The Promise and Challenges of Bank Capital Reform

BY RONEL ELUL

The failure and bailout of some prominent financial institutions amid the crisis of 2007-09, and the effect these events had on the economy as a whole, have led policymakers to rethink how the global financial system is regulated.[1] These changes, commonly known as the Basel III Accords, will require banks to maintain more capital in reserve, hold higher-quality capital, and assign greater risk weights to certain types of assets.[2]

Why were these changes considered necessary? And how might the new standards help prevent future crises? To understand the rationale behind the changes, it is helpful to examine the history of bank capital regulation and explore some reasons why previous regulatory frameworks may have proved inadequate during the crisis.

HOW AND WHY WE REGULATE BANKS

Why We Need to Regulate Banks. Society may have a particular interest in financial stability — and in particular regulating financial institutions so as to reduce the incidence of their failure — for several reasons. One reason is the key role that banks play in channeling funds to firms throughout the economy. This means that the impact of a bank failure, or of a weak bank, can be greater than that of other kinds of businesses. Victoria Ivashina and David Scharfstein give an example of how a shock to banks can affect other parts of the economy. They show that banks that were members of lending syndicates with Lehman Brothers reduced their lending to a greater extent than other banks following the Lehman bankruptcy in September 2008.[3] Ivashina and Scharfstein reason that these banks expected to shoulder the commitments that Lehman could no longer honor, so they cut back on making other loans. Similarly, Manju Puri, Jorg Rocholl, and Sascha Steffen show that German savings banks that had significant exposure to U.S. subprime mortgages were more likely to reject loan applications.

Another reason why society is concerned with regulating banks is the interconnection among financial institutions; the failure of one can bring down others. This was cited, for example, in the bailout of AIG, whose failure would have led to significant losses at Goldman Sachs and the large French bank Société Générale, among others. Yet another reason that bank failures may be of social concern is that because U.S. bank deposits are guaranteed (through the FDIC), taxpayers may end up bearing the costs of bank failures.[4]

Finally, the regulation of banks may be important simply because they are particularly fragile, as compared with nonfinancial firms. Many financial firms are fragile because they tend

[1] The Federal Reserve Bank of St. Louis has compiled a timeline of the financial crisis at http://timeline.stlouisfed.org/index.cfm?p=timeline.

[2] The Basel Committee on Banking Supervision provides an overview and details on Basel III at http://www.bis.org/bcbs/index.htm.

[3] In a lending syndicate, a group of banks makes a shared commitment to make loans to a particular borrower at the customer's demand for some fixed period of time.

[4] Although the guarantee fund is paid for by an assessment on banks, taxpayers are on the hook to the extent that the funds needed to pay off depositors turn out to be greater than the funds available.

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to fund their assets with debt. Furthermore, this debt often has much shorter maturity than the assets (for example, using demand deposits to fund mortgage lending). Thus, they are subject to the risk of bank runs in which lenders (including depositors) refuse to continue financing the bank. At the same time it may be difficult for the bank to raise funds by selling its assets, and so it is at risk of failure.

Capital Requirements Are an Important Regulatory Tool. One of the most important ways in which banks are regulated is through capital requirements. A financial institution's capital is its net worth: the difference between the values of its assets and liabilities. A bank's typical assets would include loans to businesses and households, and securities such as municipal bonds or mortgage-backed securities, while its liabilities would include deposits, loans from other banks or the central bank, and other types of debt.

But what's the best way to measure net worth? One way would be to consistently use market values for assets and liabilities, a measure that economists call "economic capital." But the capital measure used by regulators departs from this by relying more on accounting book values. One reason for this is that it may be hard to determine market values for assets, a particular problem during financial crises, when markets shut down and the number of trades falls to a trickle. Thus, for regulatory purposes, loans the bank made might be carried at historical cost until they reach a certain level of delinquency, for example 90 days delinquent, at which point they are written off.

A further reason book values are used is that market values fluctuate more often; this might create more uncertainty about when regulators would intervene. This uncertainty might make it more difficult for the bank to raise financing. The drawback of relying on book values, however, is that these tend to be backward-looking and, thus, generally represent a less up-to-date measure of the firm's worth.

