

CHAPTER 9

How Is the System Safer? What More Is Needed?

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The recent severe financial crisis underlined the need for our financial system to operate with sufficient safety margins. Fortunately, very considerable progress has been made in improving safety through a combination of law, regulation, and voluntary private sector responses to the lessons of the crisis.

We will focus in this paper on the improvements in some of the key safety margins, particularly the actions to:

1. Substantially raise bank capital requirements to reduce both the probability of failure and the potential cost of such failures. If a troubled bank's capital falls below the new, higher requirements, the Federal Deposit Insurance Corporation (FDIC) can intervene while there is still substantial shareholder money available to cushion creditors and, ultimately, taxpayers.
2. Create new bank liquidity requirements that should have similar benefits to the capital increases. Liquidity shocks are a major source of the risk of bank failures, so improving a bank's ability to handle such shocks reduces the probability of failure. Further, buying time to react should reduce economic losses that would be caused by the need to quickly secure liquidity even on damaging terms.
3. Raise capital and liquidity levels still further for the most important financial institutions. This provides an incentive for a firm to voluntarily reduce its systemic importance, if that can be done economically, and also widens safety margins to reduce potential taxpayer and societal losses.
4. Reform the legal approaches to resolution of troubled financial institutions so that it becomes feasible to allow even important

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financial firms to fail without severe disruption to the financial system as a whole, while placing the costs of failure on the shareholders and holders of long-term unsecured debt at the holding company.

5. Create mechanisms to provide macroprudential oversight for the financial system. This describes a set of tools to try to manage overall systemic risks, such as by requiring higher capital levels in boom times, when the risk of a bubble developing is greatest.

The rest of this paper will elaborate on these points.

Substantially raising bank capital requirements

The most critical margin of error for a bank is that supplied by its capital. Capital, in its simplest form, represents the portion of the value of a bank's assets that is not legally required to be repaid to anyone and is therefore available to cover losses. The purest and strongest form of capital is therefore common equity, the funds paid in by the original purchasers of a bank's common shares, plus the accumulated profits and losses of the bank. Common shareholders are the owners of the bank and benefit or lose based on the bank's performance rather than on any guaranteed return. Common equity is the strongest form of capital because it: (a) is perpetual, with no automatic right to a future repayment, (b) has no right to a minimum periodic payment, such as a dividend or interest payment, and (c) has the lowest repayment priority of any security in a bankruptcy or other insolvency proceeding.

Capital directly protects depositors, transactional counterparties, other customers, and investors in the bank's debt. It indirectly protects taxpayers by ensuring that someone other than these protected parties bears the loss, without the government having to step in with a rescue package. This margin for error is very valuable to all the other constituents of a bank, particularly because it is entirely flexible. The source of the loss can come from any cause: one does not have to guess in advance what the problem might be and provide specific protection for that eventuality.

There are other securities that also perform capital's critical function of protecting other investors or depositors in the financial instruments of a bank. For example, a perpetual preferred share never needs to be repaid and ranks behind all claimants on the estate of a bankrupt institution, except for common shareholders. If it is non-cumulative, meaning there

is no right to receive in the future any dividends that are skipped because of financial difficulties, then it also does not represent a cash drain on a bank that is in trouble and chooses not to pay its preferred shares. Because they are shares, the holders do not have the legal right to force the company into bankruptcy for nonpayment of dividends. Thus, this security provides almost as much protection to all the other constituents of a bank as common equity does.

There are still other forms of securities that provide a weaker version of capital. For example, cumulative perpetual preferred shares give less protection because they have the right to eventually be paid any dividends that were skipped, but they have all the other protective characteristics. A preferred share with a very long maturity, say thirty years, is much like a perpetual preferred share as long as the maturity date is so far off that it does not affect the behavior of other investors. (If a bond holder will be paid off in five years, he is unlikely to care much whether the preferred has no claim to repayment at all or no claim for thirty years.) Perhaps the weakest form of capital that still can reasonably be considered capital is a subordinated bond. It fails the key tests of capital for a going concern, since there are required payments both at maturity and on interest payment dates, enforceable by the right to push a bank into insolvency.

In terms of avoiding failure, therefore, subordinated debt is much inferior to higher levels of capital, such as equity. However, the existence of such debt can be very important in the event of failure. As we discuss later in this paper, unsecured debt issued by the financial holding company is part of the cushion that protects taxpayers in the event of bankruptcy or when FDIC resolution is invoked.

In retrospect, it is clear that banks and many other financial institutions were generally quite under-capitalized prior to the financial crisis. Capital levels for banks should be set so that there is a very low probability that any losses will spread beyond the common shareholders and other suppliers of capital. Instead, many financial institutions went bankrupt in the financial crisis and many more might have done so had there not been massive government intervention.

Capital levels, and the quality of that capital, are now quite substantially higher than during the boom years. Much of this is the result of market responses. Debt holders, uninsured depositors, customers, and even many investors in common stock are leery of dealing with an under-capitalized financial institution. Capital levels had only sunk so low during the boom because there was a wide perception that economic and financial risks

were also very low. The crisis demonstrated the fallacy of this thinking and it became difficult for banks to compete effectively without improving their capital substantially.

Regulators have pushed capital levels still higher by raising the minimum levels that they insist banks meet. Some of this occurred on an ad hoc basis, but the larger effect comes from longer-term changes in the global agreements on appropriate capital levels and their translation into national law and regulation. In particular, the global agreement known as Basel III requires sharply higher capital, and of better quality, than was allowed before the crisis. (Basel III is the term used for the third version of the Basel Accord on Bank Capital, which builds on the original accord agreed upon twenty-five years ago. The Basel rules are reached by consensus at the Basel Committee on Bank Supervision and are voluntarily implemented in national law and regulation. There are implementation differences of importance, but the standards generally apply in all the most significant banking jurisdictions.)

In the United States, rules based on the Basel III standards will start to apply this year, although the higher requirements are phased in over a few years. In practice, most banks are positioning themselves to be in compliance with the ultimate rules by 2014 or soon thereafter, rather than taking advantage of the transition period.

Regulators in the United States effectively use three different capital standards, requiring capital exceeding the maximum of these three levels: a ratio of capital to risk-weighted assets (RWA); a simple “leverage ratio” of capital to total assets; and the level of capital required under a stress test, which applies only to the largest banks.

The first measure attempts to calculate the level of risk in a bank’s portfolio of loans and investments and to ensure that capital is adequate to cover that risk. RWA is therefore the risk-weighted total amount of assets held by the bank. That is, the total value of each asset is multiplied by a percentage reflecting its risk level and this adjusted amount is added across all assets to produce a total risk-weighted asset figure. The percentage weighting for each category ranges from 0 percent, for extremely safe investments such as cash and US government securities, to 100 percent for riskier classes of assets. In a few cases, the levels exceed 100 percent for certain very risky assets, such as loans in default or imminent danger of default and the riskiest tranches of securitizations. Commitments to lend that are not carried on the balance sheet are converted to an asset amount using weightings that depend on the type of commitment, with those that

are certain to be drawn down receiving 100 percent weightings. These asset-equivalent amounts are then treated as if they were already on the balance sheet, with their effect on total RWA depending on the riskiness of their type of credit.

