the-counter (OTC) derivatives markets. That said, after briefly describing the positives, I will focus the majority of my analysis on some missed opportunities for the Dodd–Frank Act to have addressed these important issues, as well as on some of the unintended consequences stemming from the legislation.

Systemic risk

The economic theory of regulation is very clear. Regulate where there is a market failure. It is apparent that a major market failure in this crisis was the emergence of systemic risk. More specifically, systemic risk emerged when aggregate capitalization of the financial sector became low. The intuition for why this is a problem is straightforward. When a financial firm's capital is low, it is difficult for that firm to perform financial services; and when capital is low in the aggregate, it is not possible for other financial firms to step in and address the breach. This breakdown in financial intermediation is the reason that severe consequences occurred in the broader economy. When financial firms therefore ran aground during the crisis period, they contributed to the aggregate shortfall, leading to consequences beyond the individual firms. Individual firms had no incentive to manage the systemic risk.

Therefore, it is a big positive that the Dodd–Frank Act focuses on the market failure of systemic risk. The negative externality associated with such risks implies that private markets cannot efficiently solve the problem, so government intervention is required. Prior to the financial crisis, the U.S. financial system and the regulatory apparatus of the Basel Accords were focused too much on individual institutional risk and not enough on system-wide risk. In other words, regulators now need to focus *not just* on the losses of individual financial institutions, but also on the cost that their failure would impose on the system.

The Dodd–Frank Act now emphasizes macroprudential regulation as an important component of the financial regulatory system. For the first time in U.S. financial regulatory history, the act requires such regulation—that is, 1) to measure and provide tools for measuring systemic risk, 2) to then designate firms and even sectors as those that pose systemic risk, and 3) to provide enhanced regulation of such firms and sectors. While arguably this type of regulation was always in the purview of the central bank and regulators, the recent crisis has shown the importance of writing it into law.

Specifically, the Dodd–Frank Act creates a supporting research organization within the U.S. Department of the Treasury—namely, the Office of Financial Research (OFR)—to measure and provide tools for measuring systemic risk. The Dodd–Frank Act assigns new responsibilities to a new body, the Financial Stability Oversight Council (FSOC), which will use the data provided by the OFR to identify systemically important financial institutions (SIFIs). FSOC and the other relevant agencies are then given the power to provide enhanced regulation of these SIFIs—such as levels of capital and liquidity necessary to withstand major shocks to asset markets. In addition, the act also gives the power for prompt corrective action of SIFIs through the orderly liquidation authority (OLA), which is to be run and modeled by the Federal Deposit Insurance Corporation (FDIC). This is the focus of the next section of the article.

Of course, the devil is in the details, and there are plenty of things in the Dodd–Frank Act that do not coincide with my thinking on macroprudential regulation (or with that of many of my colleagues at NYU Stern). In the Dodd–Frank Act, large banks (that is, those with over $50 billion in assets) are designated as SIFIs. Subsequent to the passage of the Dodd–Frank Act, FSOC published its final rule (and interpretative guidance), detailing the potential criteria for nonbank financial companies to also be SIFIs.[5] These criteria involve a three-stage process. The final FSOC rule states that "the first stage of the process ('Stage 1') is designed to narrow the universe of nonbank financial companies to a smaller set of nonbank financial companies," which is completed "by applying uniform quantitative thresholds that are broadly applicable across the financial sector to a large group of nonbank financial companies." Next, according to the rule, "in the second stage of the process ('Stage 2'), the Council [FSOC] will conduct a comprehensive analysis … of the potential for the nonbank financial companies identified in Stage 1 to pose a threat to U.S. financial stability." And finally, the rule explains that "the Council will send a notice of consideration to each nonbank financial company that will be reviewed in Stage 3," which "will build on the Stage 2 analysis using quantitative and qualitative information collected directly from the nonbank financial company." In addition, the rule states that "based on the analysis performed in Stages 2 and 3, the Council may consider whether to vote to subject a nonbank financial company to a proposed determination [of SIFI status]."[6]

The FSOC rule narrowed the Dodd–Frank Act's criteria to six factors: size, interconnectedness, substitutability, leverage, liquidity risk and maturity mismatch, and existing regulatory scrutiny.[7] Each of these factors would then be applied to the process described previously to come up with a possible SIFI designation. As title I of the Dodd–Frank Act states, once SIFIs have been determined, then FSOC will provide "the establishment and refinement of prudential standards" for them that "are more stringent than those applicable to other nonbank financial companies and bank holding companies that do not present similar risks to the financial stability of the United States." Moreover, these stricter standards may include "(A) risk-based capital requirements; (B) leverage limits; (C) liquidity requirements; (D) resolution plan and credit exposure report requirements; (E) concentration limits; (F) a contingent capital requirement; (G) enhanced public disclosures; (H) short-term debt limits; and (I) overall risk management requirements."