Capital regulation usually takes the form of requiring the bank to hold a minimum level of capital, relative to the bank's assets. A typical capital ratio requirement would require the bank's equity financing to be at least a certain fraction of the value of some measure of its assets.[5] Requiring banks to hold capital has several benefits. One is that holding capital helps to absorb unanticipated losses, thereby inspiring confidence that the bank can continue as a going concern. In addition, it protects nonequity liability holders, especially depositors, and deposit insurers (and thus, the taxpaying public) against losses. Finally, it limits risk by restraining asset growth; to lend more, banks need to raise more capital.

For several reasons many economists feel that banks would not hold enough capital were they left to their own devices, and thus they must be regulated. One reason is that equity financing tends to be more expensive than debt financing because debt interest payments are tax deductible.[6] Another important reason is that the management team of a bank does not bear the full cost of the bank's failure; there can be spillovers to other financial institutions and to society more generally.

INTERNATIONAL CAPITAL REGULATION

Why Might We Want Regulatory Harmony? Since the 1970s, there has also been an effort to harmonize international capital regulations through the Basel Committee on Banking Supervision (BCBS).[7] Why would we need international harmonization of capital regulations? One reason is that bank failures in one country can spill over to other countries. One early example is the failure of the German Herstatt Bank in 1974. Herstatt had agreed to exchange Deutsche marks it received from its customers for U.S. dollars, which were to be delivered in New York, but the bank was shut down by German regulators before it could deliver the dollars (since New York markets opened later in the day). This led to turmoil in the interbank markets that banks use to borrow from each other. Another example is Lehman Brothers; one of the biggest creditors in its bankruptcy was the German Deposit Insurance Fund.

Another reason given for why we need international harmonization is the potential for a race-to-the bottom

> The first international agreement on capital regulation was the 1988 Basel Accord, commonly known as Basel I.

[5] I will discuss the various ways in which regulators measure assets for capital regulation below. The most commonly used measure is *risk-weighted assets*, in which the amount of capital required per dollar of an asset depends on the risk of the asset. As discussed below, the Dodd-Frank Act would require banks to maintain a 7 percent equity capital ratio by 2019.

[6] Another reason equity financing is more expensive than debt is that the value of equity is more sensitive to private information that insiders might have about the value of the bank, as discussed by Stewart Myers and Nicholas Majluf.

[7] The BCBS provides a forum for international cooperation on banking supervisory matters, including the harmonization of regulations.

in bank regulation.[8] That is, each national regulator will lower its standards in order to lure business to its jurisdiction. But are there any drawbacks to harmonization?

Giovanni Dell'Ariccia and Robert Marquez develop a model that analyzes the tradeoff between the benefits and costs of international harmonization of regulations. In their model, regulators are interested not only in the profitability of their home banks but also in financial stability. Competition among regulators leads to standards that are too lax because national regulators want to benefit home bank shareholders and don't fully take into account the benefits to other countries' banks of imposing tighter standards on their own banks. Specifically, tighter standards set by regulators on banks domiciled in that country lead to fewer bank failures in other countries in which the bank also does business. On the other hand, there is a cost to coordinating regulation: uniform standards may not fit each country. In Dell'Ariccia and Marquez's model, this is because the public in each country places different weights on financial stability versus the profitability of their home banks. But one can also imagine other salient differences, such as differences across countries in the concentration of the banking sector or in the relative sophistication of nonbank financial markets. So when is it good to harmonize regulations? In their model, a regulatory union is beneficial when countries are not too dissimilar, so that the benefits outweigh the costs.

The First Basel Accord. The first international agreement on capital regulation was the 1988 Basel Accord, commonly known as Basel I. Basel I required banks to hold at least 8 percent capital relative to risk-weighted assets. Asset classes perceived as less risky received lower risk weights. For example, sovereign debt was assigned a zero risk weight (so no capital was required), mortgages were given a 50 percent risk weight, and corporate bonds a 100 percent risk weight. This meant, for example, that the capital a bank was required to hold per dollar of mortgage loans made was only half that for corporate loans. Each country that was a party to Basel I agreed to write its own regulations that implemented these principles, although, in practice, the national authorities had considerable discretion in how to interpret them.