For example, residential mortgage loans often have a 50 percent risk-weighting, so that a \$1 million mortgage would generate a risk-weighted asset of \$500,000. If a bank were trying to hold capital equal to 10 percent of its RWA, then it would need \$50,000 of capital to cover this mortgage. If, instead of making a loan immediately, the bank made a commitment to lend in the future should the homeowner wish, then the \$1 million commitment might be treated as equivalent to, say, a \$750,000 loan. After applying the 50 percent risk-weighting, this would produce an RWA of \$375,000 and a need for capital of \$37,500.

Those banks that have significant trading books use a different set of rules to determine the capital needed to back those trading positions. These calculations attempt to capture both the overall market risk of different types of securities and the specific credit or other risks that apply to particular securities. Market risks are calculated based on a “value at risk” (VAR) formula that looks at the historic distribution of price movements. The idea is to use the level of loss from an unlikely severe market movement, such as one that occurs only 1 percent of the time in the chosen historical period, and then to multiply this by a factor to add further conservatism. The specific techniques and weightings used under the previous version of the Basel Accord (Basel II) are now viewed as unsatisfactory in light of their performance in the recent financial crisis and have been revised to be considerably more conservative.

US bank regulators also require that banks maintain sufficient capital to meet a “leverage ratio” test, which is measured simply as the amount of capital divided by total assets, without regard to risk weighting, averaged over the period. Basel III will add a leverage ratio to global standards as well.

The largest US banks also undergo a stress test in which a particularly adverse economic environment is postulated and banks must use their models, under the guidance of the regulators, to estimate how much capital they would have at the end of the period. These stress tests remain relatively ad hoc, changing considerably from year to year based on changes in the regulators’ perceptions of the economic risks and also evolving over time as regulators attempt to refine and improve their risk measurement approaches.

In recent years, the stress tests have become the binding regulatory capital constraint on the banks subject to the tests, producing higher minimum requirements than the other methods. This may be a natural and useful result in a crisis period or immediately thereafter, but it would be disturbing if it became the long-term norm. The stress tests have many flaws as the binding constraint. They have not been derived by the kind of multiyear global consultative process that has allowed the Basel rules to be refined. They have not even gone through a normal US rule-making process whereby there is adequate public discussion of how they are structured and why. For that matter, even the subjects of the test are not fully aware of how the regulators will decide to adjust the results of the banks' internal models, since the authorities have been afraid that transparency would lead to gaming. Further, the tests are ad hoc and change considerably from year to year.

If there is a decision to use the stress tests as the main regulatory constraint on capital, then there should be much more discussion of the rationale for this and there need to be important changes to fix the flaws.

The Basel III rules are substantially more conservative than the earlier US rules or than the Basel II rules that were adopted by most of the world but had not yet been put into place in the United States. Basel III is more conservative than Basel II in a number of key ways, five in particular, which will be explored below:

- Higher quality of capital
- Higher required capital levels
- Higher levels of risk-weighted assets
- Much higher capital for trading positions
- Leverage ratios

1. Higher quality of capital: The Basel rules allow banks to count a number of instruments beyond common equity as capital, with the strongest being considered part of "tier 1," which counted for most purposes as if it were common equity. Weaker instruments fell into "tier 2" or, for limited purposes, an even weaker bucket called "tier 3." In practice, ratios using tier 1 capital tended to be the most binding on the banks, since it was considerably easier and less expensive to sell tier 2 securities than those that fell into tier 1.

The financial crisis demonstrated that the weakest forms of capital provided little real protection in a severe, widespread crisis. In particular,

subordinated debt proved to be of almost no public policy value because it was not considered feasible to allow so much of the financial system to be restructured in insolvency proceedings. Outside of such circumstances, subordinated debt has no capital features, since it requires fixed payments that can be enforced by putting a firm into bankruptcy. Similarly, the ability to skip or defer payments on preferred shares proved to be of less value than expected, because of the signaling effects of that deferral. It would certainly have sent a negative signal about the specific bank that skipped a payment, but there was also concern that it would then make it much harder for other banks to roll over their preferred securities or to raise capital through issuing new preferred shares, because of the contagion effects.

As a result, the Basel III rules mean that some securities that counted in tier 1 under the previous rules now fall in tier 2 and a number of tier 2 securities no longer count at all, especially since the former tier 3 category has been completely abolished.

Further, Basel III puts constraints on how much of certain items can be counted as capital. In particular, the treatment of intangible assets is tougher. The value of a firm's assets usually includes some assets that have value, but which are neither financial instruments nor physical in nature. Most intangible assets at banks derive from the difference between the amount the bank paid in the past for another bank and the book value of the acquired bank's assets at the time of the purchase. The presumption is that the sales price represents the fair value of the bank, since it was arrived at in an arm's-length negotiation, so intangible assets must exist that were worth the difference between the price and the book value. The biggest banks have grown through many acquisitions, so this type of intangible asset can represent a large figure for them.

Mortgage servicing rights represent another large category of intangible assets for banks. Servicers normally make a profit, often substantial, on the mortgages they handle. As a result, banks have developed a market to buy or sell the right to be the servicer for the remaining life of a portfolio of mortgages.

Intangible assets usually represent genuine value, but they can be difficult to turn into cash in a crisis and they can lose value if a bank's overall franchise deteriorates. Both disadvantages are particularly true of the goodwill taken on in acquisitions, which can be almost impossible to monetize in a crisis. In recognition of these difficulties, Basel III subtracts from the value of common equity the amount of intangible assets, with a few exceptions. Mortgage servicing rights are allowed in an amount up

to 10 percent of tier 1 common equity. If the balance sheet shows more, then the level of assets and the level of common equity are reduced by the overage.

Two other categories of assets are partially excluded. Deferred tax assets whose value is dependent on future profits are also limited to 10 percent of tier 1 common equity, since their value can fall sharply when a bank becomes troubled. Equity investments in nonconsolidated financial institutions face the same limitation for a different reason: there is concern that a problem at, for example, an insurer would end up hitting the capital both of that insurer and of a bank with a significant stake in that firm.

In addition, the aggregation of these three categories is capped at a total of 15 percent of tier 1 common equity. In the case of all three categories, there was a significant minority that wished to exclude these assets completely from tier 1 common equity; the partial exclusion was the result of a compromise.

2. Higher required capital levels: The minimum level of the ratio of capital to risk-weighted assets is higher in absolute terms. Under Basel II, tier 1 capital had to be at least 4 percent of RWA and common equity had to “predominate,” generally interpreted as being at least half the total. Thus, 2 percent of RWA had to be in the form of common equity. Under Basel III, tier 1 capital must be at least 6 percent of RWA and at least 4.5 percent of RWA must be in the form of common equity. Thus, the safest and most expensive form of capital underwent more than a doubling of the minimum requirements. The minimum total of capital remains at 8 percent of RWA, meaning that tier 2 capital can only fill 2 of the 8 percentage points of RWA going forward, whereas Basel II allowed tier 2 and 3 capital to total up to 4 percentage points.

However, this considerably understates the true required increase. Basel III adds a new “capital conservation buffer” of 2.5 percent of RWA, which must be in the form of tier 1 common equity. If a bank does not maintain this full buffer on top of its base minimum, then various actions will be required to conserve capital, including limitations on dividend payments and on bonuses. The constraints are onerous enough, and the signaling effects severe enough, that it is clear that managements will work hard to avoid dipping into this buffer, although it will be there to deal with emergencies. Thus, the minimum level of tier 1 common equity effectively increases from 2 percent of RWA under Basel II to 7 percent under Basel III, more than tripling.