Rather than provide a long list of criticisms of the Dodd–Frank Act's approach to systemic risk, I will mention just a few important ones. The six factors mentioned in the FSOC rule are reasonable descriptions of the failure risk of financial institutions. However, these factors may not be adequate for addressing this point: It is not the individual institution's risk per se, but its contribution to system-wide risk that matters. What we care about is whether a financial firm will falter when other firms are struggling. In other words, systemic risk is about codependence—that is, how much leverage a firm has and how correlated its assets are with those of other institutions in the bad state of nature, as well as whether its failure increases the likelihood of other firms failing. There is no mention in the Dodd–Frank Act or subsequent revisions about the co-movement of a financial firm's asset returns with aggregate factors and tail risk. Of course, this does not preclude FSOC from making codependence an important component of systemic risk measurements in the future, but at present FSOC does not require this.

For example, it is looking increasingly likely that capital regulation will be the blunt instrument to deal with SIFIs. Analysis by a number of us at NYU Stern makes clear that higher capital requirements resulting from systemic risk do not have to coincide with larger financial institutions (see http://vlab.stern.nyu.edu/welcome/risk/). For a variety of reasons, it may well be the case that large financial institutions deserve heightened prudential regulation. But if the criterion is that they need sufficient capital to withstand a crisis, it does not follow that size necessarily is the key factor unless it adversely affects a firm's marginal expected shortfall, that is, a firm's expected losses in a financial crisis.

The fact that this simple point about codependence is missed by both the Dodd–Frank Act and subsequent FSOC rulings is worrying. This problem is exacerbated by the added concern that a collection of small firms, such as money market funds, can have a systemic impact on the financial system and the overall economy, yet may not be detected by FSOC's three-stage evaluation of the six identified factors. This issue is discussed in more detail later.

That said, the financial crisis was primarily caused by the existence of incentives of large, complex financial institutions to take excess risk and leverage. The primary source of this misalignment of incentives was twofold: 1) the fact that systemic-risk costs do not get internalized by individual institutions and 2) the existence of a conflict of interest between firms' shareholders and the taxpayers via mispriced government guarantees of debt (for example, deposit insurance and too-big-to-fail subsidies).

With respect to individual institutions not internalizing systemic risk, the Dodd–Frank Act creates incorrect incentives by charging ex post rather than ex ante for systemic risk (an issue discussed in greater detail in the next section). The act misses the opportunity to fix the negative externality of systemic risk by imposing the standard economic solution of taxing such an externality. In other words, there should be an additional fee or premium that is tied specifically to the systemic risk of LCFIs as their failures impose costs on the rest of the financial sector and the real economy (for example, Acharya, Pedersen, et al., 2010). The issues underlying the development and implementation of such a systemic fee structure are, however, nontrivial. This point aside, in order to avoid these fees, LCFIs would organically become less systemic by choosing less leverage and holding assets that have less aggregate tail risk. It is interesting to note that in the House of Representatives' version of the precursor bill to the Dodd–Frank Act, such a provision was included.

But this is not the approach taken by the Dodd–Frank Act. As mentioned previously, it is looking increasingly likely that the result will be to follow Basel III's lead. With respect to Basel III, there are certainly improvements to Basel II, most notably the addition of a liquidity requirement for financial firms, a simple leverage ratio as a supplementary measure to risk-based capital, and higher capital requirements overall for SIFIs. All of these are included in the Dodd–Frank Act.

Unfortunately, however, Basel III continues the risk weights that are tied to credit ratings both within and across asset classes, as well as the internal ratings approach that many have forcefully argued against as a result of the crisis. Remarkably, the Basel III approach and, therefore, Dodd–Frank's are still focused on the risk of individual banks as opposed to system-wide risks. Indeed, Basel III continues the focus of the previous Basel Accords on risk-weighted capital measures of individual firms as the main indicator.

This approach is a core problem of the new financial regulation. Basel's approach to systemic risk weights seem arbitrary and is not based on objective criteria. Thus, across-the-board higher capital requirements, as are being proposed for SIFIs, may actually exacerbate the problem. Regulation should not be about more capital per se but about more capital for systemically riskier financial firms. One of the problems that emerged in the financial crisis was the preferred capital treatment provided to certain asset-backed securities, such as AAA-rated mortgage-backed securities (MBS). With simply higher capital requirements for SIFIs, it cannot be ruled out that the preference for AAA-rated MBS or other similarly rated securities will be even greater, causing an even bigger buildup in aggregate systemic risk. Granted, the Dodd–Frank Act does provide some mitigating solutions, such as the Volcker rule,[8] that still need to be played out.

Moreover, whatever is being proposed for the banking sector in terms of capital requirements should have comparable regulation for the "shadow" banking system,[9] lest the activities simply be shifted from one part of financial markets to another. The result of such a shift could actually lead to an increase in systemic risk. This issue is not directly covered in the Dodd–Frank Act. But I discuss it in greater detail later in this article.

