

Where do we go from here?
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1. Introduction

It is a treat to be able to participate in this capstone session of this conference. I am grateful to the organizers for including me.

The title of the conference asks have the rules of finance changed? I say no, most of what happened can be understood using standard analytic frameworks. But that does not mean that regulation has kept up with innovations in how we think about finance, so there are many reforms that are needed.

To organize my call for reform I will proceed in three steps. First, I want to identify a few of the places where I think regulation has lagged. Next, I announce four principles to guide us as fill in the gaps in the regulatory tool kit. Finally, I will close with some specific suggestions. Most of the specifics come from the Squam Lake Working Group on Financial Regulation has developed. But I do not want to hold the Squam Lake group or any of the other organizations with which I am affiliated accountable for what I am about to say.

2. Back to Basics

One of the peculiarities of this crisis is that the path by which we arrived at it. The crisis came after roughly 25 years of relative macroeconomic stability. The bulk of research within central banks had shifted to studying inflation determination. The workhorse models used by central bankers mostly ignored the financial system – this is especially ironic in the U.S. since the chairman of the Board of Governors was among the most prominent advocates of paying more attention to the role of financial factors in monetary transmission.

But Chairman Bernanke held a minority view and most macro models reflected the view that the Modigliani-Miller view of capital structure was approximately correct. By that I mean that the liability side of a firm's balance sheet was irrelevant. There was no need to figure out financing arrangements for firms (and by implications banks) because financing constraints were

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unimportant. More precisely, the structure of liabilities would not change anything about the cash flows generated by an enterprise or its value. I think the crisis has taught us that this approximation is woefully inadequate.²

In deciding what we missed it is helpful to recall the three assumptions that must be marinated for the Modigliani-Miller (MM) Capital Structure Irrelevance Proposition to prevail. Berk and DeMarzo (2007) describe them as

1. Investors and firms can trade the same set of securities at competitive market prices equal to the present value of their future cash flows;
2. There are no taxes, transactions costs, or issuance costs associated with security trading;
3. A firm's financing decisions do not change the cash flows generated by its investments, nor do they reveal new information about them.

I maintain that many of the unexpected and confusing aspects of the crisis came from underestimating the transactions costs associated with the bankruptcy, and from not appreciating how financing decisions do change cash flows.

Because of the short time I will focus on leverage and the role it played in the crisis. I make this choice because I believe the failure to understand the forces that contributed to a buildup of leverage in the financial system and costs of unwinding the leverage was probably the biggest mistake we (academics, policymakers, practitioners and the media) made.

3. Frictions begat Leverage

There are several ways in which the failure of the MM assumptions contributed to leverage. First, leading theories of banking give a special role to the value of funding banks with short-term obligations. The most recent work in this area, by my colleagues Douglas Diamond and Raghuram Rajan³, explains why having demandable debt serves as a discipline device for banks that allows them undertake more lending than if they were financed differently. Put differently, banks have a good reason for having plenty of short term debt in their capital structure.

Second, banks specialize in activities that are difficult for outside parties to monitor. Unlike an operating company a bank can transform the risks it faces very quickly. Investors that take an equity position in a bank therefore are exposed to much more managerial discretion with how the

² Given the central role of financial factors in the Great Depression, the lost decade in Japan and the financial crisis of the last two years, I predict a paradigm shift in macro so that the financial system will be included standard macro models in the future.

³ See Douglas W. Diamond and Raghuram G. Rajan (2000) for a summary of this thinking.

funds might be used than would be the case for typical operating company whose risks are relatively well understood. The possibility of management not acting purely in the interest of shareholders is another departure from the MM assumptions that seems particularly salient for financial institutions. This force also pushes banks to have more debt and less equity.

Once we understand that banks have good reasons for high leverage several additional implications follow immediately. First, if capital regulation simply seeks to push banks to hold more capital they will likely try to avoid the regulation. The amount of equity in their capital structure is not a matter of indifference. Many of the complicated off-balance sheet entities that were created over the last few years were a natural response to the regulations (that had much lower capital charges for off-balance sheet assets than assets held on the balance sheet).