Basel III also calls for national authorities to have the right to impose a counter-cyclical capital buffer of up to 2.5 percent of RWA if they believe that financial conditions are too loose. This is one of the macroprudential measures that are discussed in more detail later. It is *not* expected that this buffer would be employed under most circumstances, but it would be available for use in boom times.

3. Higher levels of risk-weighted assets: As part of designing Basel III, the committee spent considerable effort reviewing the risk weights that were applied to the different types of assets. There was a consensus that many of the risk weights had been too low under Basel II and therefore there were a number of increases to them going forward.

4. Much higher capital for trading positions: Under the previous Basel rules, the amount of capital required for positions held in the trading book was often quite a bit lower than the same position would have required outside that book. This was principally because trading positions were judged based on the volatility of prices, using the assumption that a security held for trading could be liquidated within ten days and that it was possible to estimate how much of a loss that might entail, based on historical data about prices. In retrospect, the historical data generally reflected the recent, much quieter market environment, especially for new types of securities and other financial instruments for which there was relatively little history. In consequence, a series of revisions were made that took effect in advance of Basel III. These are known, perhaps inevitably, as Basel II.5.

Most basically, there are definitional changes that make it harder to take a banking book position and move it to the trading book in order to gain from potentially lower risk-weightings. The risk-weighting calculations were also toughened considerably, with Standard & Poor's reporting a resultant tripling of the average risk-weighting for such assets at eleven European banks that it surveyed in 2012.¹

One important change is to use a "stressed value at risk" (SVAR) measurement in addition to a normal VAR calculation. In essence, VARs calculate a potential loss on a position by assuming that historical patterns of

1. Standard and Poor's, "Basel 2.5 Increases The Squeeze On Investment Banking Returns," last modified May 14, 2012, <http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245334380388>.

trading prices hold and that a low-probability bad outcome occurs, such as a loss on a ten-day holding period that is worse than the losses experienced 99 percent of the time historically. Generally, although not always, banks used the most recent year for their probability calculations. Stressed VARs instead must be calculated using a one-year period of historical market conditions that would have produced a substantial loss, which might be a year from the recent financial crisis. Several other important technical changes were made to try to ensure that market risk was truly fully accounted for.

5. Leverage ratios: Basel III added a feature to Basel II that was already in place in the United States, albeit with different details. Earlier versions of Basel used only one set of capital requirements, those related to the risk-weighted asset calculations. The new version adds a second minimum requirement, based on a leverage ratio, with the binding constraint being whichever calculation produces the higher minimum for a bank. The leverage ratio is calculated by dividing total tier 1 capital by the total assets of the bank, with some adjustments to the assets, particularly the addition of a number of off-balance-sheet exposures.

The intention of the Basel Committee was clearly to continue to use the risk-weighted measures as the normal method for determining the minimum required capital, but with the addition of the leverage constraint to avoid problems that might arise from risk weightings that prove to be too low.

Most developed banking systems did not use a leverage ratio, unlike the United States, and therefore it was decided to provide an extensive transition period. The leverage ratio is to be reported by banks starting in 2015, with its use as a binding regulatory constraint starting in 2018.

The United States already had a leverage ratio, albeit calculated somewhat differently. Banks are required to maintain a 3 percent leverage ratio if they are considered “strong” by supervisors or a 4 percent ratio otherwise. However, for a bank to be considered “well-capitalized,” and therefore benefit from some automatic regulatory flexibility, its ratio must be at least 5 percent.

One of the most important differences between the existing US rules and the Basel III rules as they will be applied in most countries relates to our accounting systems. In the United States, we use generally accepted accounting principles (GAAP) as promulgated by the Financial Accounting Standards Board under the authority of the Securities and Exchange

Commission (SEC). Most nations use International Accounting Standards (IAS) as promulgated by the International Accounting Standards Board (IASB). There are significant differences that are relevant to financial institutions. In particular, derivatives exposures are generally carried on a gross basis under IAS, whereas GAAP carries them on a net basis, where offsetting exposures to a single counterparty are netted if there is a master netting agreement between the firms, as is usually the case. It has been reported that the size of Deutsche Bank's balance sheet is almost twice as big under IAS rules as under GAAP, although it would be rare for the difference to be this pronounced. (Deutsche Bank has very large derivatives exposures that magnify the differential.)

Basel III provides considerable guidance as to how derivatives and similar exposures should be calculated for leverage ratio calculations, although there still remains a residual difference because of the basic national accounting rules and regulatory discretion in the application of the Basel rules. The US federal banking agencies have indicated that, on average, a sampling of banks in this country that are sophisticated enough to be allowed to use the "advanced approaches" option for capital calculations would have a denominator for the Basel III leverage calculations that is 1.43 times the balance sheet size that was previously used in US leverage ratio calculations.

The US regulatory agencies recently proposed for comment the concept of setting a supplementary US leverage ratio for the largest banks at 5 percent of assets for consolidated banking groups and 6 percent for the banking entities within those groups. If the 1.43 multiple holds true, this would imply leverage ratios of 7.15 percent and 8.52 percent under the old US calculations. The new rules would take effect at the beginning of 2018.

An argument that is made for using a leverage ratio calculation is that it is simple and provides a backup safety measure that avoids the possibility of financial institutions gaming the risk-weighted capital ratio. A downside of a simple leverage ratio is that if it becomes the binding constraint on financial institutions, this may encourage them to hold riskier assets that promise higher expected returns. Corporations set target rates of return on equity, arguing they must do this to remain viable in a competitive market environment. If required to hold additional capital, they will look for ways to raise returns in order to meet their return targets, especially if additional risk in the portfolio of assets is not understood by markets.

There is a considerable literature on the question of the costs of bank capital and whether or not the cost of equity (and hence the company's target rate of return) will decline if banks take steps to become safer or rise if banks become riskier. Certainly there are steps banks can take that are visible to shareholders and that reduce risk, and these should lower the cost of equity. But it is apparent that in the run-up to the crisis the shareholders of many financial institutions had insufficient sense of the riskiness of the portfolios of these institutions. Taking excessive risk was a major factor in the crisis; leverage ratio regulation should avoid promoting such behavior in the future.

Total effect of changes incorporated in Basel III

It is now possible to get a fair estimate of the total impact of Basel III on minimum capital requirements because large banks have generally begun disclosing their capital ratios under both the old and the new rules.

Figure 9.1 shows the differences in capital requirements for a set of large US bank groups as calculated on a Basel III basis as compared to the Basel II.5 rules. On average, the stricter Basel III rules reduce the reported tier 1 common equity ratio by 2.4 points.² The full difference between the earlier US rules and Basel III would be higher, as there were some effects from moving to Basel II.5 from the earlier US rules.

Improvements in bank capital in recent years

The total increase in key capital ratios since the crisis is very striking, clearly showing a large increase in margins for error in the system. Another chapter in this book³ illustrates the magnitude of the capital changes at US banks. Using a consistent Basel I basis, tangible common equity rose from 4.6 percent of risk-weighted assets in the fourth quarter of 2007 to 11.6 percent in the third quarter of 2013, as shown in Figure 9.2 .

2. These figures are taken from 10-Q statements filed with the SEC for the third quarter of 2013, the latest figures available. The purpose here is to show how changes in the Basel guidelines have affected the capital ratios for the large banks. We recognize that there are alternative ways of calculating capital ratios. For example, Thomas Hoening posts comparative measures on his web site, www.fdic.gov/about/learn/board/hoenig/capitalizationratios2q13.pdf.