Finally, the problem of mispriced government guarantees (and resulting moral hazard) gets little coverage in the Dodd–Frank Act other than in the orderly liquidation authority in title II. There is little analysis of what it means for the ability to regulate the financial sector when many financial institutions can finance their activities at below-market rates, which we know can lead to excessive risk. These distortions occurred not only at banks with access to FDIC insurance, but also at Fannie Mae and Freddie Mac (the two major GSEs) and the too-big-to-fail LCFIs. And such distortions remain a big issue. With regard to this point, there is a 2002 study by economists at the Federal Reserve Bank of Richmond that found about 45 percent of all financial liabilities in 1999 fell under the U.S. safety net (Walter and Weinberg, 2002); a similar study performed more recently by the Richmond Fed found that a decade later almost 60 percent of all financial liabilities were covered by the safety net (see Malysheva and Walter, 2010).

It is hard to imagine how systemic risk can be addressed without simultaneously dealing with the mispriced safety net of the U.S. financial sector. Thus, it seems necessary that financial firms be charged fees commensurate with the explicit or implicit government insurance they enjoy on a continuous basis. If one looks at the act itself, it does make some changes to FDIC insurance premiums in title III. For example, FDIC premiums are expanded beyond the insured deposit base to most liabilities, and the upper limit for the ratio of the FDIC-insured fund to total deposits is removed. That said, the GSEs are ignored in the act. For the insurance sector, there's a national office to look into these issues, but the sector is, for the most part, ignored and thus left to rely on small state guarantee funds. Most problematic is the fact that no significant changes to risk-based pricing have been made since the Federal Deposit Insurance Corporation Improvement Act of 1991. Some 20 years later, both the nature of the risks and our understanding of those risks have changed greatly.

Resolving large, complex financial institutions

There is almost universal agreement that there needs to be a solvency regime to deal with LCFIs. One might prefer the receivership approach of the Dodd–Frank Act; changes to the U.S. bankruptcy code, in the form of Chapter 11F for financial institutions (see, for example, Jackson, 2010); or "bail-in" alternatives, which I explain more later (see, for example, Acharya, Adler, et al., 2010). But nearly all agree that the regulatory system must be powerful enough to be able to take prompt corrective action—in other words, it must have enough authority to deal with troubled institutions prior to default. The financial crisis of 2007–09 illustrated the problems that can arise when an LCFI, such as Lehman Brothers, fails without adequate planning and safeguards. At least from 30,000 feet above, the fact that title II of the Dodd–Frank Act puts such liquidation authority in place appears to be a positive. The case I make here, however, is that there remain several important questions about the implementation of this authority, as well as concerns about the systemic risk that can emerge from it.

The Dodd–Frank Act describes the following process. FSOC would have previously made a determination that a financial company (that is, a bank holding company, insured depository institution, nonbank financial company, or insurance company) is systemically risky—that is, it is a SIFI. The FDIC and the Fed (or, for insurance companies, the Federal Insurance Office) must report to the Treasury Secretary that the SIFI is in danger of default and then explain how this default would affect overall financial stability, why normal bankruptcy proceedings are not appropriate, and why a private sector solution is not available. Under these circumstances, the Treasury Secretary seeks appointment of the FDIC as receiver. If the company does not consent to be placed into receivership, then a petition by the Treasury Secretary must be filed at the U.S. District Court for the District of Columbia. The court's only determination is whether the decision was "arbitrary and capricious." This determination must be made within 24 hours of the receipt of petition.

If the Treasury Secretary's petition succeeds in court, the FDIC assumes complete control over the company and its liquidation process. Most important, the FDIC has unilateral authority to review and pay claims. The principle of priority should be followed; however, in contrast to normal bankruptcy proceedings, the FDIC has latitude to deviate from this principle under the Dodd–Frank Act's orderly liquidation authority process. Some examples of the FDIC tools are: 1) advanced planning enhanced by living wills of SIFIs, 2) prompt distribution of proceeds upon the sales of assets, 3) the authorization to provide "going concern" support via a bridge financial company, 4) the authorization to borrow from the Treasury to provide such funding (eliminating the uncertainty of debtor-in-possession funding), and 5) the ability to transfer qualified financial contracts (for example, swaps, repurchase agreements, and other types of securities contracts) to the bridge company via a brief automatic stay.

The last tool highlights the benefits and costs of providing safe harbors for qualified financial contracts. On the one hand, safe harbors allow counterparties to terminate, liquidate, or net out their contracts immediately, potentially causing fire sales, which might propagate systemic risk. On the other hand, automatic stays tie up the contracts and reduce liquidity, making runs on the financial system more likely. The Dodd–Frank Act provides a compromise between these two unfortunate outcomes.