What was the effect of the first Basel Accord? Patricia Jackson and her coauthors survey the literature and find that this accord generally represented a tightening of regulations, since it led banks in the G-10 countries to raise their capital ratios, on average.[9] There may have been some negative consequences to this, however. First, some economists, such as Ben Bernanke (who later became Chairman of the Federal Reserve Board) and Cara Lown, have argued that this led to a credit crunch, or a decline in lending, during the 1990-91 recession in the U.S.

In addition, Basel I may also have encouraged *regulatory arbitrage*, that is, a shift toward risky activities that are not fully captured by the regulations. The reason is that with higher capital requirements, banks may have had an increased motivation to evade regulations in order to conserve capital. Furthermore, setting uniform international standards required more formal rules than had existed in the past, which could make it easier for banks to structure their activities in such a way so as to evade these regulations.

In his study, David Jones gives several examples of how banks could use securitization to reduce their regulatory capital requirements while still effectively retaining all of the risk of the loans. One way they can do this is by selling the most senior, safest parts of the assets to investors (thereby removing them from their balance sheets) while retaining the junior, riskier portions. Basel I's emphasis on credit risk alone may also have encouraged banks to increase their profits by taking on other risks. For example, Linda Allen, Julapa Jagtiani, and Yoram Landskroner find that, after the introduction of the first Basel Accord, some banks took on additional interest rate risk without increasing their capital.[10] In addition, Basel I did not distinguish between different risks *within* categories. Since all corporate loans received a 100 percent risk weight, for example, banks might lend to riskier customers, thereby increasing the risk of distress — a risk partially borne by other banks and taxpayers — without being required to hold more capital of its own. Finally, Basel I considered the credit risk of assets individually, rather than the riskiness of the bank's whole portfolio; thus, a well-diversified portfolio could have the same required capital as a poorly diversified portfolio. Notwithstanding these specific examples, a survey of the literature by

[8] The risk of a "race to the bottom" in banking regulation was cited as a reason that "standards be implemented uniformly and in a timely fashion" by Stephen Cecchetti, head of the monetary and economic department at the Bank for International Settlements, in an interview with the *Wall Street Journal* on October 30, 2012.

[9] The Group of Ten, or G-10, is composed of 11 nations that are members of the International Monetary Fund: Belgium, France, Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, the United States, Canada, and Switzerland.

[10] By interest rate risk we mean holding assets whose values fluctuate more in response to variations in interest rates than do the values of the liabilities used to fund the assets. In particular, a rise in interest rates can lead to a large fall in assets with long maturities. While these assets yield high returns because they are riskier, they would not require more capital.

Linda Allen finds no consensus that banks increased their overall risk in response to Basel I.

Basel II Made Capital Requirements More Sensitive to Risk. The second Basel Accord (Basel II), published in 2004, was designed to address some of the shortcomings of Basel I, and its provisions remain in force in some countries. Basel II makes the standard framework more risk-sensitive than Basel I, especially within asset categories. It does this primarily by relying on credit ratings to calibrate risks. Thus, assets with a BBB rating from Standard & Poor's require less capital than those with a BB rating. Basel II also allows large banks to use their own internally developed risk models, the presumption being that these models more accurately reflect risk, particularly at the portfolio level. Note, however, that countries differed in how they implemented the accord. For example, while European regulators allow banks to estimate their own required capital using internal models, U.S. regulators permit U.S. banks to use their own internal models only for assets held in their trading book, and even then, they are more restricted than banks in other countries.

Shortcomings of Basel II. There are some shortcomings with the Basel II framework, however, some of which became apparent during the financial crisis.

First, the heavy reliance on credit ratings may have created problems. For instance, Basel II treats ratings inconsistently, with sovereign debt often receiving lower capital charges than corporate bonds with the same ratings. For example, a corporate bond with a rating between A– and A+ receives a 50 percent risk weighting, whereas a sovereign bond with the same rating (such as Greek bonds in 2009) would get only a 20 percent risk weighting. This inconsistency may help to explain the heavy holdings of risky sovereign debt by some European banks.