Second, with high leverage, a loss that might be small relative to the banks' total assets or loans, can still be large relative to the banks' equity. The trigger for the recent financial crisis was losses on low quality mortgages. Many believed that the impact of these losses would be limited because the total eventual losses would be in the hundreds of billions – the kind of loss that routinely occurs for the collection of investors that own U.S. publicly traded firms. Had the losses been spread across a disperse set of investors the impact probably would have been contained. But with substantial holdings residing on the balance sheets of highly levered financial institutions, the impact was much larger (Greenlaw et al (2008)).

Once the banks realized their exposure put much of their capital at risk, they began trying to bring the risk of their assets in line with their remaining equity. In principle, they could have responded by holding onto their assets and simply raising equity. But raising equity is costly, especially when uncertainty of the value assets was high. So the banks began reducing assets. We learned during this crisis that deleveraging through the shedding of assets was not costless.

These costs stem from the fact that bank credit appears to be special. The MM assumptions imply that when bank decides to delever and not to roll over a loan, the borrower simply obtains the funds through another source. Especially after the failure of Lehman Brothers bank credit declined precipitously and economic activity slowed sharply; apparently it was not easy for most borrowers that lost bank credit to make it up immediately from other sources (Ivashina and Scharfstein (2009)).

The Lehman failure and associated chaos in financial markets also has suggested that bankruptcy for a large, complex organization is expensive. So this particular transaction was costly. For some of the other megabanks engulfed in the crisis, a bankruptcy under existing rules appears to be infeasible. For instance, for Citigroup the complicated legal structure of its international subsidiaries would make it impossible to seize the entire institution and be able to secure control of all its' and its' customer assets. Moreover, the agreements governing its derivatives contracts would greatly raise the cost of declaring the institution bankrupt; all contracts of the failed firm must allow its counterparty to recover the market value of the counterparties position. This

means that winning and losing trades are settled at disadvantage prices. Finally, because customers of financial institutions can run at the hint of trouble, for a large organization with many subsidiaries that have many inter-locking liabilities it may not be possible to salvage any value in potentially viable subsidiaries. Thus, recovering potential value in the non-bank parts of a holding company to support a bank subsidiary may be difficult.

In addition to any direct losses in the Lehman failure, another consequence was the collapse of the market for convertible debt (Mitchell and Pulvino (2009)). When Lehman declared bankruptcy, convertible bonds represented a great deal of the collateral that its counterparties received. Any hedges that Lehman had that reduced the risk of these securities, however, were not transferred to the counterparties. This left the counterparties exposed to considerable risk and many chose to immediately sell the bonds. Over the next weeks, trading volume surged and prices crashed. This provides perhaps the best example of a fire sale (defined loosely as a collapse of prices below fundamental value due the inability to absorb a surge in supply).

4. Some Guiding Principles for Regulatory Reform

Based on these observations we can identify several problems with current regulations that could be addressed in reforms. Let me focus on four issues.

First, the standard chapter 11 style bankruptcy rules for handling a failing firm do not work well for banks. Thus, some special rules to guide the bankruptcy process are needed.

Second, anticipating that a failure will be expensive, it is prudent to adjust regulations to reduce those costs (conditional on a failure) or to make failure less likely. Banks which have large amounts of short term debt are more fragile. Banks with lots of illiquid assets will be more expensive to unwind on short notice. Banks that have more counterparties and are more inter-connected in the financial system will be more expensive to resolve. Regulation can take account of all of these observations.

Third, deleveraging is costly, but more so for society if a bank responds to a shock by shrinking its balance sheet. Proposals that lead banks to rebuild equity rather than sell assets should be preferred.

Finally, the deleveraging during a bust in part reflects market requirements for lower leverage. A free-market financial system will be “pro-cyclical” in that more capital is likely required during bad times than during good times. Thus, even absent regulation banks would be less able to lend in recessions than in booms.