The main problem with the Dodd–Frank Act's approach to the failure of a financial institution, however, mirrors its problems with respect to managing systemic risk described earlier. The orderly liquidation authority of title II provides the regulator legal power to act in the case of a failure of a SIFI, but it does not set up the appropriate regime to deal specifically with banking crises—that is, with multiple SIFI failures occurring simultaneously.

The problem is that the Dodd–Frank Act really puts a heavy reliance on the creation of the OLA to

solve financial crises. Resolution by its nature is a balancing act between two forces that (potentially) work against each other. The first force is that ideally the act should mitigate moral hazard and therefore bring back market discipline. The countervailing force is that the act should also help manage systemic risk when it emerges. So, how well does the Dodd–Frank Act do this? Not that well, from my perspective.

It seems to me that the act is, for the most part, focused on the orderly liquidation of an individual institution and not on the system as a whole. What is unique about a financial firm's failure, however, is its impact on the rest of the financial sector and the broader economy. In other words, losses to SIFI creditors can wipe out the capital of other SIFIs, which in turn can cause the economy to falter. This suggests that we need an ex ante orderly liquidation fund.

To put this into perspective, consider Federal Reserve Chairman Ben Bernanke's oft-cited analogy for why bailouts, however distasteful, are sometimes necessary.[10] Bernanke has described a hypothetical neighbor who smokes in bed and, through his carelessness, starts a fire and begins to burn down his house. You could teach him a lesson by refusing to call the fire department and letting the house burn to the ground. However, you would risk the fire spreading to your home and other homes. So first, the fire has to be put out. Only later should you deal with reform and retribution. This is how I would describe legislation prior to the Dodd–Frank Act.

In terms of Bernanke's analogy, the Dodd–Frank Act's approach would be to not call the fire department and to let the neighbor's house burn down. The act would forbid the fire department from initially coming to the scene. Given the costs of such a policy, the Dodd–Frank Act would police the neighborhood to try and make sure no one smokes, and if a fire results, it would charge the neighbors eventually for costs associated with a fire. I suppose the hope is that these neighbors would therefore also police each other.

Instead, I would argue that (again, in terms of the Chairman's analogy) you should call the fire department, but instead of saving the neighbor's house, the firefighters should stand in protection of your house and those of your other neighbors. If the fire spreads, they are ready to put it out. This is what the role of the orderly liquidation fund should be. And by the way, because a fire department is expensive to keep, I would charge all the smokers in the neighborhood the cost. And over time, the neighborhood would have fewer smokers. This is what I mean by balancing moral hazard mitigation and systemic risk management.

The Dodd–Frank Act clearly does not do this. Here is one example. As mentioned before, the act creates incorrect incentives by charging ex post rather than ex ante for systemic risk. In particular, if firms fail during a crisis and monies cannot be fully recovered from creditors, the surviving SIFIs must make up the difference ex post. This actually increases moral hazard because there is a free-rider problem—prudent firms are asked to pay for the sins of others. It also increases systemic risk in two important ways. First, firms will tend to herd together, so a race to the bottom could ensue. Second, it requires the surviving firms to provide capital at the worst possible time.

Another important issue is the question of how to deal with liquidity. As Tirole (2010) points out, the approach for the prudential regulation of liquidity can be very similar to that for the prudential regulation of capital; that is, this approach can be micro-based, by protecting taxpayers, and macro-based, by managing systemic risk. The Dodd–Frank Act does not apply a macro-based approach to the prudential regulation of liquidity, and it arguably hinders a solution—namely, the Fed's role as a credible lender of last resort (LOLR).

As past crises have shown, in particular during the Panic of 1907, liquidity crises can quickly turn into solvency crises. In fact, in the wake of the Panic of 1907, Congress passed the Aldrich–Vreeland Act, resulting in a final report on the crisis some three years later. This report in turn led Congress to pass the Federal Reserve Act on December 22, 1913, creating the Federal Reserve System. While the Federal Reserve has clearly evolved over time, it still serves its original purpose as a credible lender of last resort, as it did in the most recent financial crisis. The underlying principle of the LOLR is based on Walter Bagehot's (1873) famous work *Lombard Street: A Description of the Money Market*, which suggested that in order to prevent the failure of solvent but illiquid banks, the central bank should lend freely on good collateral at a penalty rate.

While there is substantial disagreement among policymakers, analysts, and academics as to whether the Fed stretched this principle to insolvent firms, there is little disagreement that the LOLR was used widely throughout the crisis. At the very least, as the recent financial crisis has shown, solvency crises can be greatly amplified by liquidity funding problems. From my perspective, it is clear that the architecture of the financial system should be built around this point.