3. See chapter 12 of this volume: Steve Strongin, "Too Big to Fail from an Economic Perspective."

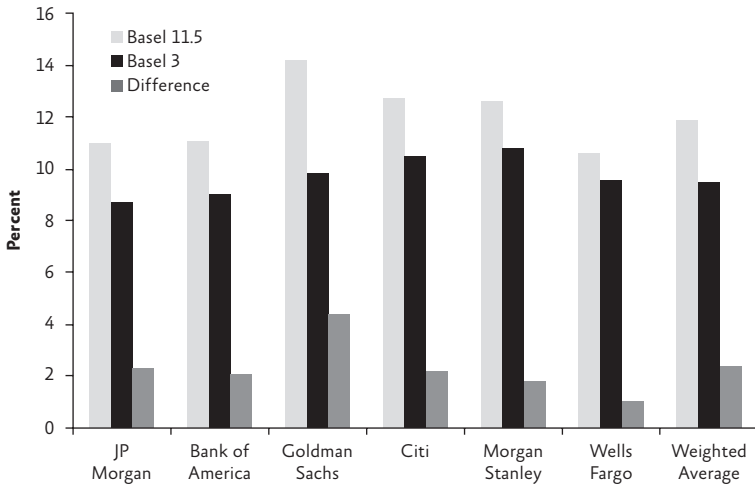


FIGURE 9.1 Common Equity Tier 1 Capital Ratio as of September 30, 2013

Note: Weighted Average based on risk-weighted assets under Basel II.5 standards.

Source: SEC filings

Creation of new bank liquidity requirements

Capital is arguably the most important safety buffer, since it provides the resources to recover from substantial losses of any nature and also gives those dealing with the bank confidence in its safety. However, the proximate cause of a bank's demise is usually a liquidity problem that makes it impossible to survive a classic "bank run" or a modern equivalent, such as an inability to access the debt markets for new funding. It is entirely possible for the economic value of a bank's assets to be more than sufficient to cover all of its claims and yet for that bank to go bust because its assets are illiquid and its liabilities have short-term maturities.

In fact, a primary reason for the existence of central banks is to assist with this problem through a "lender-of-last-resort" function. Central banks are intended to halt bank runs against solvent institutions by lending against sound collateral to provide the liquidity necessary to pay out claims in a crisis. This function is not intended to be a bailout of an insolvent bank, nor would such a bank have sufficient truly sound collateral to be able to borrow the necessary funds from the central bank. However, the difficulty of placing a value on the assets offered as collateral means

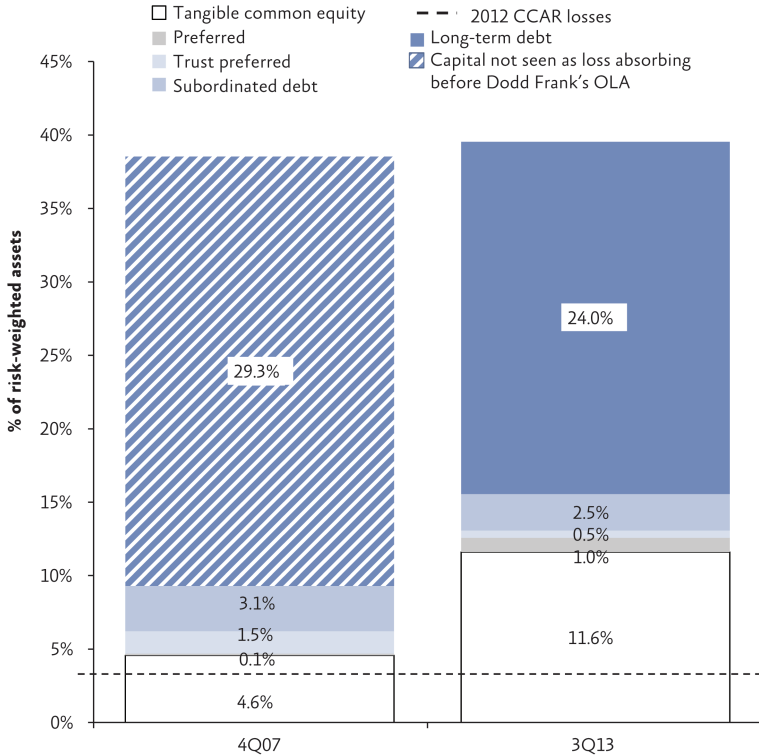


FIGURE 9.2 Loss-absorbency among US G-SIFI banks

Source: Steve Strongin, “Too Big to Fail from an Economic Perspective,” chapter 12 in this volume.

that it can be hard to tell for sure whether a bailout may be occurring. It also raises the risk that a truly solvent bank will not receive the appropriate central bank funding due to a misunderstanding of the actual asset values.

The recent financial crisis underlined the importance of the lender-of-last-resort function as well as the practical and political difficulties in its use on a widespread basis. As a result, regulators and the markets now demand that banks be considerably more liquid than was required before the crisis. One of the major miscalculations made by most of the market players and the regulatory community was a belief, often unstated, that the high levels of market liquidity typical of the preceding decade would

make it possible to sell assets readily without too large a haircut. This proved to be wrong.

In the Basel III rules, regulators have, for the first time, designed global standards for the minimum liquidity levels to be held by banks. Before this, there were a few countries that had quantitative minimum requirements, but the large majority, including the United States, relied on subjective regulatory judgment as to when liquidity levels were so low that a bank should be forced to remedy them. In practice, very little was done to force banks to shore up liquidity.

The Basel III liquidity rules, which will be phased in starting in 2015, rely on two minimum ratios. The first is a “liquidity coverage ratio” which is a kind of stylized stress test to ensure that a bank would have the necessary sources of cash to survive a thirty-day market crisis. It appears that thirty days was chosen as the relevant period because it was viewed as long enough for central banks and governments to take the necessary emergency measures to calm a widespread market crisis of liquidity.

The second is the “net stable funding ratio,” which tries to ensure that a bank’s balance sheet would be more than covered by stable long-term funding sources. The idea is to keep banks from engaging in excessive “maturity transformation” whereby they fund long-term obligations with short-term sources of cash.

Liquidity coverage ratio

The liquidity coverage ratio (LCR) is calculated by dividing the bank’s level of high-quality liquid assets by the projected cash claims over the next thirty days. Basel III specifies what will be considered high-quality liquid assets. Very safe, very liquid assets, including government bonds and cash held at central banks, are considered to be tier 1 assets. Safe and liquid assets of other types, including specified categories of private securities, are considered to be in tier 2 and are subject to haircuts of up to 50 percent on their value to represent the potential loss in a fire sale during a time of crisis. Tier 2 assets may constitute no more than 40 percent of the total.

Basel III also specifies what percentage of assets with an indefinite maturity, such as demand deposits, will be assumed to run off. In practice, retail deposits tend to be “sticky” and not to move, especially when they fall

within the deposit guarantee limits, and therefore little run-off is assumed from them. Corporate deposits are less sticky and are assumed to run off in greater volume. Assumptions are also specified about drawdowns of cash through lines of credit and other instruments where banks have promised to loan money up to certain limits if requested. Crisis times tend to result in many of these lines being drawn down.