5. Some specific suggestions.

These observations, in turn, yield a set of specific suggestions for reform that naturally complement each other. All that I will describe seek to reduce the likelihood of or costs of deleveraging and/or reduce the likelihood or costs of a bank failure.

The first proposal is to amend capital regulation to reflect the externalities mentioned earlier. Capital standards should vary based on proportion of short-term debt, illiquidity of assets and bank size. Yet, even if these changes are implemented, during a downturn the ability to continue to attract funding may require the bank to have higher capital than during normal times (Squam Lake Working Group on Financial Regulation (2009a)).

This market constraint implies that there will be limits to using time-varying capital requirements to battle deleveraging. High regulatory capital requirements during good times might constrain a bank from increasing leverage. But cutting capital requirements during a recession might not lead to additional lending. In order for this to be feasible, the regulatory capital requirement during good times would have to be higher than the market requirements during bad times.

Kashyap and Stein (2009) offer a proposal that might be modified to address this issue. They suggest that the central bank issue “capital forbearance certificates” that could be counted towards regulatory capital. These certificates would be supplied to the market and traded amongst banks. By supplying a large quantity of these certificates, a regulatory capital requirement could be set very high (say 20 percent). Each bank would be prohibited from substituting too many of the certificates for actual equity. The market would not worry about the presence of the certificates and the artificially high regulatory requirement in normal times because the banking system would be massively over-capitalized relative to what debtholders would require to provide financing.

As trouble develops and market capital requirements creep up, the value of the certificates would rise. The price of these certificates would reveal to regulators that the shadow value of capital would be rising. At that point the regulators could decide to lower regulatory requirements or have an objective market price to guide other decisions.

These permits could complement other policies to limit the adverse effects of deleveraging. One element could be some debt that would be converted into equity in certain circumstances. Flannery (2005) proposed that a conversion occur for any bank experiencing distress. Kashyap, Rajan and Stein (2008) suggest that conversion occur only when the aggregate bank system is in trouble (as measured by industry loan losses). The Squam Lake Working Group (2009b) proposes conversion when two conditions are satisfied. First, there must be an industry-wide capital shortage (as declared by a systemic regulator.) Second, an individual bank must be in trouble. While there are some important differences in how these triggers would work, any of these securities would help combat deleveraging.

A third proposal is to amend the regulations to reduce the costs of distressed institutions. Ideally a new, special set of bankruptcy rules would be proposed that would work for all major financial institutions. These changes would need to deal with the problems related to the connections between subsidiaries and bank holding companies. It should also deal with the complications that arise because of the master swap agreements for derivatives. Ideally, the changes would eventually handle the cross-border problems too. But since any international harmonization of bankruptcy rules will take time, it would be preferable to have a flexible set of rules that work as well as possible given existing international constraints.

In addition to reforming the bankruptcy code, the regulators could force banks to spend more time contemplating how a resolution might proceed if it were to become necessary. These living wills would include a full descriptions of a bank's ownership and organizational structure, including inter-linkages, its assets, liabilities, contractual obligations, and the jurisdictions covering all of the above. They would also describe the cross-guarantees tied to different securities, a list of major counterparties, and a process for determining where the firm's collateral is pledged. The bank should be required to sketch a few major distress scenarios, and the likely resolution processes under each scenario. Finally, the bank would be asked to provide a list of potential parties who could take over the institution's contractual obligations at low cost.

The living will would include an estimate of how long it would take to take control of the institution and begin the process of closing it. Banks that require more time could also be required to hold more capital. The extra resolution time presumably would mean taxpayers face more risk if the bank were to fail. Charging the bank in advance for this possibility is therefore appropriate. The capital charge would also give the bank's management an incentive to reduce its complexity. Currently there is little in the regulatory system that pushes back against complexity.

Conclusions

I have tried to make three basic points that we can discuss further during the question and answer period. First, it is appropriate to re-think our approach to regulation from first principles. Second, in my attempt to do so, the problems associated with deleveraging and high resolution costs stand out as not being handled well by existing rules. Any reforms should tackle these problems head on. Finally, there are now many good, specific suggestions for how to get started on these reforms.

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