Title XI of the Dodd–Frank Act now changes the Fed's role in dealing with a liquidity crisis. Specifically, title XI restricts the Fed's LOLR ability—established under section 13(3) of the Federal Reserve Act—to deal with nonbanks unless a system-wide crisis emerges.

In particular, emergency lending can no longer be applied to any "individual, partnership, or corporation," but only to "participants in any program or facility with broad-based eligibility." Moreover, according to title XI of the Dodd–Frank Act, "any emergency lending program or facility is for the purpose of providing liquidity to the financial system, and not to aid a failing financial company." Further, these actions have been politicized to the extent that any Fed programs that allow for the efficient distribution of liquidity in a crisis to solvent financial institutions with acceptable collateral would now require approval of the Treasury Secretary.

The most recent financial crisis illustrates the importance of the Fed's role as the LOLR, whether it be for nonbanks—like Bear Stearns, AIG (American International Group), or Lehman Brothers (which was not supported)—or the money market fund sector. The Panic of 1907 taught us something, namely, that the financial system can collapse without a corresponding large aggregate economic shock, like other crises. It is indeed troubling that when the financial system is weak, temporary liquidity problems at a particular firm can now trigger a full-blown crisis because the Fed's LOLR ability has been restricted.

Specifically, the problem is that without an LOLR for "shadow banks" and other nonbank institutions, systemically important institutions will be put through the OLA process, even if it is just for a liquidity event. But of course once this happens, similar institutions will also suffer runs as lenders try to avoid the OLA process, paradoxically triggering regulators to place them into the OLA process. From a relatively minor crisis, such as the Panic of 1907, the system could now face a severe financial crisis and systemic event. This is precisely why the LOLR was created following the Panic of 1907. In the modern world, there may be no functional difference between a bank and some other financial institution, so why restrict the Fed's ability to act?

As a final comment on resolving LCFIs, it is reasonable to question the Dodd–Frank Act's choice of the FDIC receivership approach. To the FDIC's credit, subsequent to the Dodd–Frank Act being passed, the FDIC produced a white paper outlining how it would have used its authority under Dodd–Frank to deal with Lehman Brothers.[11] It is an interesting document because it highlights the tools now available to the FDIC as a result of title II of the Dodd–Frank Act.

That said, there are reasons to question the analysis of the FDIC authors. Their argument is based on several key assumptions, such as 1) market discipline, because Lehman management and staff would no longer believe the firm was too big to fail; 2) advanced liquidation plans, especially in light of Bear Stearns's troubles; 3) the ability to provide sufficient liquidity to operate as a going concern; and 4) an open bidding process to sell assets and operations. A few observations are in order. First, aside from the third point, the FDIC document is arguably too optimistic on these points. For example, the authors assume Barclays could have been persuaded to buy Lehman's derivatives business—even though its value would have been in question. Second, one of the main issues related to Lehman's collapse was not just the rapid unwinding of derivative and swap positions not granted a stay in bankruptcy, but also how this signaled to other LCFIs, in particular the other major investment banks, that these firms would not be bailed out, triggering runs on their liabilities. Third, it would have to be the case that the unintended consequences of Lehman's failure—such as the Reserve Primary Fund (a large money market fund with exposures to Lehman Brothers debt securities) "breaking the buck" and the resulting run on money market funds and the rehypothecation[12] and freezing of hedge fund assets at Lehman's UK prime brokerage unit—could have been identified a priori. Fourth, there is a presumption that international coordination would have taken place that somewhat relies on the false premise of a uniform legal framework across different jurisdictions.

As an alternative to the OLA process, Jackson (2010) has argued for a more standard bankruptcy model with adjustments for financial institutions—the so-called Chapter 11F. The basic notion is that the bankruptcy code has been around in some form for 200 years, so given our lengthy experience with it, there is much more certainty with respect to how it would operate. Jackson concedes that adjustments would need to be developed—such as 1) a prompt corrective trigger possibly by involuntary petition; 2) an "experienced" judiciary court focused on LCFIs; 3) qualified financial contracts being divided into two types—illiquid (subject to the stay) and liquid (exempt); and 4) a role for government through debtor-in-possession financing, albeit subject to rules of strict priority. While this model alone would not solve all the issues mentioned previously, its implementation might be smoother.

In Acharya, Cooley, et al. (2010a), my colleagues and I argue that based on the academic concept of a living will from the corporate finance literature (for example, Adler, 1993), it may be possible to impose discipline on creditors without even relying on bankruptcy. This idea is typically called a "bail-in" and is close in spirit to the concept of contingent capital (which, to the Dodd–Frank Act's credit, is discussed as a possible tool to be used by FSOC for SIFIs). The

idea is to divide a financial firm's capital structure into a hierarchy of priority tranches. In the event of a default on a debt obligation, equity would be eliminated, and the lowest-priority debt tranche would be converted to equity. If this is not sufficient, then the process is repeated until all defaults are cured or the highest tranche is converted to equity. Only at this point would senior debtholders have reason to foreclose on collateral. There are a number of issues surrounding the implementation of a bail-in that would need to be addressed; however, in the purest form of a bail-in, creditors pay for the firm's failure, but the cost of financial distress is avoided.