Banks will be required to maintain LCRs of 100 percent or more; that is, to have sources of cash more than sufficient to cover their expected outflows over the assumed thirty-day crisis period. However, the Basel Committee has indicated that national regulators should allow the ratio to fall below 100 percent when a bank or the system is in trouble. Absent this guidance, the sources of cash would essentially be tied up and unavailable to handle the very type of crisis they are intended to protect against. That said, banks in normal times will almost certainly target a ratio above 100 percent in order to maintain a safety buffer to protect them from potential regulatory actions. They will also be loath to fall below 100 percent even in a time of crisis, although circumstances may force them to do so. Financial markets will react similarly and may substantially penalize banks that open themselves up to regulatory actions by allowing their ratios to decline to near or below 100 percent.

Net stable funding ratio

The net stable funding ratio (NSFR) is the level of stable sources of funds divided by the level of assets adjusted for their ability to be liquidated. Stable sources of funds consist of tier 1 and tier 2 capital, other preferred shares, liabilities with a maturity of more than one year, and portions of those liabilities with unspecified maturities, such as demand deposits. As with the LCR, the haircuts applied to the latter category depend on the degree of perceived stickiness. The need for stable funding is reduced from the initial level of total assets by the exclusion of portions of the assets that can readily be sold. The haircuts that are applied are based on the relative degree of liquidity and therefore the ease of sale in troubled times and the potential impact of fire sale conditions.

As with the LCR, the NSFR is required to remain above 100 percent, with some flexibility for crisis times. Managements are likely to hold liquidity buffers above these levels and will be pressured by investors to do so, in order to avoid potential regulatory actions.

Liquidity improvements in recent years

A recent study by the Clearing House Association,⁴ an industry trade group, provides some revealing figures on the substantial improvements already made in the industry's liquidity position in response to the lessons of the crisis and in anticipation of future regulation. It found that US commercial banks in aggregate reduced their reliance on wholesale funding by well over one-third from the peak in 2008 to the second quarter of 2012. Wholesale funding fell from about 30 percent of total funding to roughly 18 percent. Further, it found that commercial banks went from being significant net users of short-term funding prior to the crisis to net suppliers in recent years. Specifically, the volume of short-term liabilities minus short-term assets fell from 10 percent of total assets to -6 percent.

Raising capital and liquidity levels further for the most important financial institutions

Regulators in the United States and globally drew another conclusion from the financial crisis, which is that some financial institutions have a level of systemic importance that means they should be held to even greater standards of safety. Such institutions are often referred to as systemically important financial institutions (SIFIs). The higher standards are generally viewed as serving a double purpose. The most straightforward is because they are perceived as likely to do more damage in a crisis than other institutions would. In addition, they are often perceived to benefit from an unfair subsidy in their borrowing costs based on the assumption by creditors that the government would have to rescue such important institutions if a crisis flared up. Since higher safety standards generally come with a cost, the differential in safety margins serves as a direct offset to any market subsidy.

SIFIs are required to carry tier 1 common equity to RWA of up to 3.0 points more than the standard requirements, depending on the degree to which they are determined to be systemically important. Initially, the

4. The Clearing House, "Assessing the Basel III Net Stable Funding Ratio in the Context of Recent Improvements in Longer-Term Bank Liquidity," TCH Research Report, August 2013, <https://www.theclearinghouse.org/~media/Files/Association%20Documents/20130829%20TCH%20Study%20Assessing%20the%20Basel%20III%20Net%20Stable%20Funding%20Ratio%20in%20the%20Context%20of%20Recent%20Improvements%20in%20Bank%20Liquidity.pdf>.

most critical banks, such as J.P. Morgan, are required to carry 2.5 points more of capital, with the 3.0 level available as a deterrent to the further aggregation of systemic importance. Other SIFIs have lower requirements, down to 1.0 point more of capital for the lowest tier.

Resolving large complex financial institutions

Increasing capital requirements and instituting leverage and liquidity rules are the most important steps being taken to make the financial system safer, complementing many other regulatory actions being taken to enhance systemic safety. But the new rules cannot guarantee against the failure of a large institution, an event that could potentially disrupt the entire financial sector and trigger a recession. We are not persuaded that a financial system where a large fraction of the assets are in large institutions is any less safe than a system with only smaller institutions. But nonetheless, it is important that the large institutions that make bad decisions and get into difficulties be allowed to fail, with the owners and managers of such companies bearing the costs rather than taxpayers.

Before Dodd-Frank, the failure resolution strategy applicable to these large banking organizations was bifurcated: the holding company was subject to the bankruptcy code and the failures in bank subsidiaries were handled by the FDIC. Large bank holding companies that also owned securities broker-dealers or insurance companies were subject to further failure resolution complexity with a specialized strategy for the broker-dealer administered by the Securities Investor Protection Corporation or for the insurance company by state insurance regulators. While a number of countries have special resolution regimes or arrangements for banks and other financial institutions (including Brazil, Canada, Hong Kong, Italy, Japan, South Korea, Singapore, Turkey, and the United Kingdom), no country has yet established effective means of resolving a large diverse financial group. In fact, the large financial institutions in many countries are widely viewed as being “too big to fail,” in that their governments would provide whatever support were needed to avoid failure.

Bifurcated failure resolution regimes have worked well for particular institutions and particular failures (the failures of depository institutions of the 1980s and 1990s come to mind). But in most cases where such a regime has been successful, the failure itself was pretty straightforward: the failed depository institution was often the sole or most significant

asset of the holding company, the balance sheet was simple, and the resolution was aided by a bank willing to acquire and take on the assets and liabilities of the failed bank, with limited help from the FDIC and its deposit insurance fund.

However, as the crisis of 2008 revealed, the FDIC's limited tools were only applicable to depository institutions, with no jurisdiction over holding companies or nonbanking subsidiaries. So, when the institution in question is a large, complex bank holding company with many nonbanking subsidiaries, a bifurcated regime has been less effective, especially since failures outside the bank subsidiary itself can cause a run on the bank. Moreover, in periods of systemic risk, the bankruptcy code was the only means of addressing the bank holding company and other nonbank subsidiaries, and the code proved to be inadequate and slow. Additionally, the bankruptcy courts themselves have no special expertise in dealing with the complicated problems of large financial institution failures. While the traditional failure resolution regime can be sufficient for certain institutions during normal circumstances, 2008 proved that such a regime is limited in stressful circumstances, ones involving systemic risk and multifaceted financial institutions.

To create a framework in which large, complex institutions could fail, Congress approved the creation of the Orderly Liquidation Authority (OLA) in Title II of the Dodd-Frank Act. This failure resolution framework imposes losses suffered by financial institutions on their shareholders and creditors and prohibits taxpayer payments for losses. It sets up a process that is intended to provide an orderly, organized system of resolution. The conditions for the use of the Title II option of Dodd-Frank are restricted. It can only be enacted when officials from the Treasury Department, the Federal Reserve, and the FDIC agree that normal failure resolution mechanisms would cause instability. If such a consensus is not created, failure is addressed under pre-Dodd-Frank frameworks: the Federal Deposit Insurance Act handles failures in the banks and the bankruptcy code is used for the bank holding company. The new Title II strategy acknowledges the reality that large, diversified US financial institutions usually consist of a holding company that owns various subsidiaries such as a bank, a broker-dealer, and even an insurance company. The issues that can topple this sort of institution often begin with losses or stress at one or many of the operating subsidiaries.