Another shortcoming of the Basel II capital accord is that it underweights "tail risk." That is, it arguably does not assign sufficient capital to protect against extreme events such as a nationwide collapse of the housing market or a financial crisis. Viral Acharya, Thomas Cooley, Matthew Richardson, and Ingo Walter have argued that in the run-up to the financial crisis, this aspect of the Basel II framework encouraged the biggest financial institutions to accumulate large amounts of tail risk without holding a commensurate amount of capital. One example is the most senior tranches of mortgage-backed securities (MBS), which had AAA ratings (and thus very low capital charges) and were often retained by large banks.[11] Such securities were considered safe, except in what was then considered the unlikely event of a large and widespread collapse in the housing market.

Another instance of Basel II underemphasizing tail risk is that, in some circumstances, it allows banks to use their own internal models and, in particular, encourages the use of value-at-risk (VaR), an approach to measuring the risk of loss in a given portfolio of assets.[12] However, in most common implementations of value-at-risk, the behavior in the tails, that is, in the case of extreme events, is not fully considered. That is, value-at-risk measures losses that occur with a large enough probability (for example, 99 percent of the time) but does not consider the potential severity of losses in the other 1 percent. Basel II may encourage tail risk in another way. The regulations have a similar impact across many banks, and thus, they may all align their portfolios in similar ways, thereby further heightening systemic risk.

Another potential problem with Basel II is that it tends to have a procyclical effect on capital charges. That is, capital requirements can go down in booms and rise following a period of financial instability. One reason for this procyclical effect is that the regulations rely on credit ratings, which generally go up in good times and down in bad times. Another factor contributing to procyclicality arises from the use of value-at-risk for setting capital requirements. Asset price volatility is an important input into value-at-risk calculations. Because data from the recent past are generally used to estimate volatility, following a period of financial stability in which asset volatilities are relatively low such as 2001-06, a bank's portfolio is likely to appear less risky and thus require less capital. Conversely, as can be seen from Figure 1, (which plots the level of the S&P 500 and stock market volatility as measured by the VIX index), during bad times prices tend to be more volatile, and so capital requirements increase.[13] As the joint report from the Financial Stability Forum[14] and the BCBS points out, one potentially undesirable consequence of this

[11] A tranche is a slice of a mortgage-backed security that is sold as a separate bond. The senior tranches of private MBS are those that have first claim on cash flows in the case of default and are thus less risky (and so obtain a higher rating). However, as became apparent during the financial crisis, they are by no means risk-free.

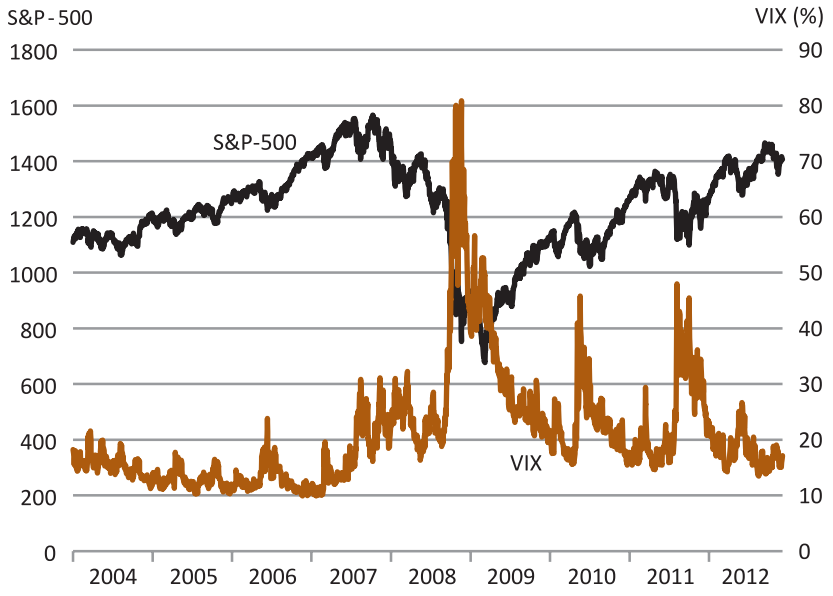
[12] For more on the use of value-at-risk by banks in meeting capital requirements, see the article by Mitchell Berlin and the book by Anthony Saunders.