Shadow banks and regulation by form, not function

As of the summer of 2007, just prior to the start of the financial crisis, the short-term liabilities of the U.S. financial system were approximately $15.3 trillion in size; however, just $4.8 trillion of this amount was insured by the FDIC. Of the rest, $2.7 trillion represented uninsured deposits, $3.1 trillion money market mutual funds, $2.5 trillion broker–dealer repo agreements, $1.2 trillion asset-backed commercial paper (ABCP), $0.6 trillion securities lending, and $0.4 trillion old-fashioned financial institution commercial paper.[13]

The shadow banking system performs functions like banks but takes the form of other financial firms or entities. These financial institutions borrow short term in rollover debt markets, leverage significantly, and lend and invest in longer-term and illiquid assets. The growth of shadow banking over the past 25 years has been extraordinary relative to the growth in traditional bank deposits. The SEC aside, the shadow banking system is, for the most part, unregulated. It is also unprotected from bank-like runs (that is, there are no explicit guarantees provided by the government). Of course, the financial crisis of 2007–09 showed that much of the shadow banking system—investment banks through repos, money market funds, and asset-backed commercial paper conduits in particular—ended up being run on and eventually bailed out. This part of the financial system, considered in whole, was too big to fail.

Does history tell us anything about how to regulate the shadow banking system? Early in the twentieth century, for example, during the aforementioned Panic of 1907 and the various banking panics that occurred in 1930–32 in the Great Depression, uncertainty and lack of information about which financial institutions were insolvent led to system-wide bank runs. In response to these systemic runs, the government created the Federal Reserve with its lender of last resort facility, the FDIC and deposit insurance, and a number of banking and investment acts. Arguably, the most important part of the legislation was that depositors no longer had to run on banks because the government guaranteed the funds. Of course, it is well understood that this safety net creates a moral hazard, that is, an incentive for banks to undertake greater risk than they would without this insurance. Over time, regulators and policymakers therefore set up a number of countervailing barriers: 1) banks would have to pay to be a part of the deposit insurance system, so, at least, on an ex ante basis, regulators took into account the cost of the insurance; 2) the risk-taking activities of banks were ring-fenced to the extent that there was a separation of the commercial and the riskier investment banking activities; and 3) enhanced supervision (generally in the form of capital requirements and prompt corrective action) and winding-down provisions of individual banks were established.

So how does the Dodd–Frank Act address the regulation of the shadow banking system? For the most part, the act is silent on the shadow banking system. This is unfortunate, since the size and nature of the shadow banking system produced obvious systemic risk effects and, at a minimum, amplified the severity of the crisis. Hence, broadly speaking, the Dodd–Frank Act falls into the trap of regulating by form, not function.

This is a problem for two major reasons. First, the experience of the most recent financial crisis showed the importance of capital requirements being consistently set across markets and institutions. In other words, if the risk of the underlying loans is the same, it should not matter how those loans are sliced and diced through securitization in terms of determining the required capital buffer of banking institutions. Second, institutions performing similar tasks (for example, depository institutions *and* money market funds) should be regulated similarly. Without such treatment, regulatory arbitrage is likely to occur at the cost of creating systemic risk. Next, I provide a few examples from the most recent crisis illustrating these points.

First, the exploitation of the capital regulatory rules of the Basel Accords and the U.S. regulatory structure was a major problem contributing to the financial crisis of 2007–09 (for example, Acharya, Cooley, et al., 2010b). While the Dodd–Frank Act plugs some of the loopholes, the overall general approach is unchanged. One striking illustration relates to Fannie Mae and Freddie Mac, the two major GSEs. Starting in the mid-1980s, they held about 7 percent of the market share of the mortgage market. By the time of the crisis, the number had become almost 50 percent, representing $5 trillion of credit risk. How did the

two GSEs become so dominant? If a bank made a portfolio of mortgage loans, the bank was required to hold 4 percent capital. If the same bank took that portfolio of mortgage loans, sold it to Fannie Mae or Freddie Mac, and bought it back as mortgage-backed securities, the bank only had to hold 1.6 percent capital; since Fannie and Freddie were only required to hold 0.45 percent capital on their mortgage guarantees, the financial system as a whole only needed 2.05 percent capital. So for the exact same risks and exact same loans, the financial system could have about twice the leverage (see, for example, Acharya, Richardson, et al., 2011). All that was required was that the GSEs had to be involved and the banks held the securities. Not surprisingly, a significant fraction of the mortgage risk—approximately 40 percent—never left the systemically riskier parts of the financial system. These problems still persist under the Dodd–Frank Act.