There has been considerable skepticism about the OLA provision of Dodd-Frank, however, and its creation has been a flash point for those

who wish to repeal Dodd-Frank. A key objection is that it is said to enshrine bailouts of large institutions and worsen the “too-big-to-fail” problem and the associated moral hazard. That concern does have legitimacy. In a financial crisis, bank regulators, the Treasury, and the Federal Reserve are facing great uncertainty and fear a financial meltdown. The pressure is very high to step in and prevent bank failures by injecting taxpayer funds into troubled institutions. In our judgment, however, substantial progress has been made in developing a strategy to resolve large institutions safely and avoid moral hazard, either through the OLA or through a bankruptcy process. Work remains to be done, but the fundamentals are now being put into place.

The single point of entry approach

A new strategy has been developed for the failure resolution of systemically important financial institutions: the single point of entry (SPOE) approach that could provide a means of resolving SIFIs without triggering a panic or relying on taxpayer-funded bailouts. The SPOE approach has been developed largely at the FDIC.

The SPOE approach provides a predictable, pre-announced strategy for the private sector recapitalization of a failing SIFI. The holding company absorbs all of the organization’s losses, including those of its operating subsidiaries. SPOE is designed to impose losses on shareholders and long-term unsecured debt holders of the parent holding company. The holding company would be put into FDIC receivership under the Orderly Liquidation Authority. (It could alternatively be placed into bankruptcy with the FDIC as a party to the proceeding.) The holding company’s entire required cushion of long-term unsecured debt and equity would be available to bear the losses of the group, regardless of the legal entity in which the losses occurred. In order for SPOE to work and for the holding company to be recapitalized by converting its debt to equity, the company would need to have sufficient capital and unsecured long-term debt to absorb the losses. The post-recession increases in required capital and long-term debt levels of large US bank holding companies should be enough to provide this absorption capacity, something that can be verified using the mandated stress tests.

Shareholders of the holding company would absorb the first losses. If the losses were large enough, the value of the holding company shares would be eliminated and the unsecured creditors in the company would

bear further losses. The holding company creditors would have their left-over claims transformed to equity and become new owners of the financial institution (much as in a regular Chapter 11 proceeding). Thus, long-term debt holders of the parent holder would become equity holders of the new bridge company. The management responsible for the financial institutions' losses would be replaced with the caveat that a core of senior staff would be retained, at least for a period, to ensure the continued operations of the subsidiaries. While the holding company would be in receivership, the retail and investment banks, broker-dealer, and other under-stress subsidiaries would continue to operate, meeting the obligations of their customers and avoiding disruption of the economy.

Under this recapitalization strategy, the holding company's assets (including stock of its operating subsidiaries) are down-streamed and transferred to a bridge company established by the FDIC (or a bankruptcy judge). Provided the debt and equity cushion of the original holding company had been set at an adequate level, the bridge company would be solvent; with its liabilities lifted off of it, it would be operational. Assets at the holding company are likely to be a combination of cash and receivables from the various subsidiaries. Cash can arise from issuing long-term unsecured debt at the holding company, which the FDIC is encouraging as a condition for the SPOE strategy. Particularly in times of stress, that cash would be down-streamed from the holding company to the subsidiaries in order to protect their solvency. Receivables would be created back to the holding company—and most holding company assets would be such receivables. In times of stress, the holding company would convert this intercompany debt to equity in the subsidiaries, thereby protecting the solvency of the subsidiaries at the expense of the holders of the holding company debt who would be either wiped out or end up holding equity of questionable value. This cash from the holding company down to the subsidiaries and receivables back is an intercompany loan.

If the bridge holding company or any of the operating subsidiaries were unable to secure enough liquidity to keep their business running smoothly (a likely outcome), the FDIC would use the orderly liquidation fund established under Title II of Dodd-Frank. The OLF allows the FDIC to borrow funds from the Treasury Department to lend fully secured liquidity to failing financial institutions. This provision of liquidity funding will only be available if private market funding is unavailable. The OLF is intended solely to provide fully secured liquidity and is forbidden from

providing capital. The distinction between providing capital to a failing company and providing temporary, secured liquidity may seem overly technical. But in reality the distinction between the two is the distinction between taxpayer-funded bailouts reminiscent of 2008 and acceptable government-funded, fully secured, short-term solutions. It is important to recognize that this temporary funding does not represent a bailout. Instead, this liquidity would be lent at above-normal market rates and only until the market stabilized and the bridge and its subsidiaries would be able to pay back the FDIC in full. This is not a bailout and is, instead, essentially lender-of-last-resort lending. A failed institution needs liquidity funding in order to maintain value and continue operations until it can be sold, recapitalized, or liquidated. Historically, central banks have acted as the lender of last resort by providing liquidity. The provision of liquidity funding under Title II is simply an extension of these same principles, allowing for funding to be available to failing institutions on an expedited basis. Liquidity funding could also be provided to the bridge bank if a bankruptcy proceeding is the vehicle for resolving the failing bank holding company.

The removal of the financial holding company of the troubled institution, together with its debt and equity liabilities, would provide immediate recapitalization of the new bridge holding company. It would still have troubled subsidiaries on its books. But since it has been relieved of substantial liabilities, the new entity is solvent. The transfer could be accomplished over a weekend or even overnight. Moreover, deposits and short-term obligations are almost always issued by the operating subsidiaries, not by holding companies. Therefore, as is the case under SPOE, if only the holding company fails, uninsured depositors or short-term creditors of the operating subsidiaries would have no reason to run because their obligations would still be satisfied. Even creditors of the holding company would benefit from a SPOE recapitalization as this strategy would keep subsidiaries open and therefore preserve the holding company's franchise value. So creditors are likely to suffer lower losses than if the operating subsidiaries had been liquidated. The SPOE approach offers an organized means of allowing shareholders and long-term creditors (who cannot run in a crisis) to absorb losses; allowing operating businesses of the organization to remain open and continue serving the economy; putting new management in place; and avoiding runs and potential financial panics.

Properly designed, the SPOE strategy can stave off a couple of special problems that other recapitalization strategies could trigger, such as the potential problems derivatives pose during times of failure resolutions. Swaps and other derivative instruments typically allow a party to end a derivative contract if the counterparty is failing, or sometimes even if an affiliate of a counterparty defaults. So when a financial institution with a large derivatives business fails, it could easily trigger an entire wave of derivative terminations, a wave that could destabilize the economy. Derivatives are almost exclusively issued by the operating subsidiaries of financial institutions (not by holding companies). Therefore, if only the holding company fails, then there would likely be no defaults on the derivatives issued by the bank or any other of the operating subsidiaries. Additionally, Title II has specific provisions to protect against derivative terminations that are relevant to SPOE-style recapitalizations. The FDIC, under Title II of Dodd-Frank, has clarified that, for example, if a holding company fails and is placed into receivership under Title II but its operating subsidiary has not failed, a derivatives counterparty to the operating subsidiary cannot end a derivatives contract solely because of the failure of the parent company.

Cross-border resolution issues

The SPOE recapitalization strategy does not solve the problems of resolving a global bank with foreign subsidiaries, but it makes that problem much easier to deal with. Many systemically important financial groups operate on a global scale, making an uncoordinated set of national resolution systems extremely problematic. Indeed, the most complex SIFI has 2,435 majority-owned subsidiaries, with 50 percent of them operating abroad. A complicated international corporate structure makes an orderly unwinding extremely difficult as resolution is subject to national legal frameworks.