[13] The VIX is an index disseminated by the Chicago Board Options Exchange that uses information from S&P 500 index options to infer the market's expectation of volatility over the next 30 days.

[14] The Financial Stability Forum was established in 1999 to promote international financial stability through enhanced information exchange and international cooperation in financial market supervision and surveillance. In 2009, it was replaced by the Financial Stability Board, which has a broader membership.

FIGURE 1

The S&P 500 and the VIX Volatility Index



Sources: Standard & Poor's, Chicago Board Options Exchange.

procyclicality is that it tends to encourage more lending during booms and, conversely, requires banks to sell assets when their prices have fallen, thus potentially amplifying these cycles.

Finally, although Basel II expands the range of risks that are considered in determining regulatory capital, some, such as liquidity risk, are still neglected.[15] One example of this risk is highlighted by the collapse of the British lender Northern Rock in September 2007. Hyun Song Shin shows that Northern Rock had obtained an unusually small share of its funding from traditional branch-based retail deposits. On the other hand, it relied heavily on deposits from offshore and Internet-based bank accounts and on "wholesale funding," in which short-term securities are sold to investors. And while traditional retail depositors tend to be slow to withdraw their funds from a bank, this was not the case for the other investors upon whom Northern Rock relied too heavily, and the lender was hurt when these investors fled risky investments at the start of the financial crisis in the summer of 2007 and refused to roll over their deposits at institutions such as Northern Rock.

Similarly, a paper by Viral Acharya, Philipp Schnabl, and Gustavo Suarez shows that Basel II was also subject to regulatory arbitrage in the run-up to the financial crisis because of its inconsistent treatment of credit and liquidity risk. Banks set up asset-backed commercial paper conduits that were "off balance sheet" for regulatory purposes. These conduits purchased medium- to long-term assets (often mortgage-backed securities) and held them until maturity. They were financed by issuing a type of short-term debt called asset-backed commercial paper (ABCP), with maturities of 30 days or less. Even though the assets were formally off the banks' balance sheets, in reality, the banks were exposed to the risk that they would be forced to take over the assets if investors stopped purchasing the ABCP. Banks were exposed to risk because they typically offered "liquidity guarantees" — promises to pay off maturing commercial paper as long as assets were not actually in default — to persuade investors to buy it. From the bank's perspective, this was an attractive deal because these liquidity guarantees carried lower capital charges than would have been the case had the assets been formally held on the bank's balance sheet. However, this structure really left the risk with the issuing bank because the short maturity of the ABCP meant that it would need to be paid off well before the assets were formally in default. Once investors, concerned about the risk of the underlying assets, stopped buying new commercial paper, the banks were forced to take these assets back onto their balance sheets, degrading their capital ratios.

REFORM OF BASEL II

Basel II.5. Recent revisions to the Basel Accords have addressed these concerns. Some of these revisions were proposed in 2009 and are colloquially known as Basel II.5. One area involves increasing capital requirements for certain assets, particularly for "resecuritizations" such as collateralized debt obligations (CDOs).[16]

[15] Liquidity risk refers to the problems of having assets that are difficult to sell and liabilities that have short maturities — for example, deposits. With this asset-liability structure, banks can be caught in a situation in which they must sell assets at fire-sale prices if liability holders such as depositors refuse to roll over their claims.

[16] A CDO is an asset-backed security in which the underlying collateral is itself composed of other debt securities. For example, during the subprime bubble, low-rated, junior mortgage-backed security tranches were sometimes packed into new securities. For more on CDOs and the risk they can carry, see the paper by Joshua Coval, Jakub Jurek, and Erik Stafford.

These were often created from risky tranches of mortgage-backed securities and performed particularly badly once mortgage defaults began to rise. In addition, liquidity guarantees offered by banks as part of securitizations (such as the ABCP discussed by Acharya and his coauthors) now receive higher risk weights and thus require more capital.

These revisions to Basel also introduced a "stressed VaR" calculation, in which banks would need to calculate their potential losses under a "period of significant financial stress."[17] This would address two issues raised above: the procyclicality of capital requirements based on VaR, and the fact that standard VaR implementations tend to underemphasize tail risk. One limitation of stress testing is that it is tempting to use past crises to inform the construction of the stress scenarios (indeed, the Bank for International Settlements explicitly refers to the period of 2007-08), but future crises are likely to be quite different from past ones. This is an intrinsic issue in all systemic risk regulation; while markets continue to evolve, regulators can be trapped in fighting the last crisis.