Second, the development of a parallel banking sector that used wholesale funding and OTC derivatives to conduct identical banking activities as commercial banks—even though that sector's activities were not subject to the same rules and regulations—is perfectly illustrated by the behavior of the Reserve Primary Fund, the large money market fund that "broke the buck" when Lehman Brothers failed. Kacperczyk and Schnabl (2010), NYU Stern professors, analyze the risk-taking behavior and incentives of money market funds during the crisis. The Reserve Primary Fund was one of the oldest money market funds, and historically, it had been operated as a very safe fund. Going into the summer of 2007, its $15 billion fund yielded spreads of around 7–8 basis points above Treasury securities. Then, all of a sudden, in mid-August 2007, the fund started offering spreads of 20 basis points and its assets more than doubled in value. Before the financial crisis went pandemic with Lehman's collapse in September 2008, the fund's assets had accumulated to over $60 billion and the fund had been offering spreads of 40 basis points. So what was the Reserve Primary Fund doing? It had loaded up on asset-backed commercial paper, raising the share of its holdings in ABCP from essentially zero percent to over 50 percent; it did this by reducing the U.S. government securities and repo exposures of its holdings from 40 percent to 10 percent. Of course, the fund did this by taking a big bet on ABCP. The first major run in the shadow banking system was on ABCP, with yield spreads widening from 10 basis points to 100 basis points after August 7, 2007. [14]

Why is this relevant? The answer lies in the following question: What is the likelihood, either before or after the passage of the Dodd–Frank Act, that if a bank was behaving in this manner, regulators would not intervene? The problem is that shadow banks by definition operate in the "shadows" and are thus not subject to the regulation or capital requirements that traditional banks are. Granted, these shadow banking firms may not have access to the safety net, but the fact they may need it confirms the systemic level of their activities.

That said, proponents of the Dodd–Frank Act will argue that a number of titles in the act are relevant for shadow banking. Title I of the act allows nonbanks—possibly shadow banks—to be designated as SIFIs and therefore fall under the regulatory umbrella. Title VIII (which can be cited as the Payment, Clearing, and Settlement Supervision Act of 2010) can also be interpreted as dealing with some issues related to shadow banking. Title IV calls for registration of hedge funds; title V, for a study of insurance companies; and title IX, subtitle D, for greater transparency of the securitization process (a main vehicle for shadow banks). That said, of the 16 titles in the Dodd–Frank Act, there is no specific title on shadow banking. Analysis of shadow banking and corresponding regulation of these entities, therefore, are left to working groups and task forces at the various regulatory agencies. Without the full support of the Dodd–Frank Act, it remains to be seen what these new rules will look like.

Of course, title VII of the Dodd–Frank Act did bring one of the major and very systemically important markets, OTC derivatives, operating in the "shadows" back into the regulatory fold. From my perspective, we can quibble about whether we like every aspect of how the act treats OTC derivatives markets, but I think the fact that it is now part of the regulatory environment is a net positive.

OTC derivatives account for a significant proportion of overall banking and intermediation activity—for example, notional amounts of OTC derivatives went from $60 trillion in 1998 to almost $600 trillion within just a decade.[15] On the one hand, they enable end-users like corporations, including industrial and financial firms, to hedge their underlying risk exposures in a customized manner. On the other hand, they enable banks and other financial intermediaries—the providers of hedging services to end-users—to earn profits, as they, in turn, hedge the customized OTC products they sell, either by diversifying the risk across different end-users or by shedding the risk to other intermediaries via liquid markets for standardized derivatives. It is clear that there is value to the economy from derivative products, which enable users to hedge and transfer risk by altering the patterns of their cash flows.

The financial crisis of 2007–09, however, exposed two aspects of the OTC derivatives market that deserved reform (see, for example, Acharya, Shachar, and Subrahmanyam, 2010). The first aspect is that banks can use OTC derivatives to tailor their own risk-taking and leverage buildup, since some of these positions are not reflected on their balance sheets, from either a regulatory or statutory disclosure perspective. In other words, regulatory capital requirements had not been suitably adjusted to reflect all aspects of OTC derivative exposures. Consider the following illustration. In AIG's 2007 annual report, published in mid-March 2008, well before the firm was brought down, AIG describes its now infamous $527 billion of credit default swap (CDS) positions by its subsidiary AIG Financial Products Corporation (AIGFP). As stated in the document, "approximately $379 billion … of the $527 billion in notional exposure of AIGFP's super senior credit default swap portfolio as of December 31, 2007, represents derivatives written for financial institutions, principally in Europe, for the purpose of providing them with regulatory capital relief rather than risk mitigation."[16] If financial institutions held AAA-rated securities and bought protection on those securities from AA- or AAA-rated insurance companies, then these institutions would have zero percent capital reflected on their balance sheets for such positions. Such rules possibly explain the huge leverage positions of UBS, ABN AMRO, and Merrill Lynch, among others, prior to the crisis.