For decades, there have been discussions on how to best supervise cross-border banking groups. In fact, in 1975 the Basel Committee on Banking Supervision first issued a statement of principles, or concordat, regarding how to regulate banks spanning various territories. The basic principles in the concordat have been further strengthened by statements from the committee specifically addressing cross-border supervision and home-host supervisor relationships. In practice, however, when a financial institution is faltering or exhibiting signs of a potential failure, there is a

risk that foreign regulators will “ring-fence” the assets of that company in a particular country. Indeed, when regulatory authorities are faced with the possible failure of a financial institution within their territory, they tend to prioritize the interests of the creditors and depositors to branches or subsidiaries located within their jurisdiction and of the local taxpayers. The ring-fencing of assets by host jurisdictions can hamper an effective resolution.

The SPOE approach helps a great deal because only the financial holding company located in the United States is put into resolution or bankruptcy. The subsidiaries remain operational so that, for example, the retail banking subsidiary in South America of a US-based institution going through resolution would open its doors on Monday morning and be able to give depositors access to their funds.

One further challenge to the resolution of a US-based financial firm is that certain OLA stabilization mechanisms detailed in Title II of Dodd-Frank, including the one-day stay provision with respect to over-the-counter derivatives and other financial contracts, may not apply beyond the United States. Therefore, counterparties to financial contracts with the foreign subsidiaries of a US firm may have contractual rights and incentives to end their transactions as soon as the US parent holding company begins the resolution process. Regulators are focused on addressing this problem through modifying the contractual cross-default and netting practices.

At this point there is not a broad understanding of the SPOE approach internationally. However, Paul Tucker, then at the Bank of England, voiced support for this approach, offering hope that other foreign regulators will echo that sentiment in the future.

Ensuring an adequate cushion in financial holding companies

Key to the SPOE approach is the availability of sufficient debt at the parent holding company of the failed firm, as mentioned earlier. In light of this, the Federal Reserve (while working with the FDIC) is considering a regulatory requirement that the largest, most complex US banking groups maintain a minimum amount of outstanding long-term unsecured debt at their holding companies, beyond their regulatory capital requirements. This requirement would increase the chances of an orderly resolution under OLA by ensuring that shareholders and long-term debt holders of a SIFI can bear potential losses and capitalize a bridge holding company. Switzerland, the United Kingdom, and the European Commission are also looking into similar requirements. For example, Swiss banks have

introduced contingent convertible bonds (CoCos) and Barclays Bank has issued long-term bonds that automatically suffer 100 percent default if the capital of the bank falls below a certain level. (The Barclays bonds were oversubscribed at an 8 percent coupon.) To help encourage cross-border cooperation, it might be helpful to consider an international agreement on minimum total loss absorbency requirements for globally systemic firms.

Earlier in this chapter we describe the proposals to make institutions safer by increasing capital requirements and other measures. And of course this additional capital is also part of the cushion that would protect taxpayers against taking losses in a resolution process. There is, though, a question about whether adding the additional requirement of a large amount of unsecured debt at the holding company would end up raising the cost of capital, pushing up lending rates and discouraging investment and economic growth. The public debate on this issue has become extremely politicized, with strong populist pressure to clamp down on the banks and make them smaller. The claim is made that the financial sector became too large in the United States and must have its sails trimmed. The financial industry is pushing back, of course, and arguing that it must compete globally and that raising capital and debt requirements too high will stifle growth. We have argued elsewhere that a balance must be struck between fostering lending and growth, on the one hand, and making the system safer, on the other. We do not know the optimal size of the financial sector, but note that bank assets are twice as high in Germany as in the United States in relation to GDP. The United States does not have a particularly large banking sector.

Aligning Titles I and II of Dodd-Frank

Many economists and policymakers strongly support the use of legal bankruptcy proceedings to deal with failing financial institutions. John B. Taylor, with several co-authors, has published extensively on the importance of using bankruptcy and has led a group that is committed to improving the bankruptcy code (creating Chapter 14) to make sure there are no more bailouts.⁵ A key argument is that any government-supervised

5. See Kenneth E. Scott, George P. Schultz, and John B. Taylor, eds., *Ending Government Bailouts as We Know Them* (Stanford, CA: Hoover Institution Press, 2009) and Kenneth E. Scott and John B. Taylor, eds., *Bankruptcy Not Bailout: A Special Chapter 14* (Stanford, CA: Hoover Institution Press, 2012).

resolution regime will inevitably lead to bailouts in which taxpayer funds are at risk. We will not take a stance in this paper on the relative merits of bankruptcy and resolution for large financial institutions nor try to determine the circumstances under which each of the two approaches should be used. We do make a judgment that Titles I and II of Dodd-Frank have not been aligned, creating some confusion and an unnecessary compliance burden for companies.

The Dodd-Frank legislation in Title I addresses the liquidation or reorganization of large institutions under the bankruptcy code. An important provision of this title is that living wills are required as a means of facilitating bankruptcy by providing the court with a blueprint for resolution of the parent company and the disposition of the subsidiaries, either by shutting them down or by selling them to other institutions. The living wills are also intended to reduce moral hazard and increase market efficiency by making clear to creditors their exposure to losses in the event of failure. It is also believed that the process of preparing a living will would encourage institutions to simplify their corporate structures. As a point of reference, the administrators of the Lehman Brothers bankruptcy estimated that at least \$75 billion was wasted due to lack of any preparation for bankruptcy. Finally, greater awareness by the board of directors and more in-depth analysis of the institution's activities are likely to result in greater discipline and risk avoidance.

As Richard Herring has pointed out in *Ending Government Bailouts as We Know Them*, creating a really effective living will under Title I rules in a large complex institution is a very substantial undertaking. At the same time, large institutions must also comply with Title II of Dodd-Frank, which gives a mandate to the FDIC as the regulator responsible for resolving large complex institutions under the terms of an Orderly Liquidation Authority. As things stand at present, FDIC's SPOE approach is completely different from the bankruptcy process described in Title I. Large complex institutions, therefore, currently face dual and conflicting rules for how they must prepare for potential failure. Having these two parallel tracks of potential resolution makes no sense in policy terms and places an unnecessary regulatory burden on the institutions.

As a result, we support a convergence of the Title I and Title II resolution processes for global and/or complex SIFIs. Given the advantages of the SPOE approach, we suggest that institutions be required under Title I

to prepare living wills that describe a resolution plan based on SPOE that can be applied under a modified bankruptcy law or, in extreme cases, by the FDIC Orderly Liquidation Authority.

We have noted the importance of making liquidity available in a resolution process and this remains the case for court-supervised bankruptcy. Debtor-in-possession (DIP) financing is needed if the going-concern value of any bankrupt organization is to be preserved. Often such funds are available from the private sector, but that may not be the case for a large, complex financial institution whose assets are hard to value. Thus, liquidity funding, perhaps on a large scale, must be available under either Title I or Title II resolution. This should and can be done without cost to taxpayers by lending against collateral at a penalty rate. In the event that the collateralized assets turn out to be inadequate, the net cost of the resolution would be recovered by a levy on other financial firms, as described in Dodd-Frank.

Beginning of macroprudential oversight

We believe that another improvement in the safety of the financial system will come from the increasing adoption of a macroprudential approach to the financial system. This involves viewing the safety of the financial system as being more than just the sum of the individual levels of safety of different financial institutions, and instead considering the risks that arise from the interactions of all the different participants in the financial system. For example, liquidity risks were underweighted in earlier regulatory considerations in part because any individual bank that got into trouble would have had a relatively easy time selling off financial instruments in the absence of a larger crisis. However, the effect of many institutions looking to sell at the same time, under conditions of widespread crisis, was to freeze markets and create very large fire sale discounts for those transactions that did occur.