Basel III. More extensive revisions, known as Basel III, have also been adopted in principle, and individual countries are supposed to adopt rules that would phase them in by the beginning of 2019. In addition to the reforms of international capital regulations undertaken by the Basel committee, there is also a parallel effort under way in the United States. For more details, see *Dodd-Frank and Basel III*.

Strengthened capital requirements. First, capital requirements have been increased in several respects. There is a greater reliance on common equity capital, since equity is a more stable buffer against losses. By contrast, other forms of regulatory capital, which proved to be poor buffers during the financial crisis, now play a more limited role in meeting regulatory capital requirements. For example, two forms of capital used in the past — deferred tax losses and mortgage servicing rights — did not prove to be very good buffers during the financial crisis and are now more restricted.[18] An example of a security that previously was considered as capital but must be phased out under Basel III is trust preferred securities (TruPS). These are hybrid instruments having characteristics of both debt and equity. In particular, like equity, they could count toward capital, but like debt, their dividend payments were tax-deductible for the issuer, which made them attractive to issuing banks. Unfortunately, during the financial crisis it became clear that the debt-like element of these securities meant that they were not able to fully meet their role in stabilizing the bank. For example, TruPS have a fixed term and need to be replaced at maturity (unlike equity). Also, many of these securities had dividends that accumulated if they were not paid; this limited their ability to absorb losses.[19]

In addition, Basel III will also require a *capital conservation buffer*. This buffer consists of an additional 2.5 percent of risk-weighted assets that banks can draw on during times of stress, but doing so will place limits on earnings

Dodd-Frank and Basel III

The Basel framework envisions that each country will adopt the capital regulations at the national level. In the United States, the three large regulators — the Office of the Comptroller of the Currency, the Federal Reserve, and the Federal Deposit Insurance Corporation — adopted rules in July 2013 that detail how many of the revisions to Basel will be implemented.*

In addition, the Dodd-Frank Wall Street Reform and Consumer Protection Act, signed into law on July 21, 2010, also dramatically changes how financial institutions are regulated in the United States. Many of these provisions are quite similar to those formalized in Basel II.5 and Basel III (for example, stress-testing of bank portfolios), and thus little conflict should arise as Basel III is implemented. However, in some cases, Dodd-Frank envisions a very different regulatory approach. One notable example is the use of credit ratings for regulatory purposes: The Basel Accords continue to give these considerable weight, while under Dodd-Frank, regulatory agencies' reliance on credit ratings is drastically curtailed. And indeed, the recently released rules do not incorporate credit ratings. However, some aspects of Basel III are not covered by these rules, and considerable thought will have to be given to their implementation in the U.S.

* For further detail on these rules, see the Federal Reserve Bank of Philadelphia's *Banking Legislation and Policy*, 32:2 (Second Quarter 2012). For an overview of the Dodd-Frank Act, see *Banking Legislation and Policy*, 29:2 (Second Quarter 2010).

[17] The Basel committee gave the period from 2007 to 2008 as one example.

[18] Deferred tax losses were not very valuable when banks were suffering losses. And servicing rights declined in value when the securitized mortgage market shrank dramatically during the crisis.

[19] For further detail on trust preferred securities, see the article by Jennifer Salutric and Joseph Wilcox.

distributions. That is, if losses are large enough that a bank needs to use the buffer to meet its capital requirements, the bank will be restricted in its dividend distributions, stock repurchases, and discretionary executive compensation such as bonuses.[20] Rafael Repullo and Javier Suarez develop a model in which they show that this type of buffer can help mitigate the negative effects resulting from the procyclicality of the Basel II capital requirements.

Basel III will also introduce two capital ratios to supplement the existing one based on risk-weighted assets. The first is a *leverage ratio*, in this case a minimum 3 percent of capital against all assets, without any risk-weighting; the other is the liquidity coverage ratio, which is discussed below.[21] In addition to the leverage ratio adopted in Basel III, in July 2013 U.S. regulators proposed that large institutions be subject to stricter requirements, in particular 5 percent for the largest bank holding companies and 6 percent for their insured depository institutions.