The second aspect that deserves attention concerns the opacity of exposures in OTC derivatives. By definition, an OTC derivatives market does not have a central marketplace, where all trades occur. This is in contrast to exchange-traded derivatives, which are both traded on an exchange and cleared through a clearinghouse. Unlike cleared derivatives, where the clearinghouse monitors the risk of the positions of the various participants and imposes margins and other risk-mitigating devices, the risk-monitoring function in OTC markets is left to the individual counterparties. Going into the crisis, neither market participants nor regulators had accurate knowledge of the full range of the exposures and interconnections of the various market participants. This leads to a counterparty risk externality, where each trade's counterparty risk is affected by other trades that are being done by other counterparties, although this information is not visible (see Acharya and Engle, 2009). The systemic risk arising from the collapse of Lehman Brothers is but one example of a counterparty risk externality. The government support provided to AIG during the crisis is another.

The Dodd–Frank Act, in theory, addresses these two problems through enhanced regulation and increased transparency of derivatives markets. In particular, the act calls for 1) central clearing of standardized derivatives, 2) regulation of complex ones that can remain OTC, in particular by imposing capital requirements, 3) transparency of all positions (that is, price/volume information for the public and position-level information for regulators), and 4) the separation of nonstandardized derivative positions (other than those for interest rate, foreign exchange, and single-name credit derivatives) into well-capitalized subsidiaries. As with other parts of the act, the implementation of the regulation is complicated by trying to define commercial hedging transactions (which are exempt) and standardized derivatives. The rules, for the most part, are still being written, so it remains an open question as to how effective the legislation will be.

That said, there are potential unintended consequences of the Dodd–Frank Act's reform of the derivatives market. Note that the act relies heavily on margin requirements as the first line of defense against leverage buildup through derivatives. In particular, a clearinghouse is required to charge margins such that it can withstand the failure of its largest exposure among the various members. Assuming that it is highly unlikely that two single members of a clearinghouse will default in the same day, this would mean the clearinghouse is reasonably well protected most of the time, and yet offers substantial collateral efficiency to its members. The problem, of course, arises during a systemic event when there might be multiple exposure failures. Tremendous amounts of systemic risk are housed within clearinghouses, with potentially catastrophic consequences for the financial system. Scrutiny of the clearinghouse system will be necessary; but if, as it looks likely, there are multiple clearinghouses, then a race to the bottom is possible, as they institute laxer standards to gain more members. Moreover, for derivative positions outside clearinghouses, there may be a clear cost to dealers and noncommercial users in making markets and trading these derivatives. To the extent that derivatives are useful tools to mitigate aggregate risk, they can potentially lower the systemic risk of SIFIs. This risk reduction role can warrant regulatory capital relief. That said, depending on how the margin rules are written under the Dodd–Frank Act, SIFIs might be pushed away from using derivatives.

NOTES

[1]Acharya, Cooley, et al. (2010a).

[2]The entirety of the Dodd–Frank Act (Public Law 111–203) is available at www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf. Excerpts from this source are quoted throughout this article.

[3]A video of the June 7, 2011, exchange is available at http://video.cnbc.com/gallery/?video=3000026289.

[4]For details on Basel Committee on Banking Supervision and the Basel Accords, see www.bis.org/bcbs/about.htm.

[5]FSOC initially issued a report for designating nonbank financial companies as SIFIs in October 2011. The final official document, which was based on that report and from which I quote, was published in the April 11, 2012, *Federal Register*; see Financial Stability Oversight Council (2012).

[6]That is, the nonbank firm can be regulated differently because of its systemic importance. See Financial Stability Oversight Council (2012), pp. 21641–21642, 21646.

[7]Financial Stability Oversight Council (2012), p. 21641.

[8]See http://lexicon.ft.com/Term?term=volcker-rule.

[9]The shadow banking system represents the network of financial firms (for example, hedge funds and insurance companies) that are outside the traditional banking system.

[10]Bernanke (2009).

[11]Federal Deposit Insurance Corporation (2011).

[12]Rehypothecation refers to the practice of an institution lending securities that its clients have pledged as collateral.

[13]Ricks (2010).

[14]The numbers cited here are from the original Kacperczyk and Schnabl (2010) working paper. In a 2011 version (available at http://pages.stern.nyu.edu/~pschnabl/public_html/KacperczykSchnabl2011.pdf), the authors report industry-adjusted numbers.

[15]Author's calculations based on data from various issues of the *BIS Quarterly Review* and Bank for International Settlements' Semiannual Over-The-Counter (OTC) Derivatives Markets Statistics, available at www.bis.org/statistics/derstats.htm.

[16]American International Group Inc. (2008), p. 122.

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