Contagion effects were similarly given too little weight. That is, concerns about one financial institution, such as Lehman Brothers, ended up having widespread impacts on other firms. This was partly out of concern for direct exposures these firms might have to Lehman and partly out of a fear that the problems at Lehman would prove to be replicated in other firms, whether those were poor risk management, excessive exposure to housing markets, or some other problem.

Macroprudential policy refers to using regulatory tools to attempt to lower the level of systemic risk in the financial sector.⁶ It falls between monetary policy, which operates at the level of the entire economy, and traditional safety and soundness regulation of individual financial institutions, now referred to as “microprudential” to distinguish it. There are two broad categories of macroprudential policy. One is “cyclical” or “time-varying,” which refers to efforts to damp down booms and mitigate busts in the financial system. The other is “structural,” meaning that the policies are intended to increase safety by making the financial system less vulnerable at all times.

Many of the regulatory changes coming out of Dodd-Frank and Basel III can be considered, at least in part, to be of a structural macroprudential nature. For example, moving standardized derivatives onto exchanges and increasing collateral requirements for other derivatives are intended to reduce the probability of excessive risk building up in the system, particularly through counterparty exposures. Most of the reforms are also intended to improve the safety of each individual financial institution, which is largely the context in which we have discussed these reforms elsewhere in this chapter.

The innovation, as compared to recent times, is that US authorities are also considering the potential for regulatory moves to dampen potential bubbles as they develop and to increase safety margins in those times in order to reduce the damage if a bubble develops and then, inevitably, bursts. The United States has a long history of macroprudential actions of this nature, going back to at least 1913, as shown by Douglas J. Elliott, Greg Feldberg, and Andreas Lehnert.⁷ However, such activities largely ceased in the 1980s and there were virtually no attempts of this nature to counter the developing bubble that led to the recent financial crisis.

6. Douglas J. Elliott, “An Overview of Macroprudential Policy and Counter-cyclical Capital Requirements,” The Brookings Institution, March 10, 2011, http://www.brookings.edu/~media/research/files/papers/2011/3/11_capital_elliott/0311_capital_elliott.pdf. Douglas J. Elliott, “Choosing among Macroprudential Tools,” The Brookings Institution, June 7, 2011, <http://www.brookings.edu/research/papers/2011/06/07-macroprudential-tools-elliott>. Douglas J. Elliott, Greg Feldberg, and Andreas Lehnert, “The History of Cyclical Macroprudential Policy in the United States,” The Brookings Institution, May 15, 2013, <http://www.brookings.edu/research/papers/2013/05/15-history-cyclical-macroprudential-policy-elliott>.

7. Elliott, Feldberg, and Lehnert, “The History of Cyclical Macroprudential Policy.”

There are three main ways in which the new US macroprudential approach should decrease systemic risk and, indirectly, reduce risk at the individual banks in the system. First, the new consensus on examining systemic risks and not just looking firm by firm for weaknesses should significantly aid in catching and acting upon the buildup of excessive systemic risks. This change in attitude is pervasive and should show up in multiple ways. Second, Dodd-Frank created an Office of Financial Research (OFR) within the Treasury Department with the missions of gathering the data necessary to monitor the financial system as a whole and of watching for systemic risks and reporting on them to Congress and the regulatory agencies. Third, Dodd-Frank set up a new Financial Stability Oversight Council (FSOC) to coordinate actions among the regulators and to promote any necessary steps to deal with the buildup of systemic risks. The OFR is mandated to assist the FSOC in its monitoring actions.

Should the FSOC spot rising systemic risks, the authorities now have a wide range of powers for intervention. Dodd-Frank allows the regulators to order the cessation, restructuring, or reduction of activities by SIFIs that create excessive systemic risk. Regulators also have the power, as they did under earlier legislation, to increase capital requirements to build bigger safety buffers. Symmetrically, they would be able to reduce the requirements to counter the credit contraction triggered by a financial bust, as long as the levels stay at or above certain statutory minimums. Once liquidity rules are in place, there will similarly be an ability to tighten or loosen them in response to changing financial conditions. Regulators can also influence or set minimum levels of collateral to be required for various securities transactions, such as repurchase agreements. Overall, the range of potential macroprudential tools is wide and US authorities have the ability to use most of them, although not to set credit quotas or take some other interventionist measures that are used in certain developing nations such as China.

There is a limit to how effective macroprudential policy can be. We start with technical limitations because we still lack a great deal of historical data that would be useful in comparing future conditions to past ones. We also are still in the process of developing accepted conceptual and quantitative models of the financial system and its cycles. On top of this, there will always be a need for subjective judgments, which can be flawed, and there are certainly political pressures against taking steps to dampen a bubble or to build safety margins against its eventual bursting. Even with these limitations, however, we believe that the new

macroprudential approach and tools should reduce the volatility of financial cycles and better prepare us to deal with the credit busts that follow the booms. Not using such an approach is tantamount to leaving macroprudential policy at the same setting at all times, which the recent financial crisis demonstrates can be very dangerous.

Conclusions

This paper has set out the ways in which the financial system has become safer since the crisis because of higher capital requirements, the development of leverage and liquidity rules, and progress in the effort to resolve large institutions through the SPOE approach. It is important to document these changes because they have not been sufficiently appreciated by policymakers or the public. Better shock absorbers are in place or are being put in place to make the financial system more resilient to the next shock.

There are of course many additional regulatory issues where more progress is needed. There is a perception that the whole regulatory reform process is a mess with regulators fighting with each other, with the financial industry, and with the populist effort to break up the banks. While this perception has some truth, it neglects the progress that has been made. Moreover, an important reason more progress has not been made in rule-making is that it is very hard to formulate some of the rules, particularly those around derivatives trading. Amendments that were added to Dodd-Frank in order to secure enough votes to pass the bill (the Volcker Rule and the Collins, Lincoln, and Franken amendments) have proven very difficult to implement. (Some or all of these amendments were not needed, but we leave that discussion for another time.) Since the time of the conference at which this paper was presented, the regulatory agencies have been able to agree, finally, on the implementation of the Volcker Rule, although the proposed rules specify that recalibration will surely be needed to apply the rules to both high turnover markets and low turnover markets. Metrics will have to be developed and this process will take time to get right. In addition, progress has been made in improving transparency, raising margins, and moving trading onto clearing houses.

One important question we have not tackled here is the trade-off between safety and cost. There are two lines of argument taken by those who favor ignoring the cost of higher capital requirements or other rules. The first argument is that the cost of the crisis was so large that any

improvement in safety is worthwhile. The second is that there actually is no cost to higher capital requirements because of the Modigliani-Miller theorem.⁸ We disagree. There were several contributors to the crisis and the persistent recession that has followed. And we are concerned about the negative effect on growth of reduced lending from banks and other financial institutions if capital levels and other rules are set too tight. Setting the right level for financial regulation is very hard to do. It will be important to monitor the economic impact of the changes in regulations being put into place.

8. There is a spirited debate about the applicability of Modigliani-Miller. See Anat Admati and Martin Hellwig, *The Bankers' New Clothes: What's Wrong with Banking and What to Do about It* (Princeton, NJ: Princeton University Press, 2013) and Harry DeAngelo and René M. Stultz, "Why High Leverage is Optimal for Banks," working paper, Ohio State University, August 2013.