Regulating leverage ratios has several benefits. First, as Tobias Adrian and Hyun Song Shin show, financial institution leverage tends to be very procyclical (rising during booms and falling during busts) and so imposing a maximum leverage ratio can help moderate these cycles. In addition, a simple rule like a leverage ratio is harder to manipulate by shifting portfolios away from activities with high risk weights toward risky activities with low risk weights. That is, the leverage ratio reduces the incentive for regulatory arbitrage. Finally, because it does not rely on complex models to determine the proper risk weight for assets, the leverage ratio may provide better protection against loss even when modelers — at both banks and regulatory agencies — have relatively imprecise knowledge about the true risks, as they inevitably do.[22] However, as Katia D'Hulster points out, the fact that it ignores the risk of assets can also be a weakness; thus, its proper place has typically been viewed as part of a broader framework for capital regulation, rather than as a substitute for risk-sensitive capital requirements.

Systemically important financial institutions (SIFIs). Finally, because of the transmission of shocks from one bank to another during the crisis, capital reform has also focused on increasing capital and supervisory measures for institutions deemed to be "systemically important." Under the Dodd-Frank Wall Street Reform and Consumer Protection Act, U.S. bank holding companies with assets of $50 billion or more will be designated as systemically important. These institutions will be subject to additional regulation; for example, they will be required to develop a "living will" to facilitate their orderly liquidation.[23] In addition, the act tasks the newly established Financial Stability Oversight Council with determining whether nonbanks should be designated as systemically important and subject to Federal Reserve oversight. For example, in June 2013, AIG and GE Capital disclosed that they had been designated as systemically important. The broadening of the SIFI category to include nonbanks is natural, given the key role that nonbank financial institutions — AIG in particular — played in the crisis. In addition to the SIFIs designated by U.S. regulators under the Dodd-Frank Act, the Financial Stability Board has published a list of 29 global systemically important financial institutions (G-SIFIs). Under Basel III, these institutions will be subject to additional capital requirements.

Finally, while I have focused on reforms to international capital regulations, Basel III also adds measures to reduce liquidity risk. See *New Liquidity Requirements Under Basel III*.

[20] Another proposed approach to providing additional capital during times of stress is *contingent capital*. This is debt that automatically converts into equity under certain conditions. For further discussion of contingent capital, see the article by Yaron Leitner.

[21] Some countries, such as the United States and Canada, already use leverage ratios for regulatory capital purposes.

[22] However, the leverage ratio is also subject to manipulation. As documented in the report of the examiner for the Lehman bankruptcy, Lehman Brothers used various accounting maneuvers (such as Repo 105) to reduce the level of debt on its balance sheet.

[23] For further details on how Dodd-Frank changes the regulation of institutions deemed to be systemically important, see the Federal Reserve Bank of Philadelphia's *Banking Legislation and Policy*, 30:4 (Fourth Quarter 2011).

New Liquidity Requirements Under Basel III

We have seen that Northern Rock failed in part because of illiquidity. Basel III adds liquidity requirements. One is the *liquidity coverage ratio*: the requirement that a bank have enough liquid assets to withstand outflows under a 30-day stress scenario. One example would be a significant runoff of wholesale deposits. Wholesale deposits are those obtained through nontraditional demand deposit accounts, such as from Internet accounts. Wholesale deposits tend to be much more mobile and typically evaporate when a bank gets into trouble. Another liquidity requirement added by Basel III is the *net stable funding ratio*, which requires that at least some fraction of long-term assets (such as loans with maturities greater than one year) be funded with long-term financing sources.

CONCLUSION

Capital requirements play an important role in regulating banks' risk-taking and mitigating the consequences of bank failures. Since the 1970s, there has been an effort to harmonize international regulation of banks through the Basel Accords. The financial crisis showed, however, that these regulations still have room for improvement, for example, in how they treat liquidity risk, underweight extreme or "tail" events, and continue to allow scope for regulatory arbitrage. The recent revisions to the Basel Accords are designed to address some of these concerns. Integrating all of these revisions with the Dodd-Frank Act will be another challenge.

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