

Chapter 7*

Capital and Liquidity Requirements

Overview

Systemic risk is increasing as firms become more highly leveraged. Leverage is a double-edged sword. On one hand, it pushes the financial firm closer to its default boundary. If the firm is too-big-to-fail, then, in a crisis, its increase in default creates added risk to the system. On the other hand, with the implicit government guarantee of too-big-to-fail, market discipline imposed by creditors disappears. This gives the financial institution an incentive to shift its risk -- that is, to transfer the riskiness of its underlying assets to creditors (or with the guarantee to taxpayers). The value to risk shifting increases with leverage. Therefore, without adequate capital safeguards, the firm is potentially at risk during adverse economic periods.

It is generally believed that imposing higher capital requirements is quite costly. While this ultimately depends on the definition of capital, the most basic theorem in finance (Modigliani and Miller (1958), shows that the value of the firm's assets will be independent of how those assets are financed -- in other words, choosing investments should be based on whether the return on the project's assets exceeds its cost of capital for those assets. Increasing the return on equity via leverage is just a wash. Given that the systemic costs to leverage are so high, this suggests that higher capital requirements will not be so socially costly. While the Modigliani and Miller model is not reality, it is a useful starting point.

Putting aside the tax benefits of debt, the issue of how costly it is to raise equity depends on whether one believes the agency problems of financial institutions are due primarily to conflicts between shareholders and managers or to conflicts between shareholders and creditors/regulators. If it is indeed the latter, then the relatively higher cost of equity financing compared with debt financing is being driven by the mispriced guarantees accorded to creditors. Fixing this problem (i.e., charging for the guarantees and systemic risk), is tantamount to charging for higher leverage, which will, in turn, put the cost of capital for debt and equity on equal footing.

Systemic risk does not just result from leverage. Both regulated and unregulated institutions have fragile capital structures in that they hold assets with long-term duration or low liquidity, while their liabilities are highly short term in nature. Deposit insurance and central bank lender of last resort support protect pure deposit institutions from large-scale runs. Other institutions, however, are vulnerable, and many of them -- notably Bear Stearns, Lehman Brothers, and several managed funds in the money market and hedge fund arena -- did experience "wholesale" runs during the crisis. Importantly, commercial banks are also subject to localized runs in the wholesale funding and interbank markets, if they are perceived to have exposure to institutions experiencing large-scale runs.

The Crisis

* Working group: Viral Acharya and Matthew Richardson.

The current crisis can be explained in terms of financial institutions' risk shifting and being subject to localized runs in wholesale funding. With respect to risk shifting, these firms exploited loopholes in regulatory capital requirements to take an undercapitalized \$2- to 3-trillion highly leveraged, one-way asymmetric bet on the economy, particularly tied to residential real estate but also commercial real estate and other consumer credit. This feat was performed in four ways: First, they funded portfolios of risky loans via off-balance sheet vehicles (SIVs and conduits). These loans, however, were effectively recourse so the credit risk never left the financial institution. Second, they bought "underpriced" protection on securitized products from monolines and AIG. Third, they made outright purchases of AAA-tranche of non-prime securities, which were treated as having low credit risk and zero liquidity and funding risk. Fourth, in August 2004, investment banks successfully lobbied the SEC to amend the net capital rule of the Securities Exchange Act of 1934, which effectively allowed for leverage to increase. On the funding side, all the major investment banks – Bear Stearns, Lehman Brothers, Merrill Lynch, Morgan Stanley, and Goldman Sachs – faced sudden withdrawals of liabilities during this crisis. The \$3-trillion plus money market sector also faced a run after Lehman Brothers failed. Many point to these runs as the trigger for the crisis going pandemic.

The Current Proposals

Both the House and Senate legislation call for stricter prudential standards for systemically risky institutions. These standards include risk-based capital requirements, leverage limits and liquidity requirements. According to the House bill, the leverage limit "specifies the ratio of tangible equity to total assets at which a financial holding company subject to stricter standards is critically undercapitalized."^{*} Moreover, this limit cannot fall less than 2% of total assets and not more than 65% of the required minimum level of capital under the leverage limit.

While neither risk-based capital nor liquidity requirements are defined in either bill, the House bill states that "the computation of capital requirements shall take into account off-balance sheet activities." The off-balance sheet activities are defined broadly to include letters of credit, repurchase agreements, asset sales with recourse against the seller, and various derivative contracts, among other items. There is no mention of liquidity requirements, but the House bill states that "in order to limit the risks that an overaccumulation of short-term debt could pose to financial holding companies and to the stability of the United States financial system, the Board shall by regulation prescribe a limit on the amount of short-term debt."

The House bill requires that "establishing capital requirements under this Act or other provisions of Federal law for banking institutions, seek to make such requirements countercyclical so that the amount of capital required to be maintained by a banking institution increases in times of economic expansion and may decrease in times of economic contraction, consistent with the safety and soundness of the institution."[†]

In terms of international reforms, there has been a tremendous focus on capital requirements. All the major regulatory institutions -- the Group of Twenty (G20), Bank of England (BoE), European Central Bank (ECB), Financial Services Authority (FSA), Bank for International

^{*} H.R. 4173, Sec. 1104.

[†] H.R. 4173, Sec. 1255.

Settlements (BIS), Financial Stability Board (FSB), International Monetary Fund (IMF), Organization for Economic Cooperation and Development (OECD), and European Commission (EU) -- have proposed detailed capital adequacy requirements and leverage ratios. The common threads include the following: capital requirements should be increased substantially; capital requirements should help mitigate procyclicality; off-balance sheet financing should be incorporated; regulators should introduce a leverage ratio as a supplemental measure; and the definition of capital and leverage should be defined consistently across jurisdictions.

There has also been considerable work done on issues related to liquidity. The G20, FSA, BIS, IMF, and EU have all published statements calling for the creation of liquidity buffers and stress tests to determine these buffers -- in particular, incorporating financial institutions' holdings of liquid assets, the maturity mismatch between assets and liabilities, and the reliability of funding sources.

Evaluation of Current Proposals

In general, the House and Senate bills correctly focus on higher capital and liquidity requirements for systemically important institutions as one way to combat this risk.

Capital Requirements

As we have learned from this crisis, capital requirements can be gamed. So to some extent, the financial system must rely on the power and supervisory expertise of the regulator. That said, it does seem that some significant improvements are possible by closing major capital loopholes, and by relying less on rating agencies.

With respect to the loopholes, a good rule of thumb is that if the credit risk of the loans from off-balance sheet financing is effectively still the bank's risk, then the capital at risk should be treated as such. Moreover, counterparty credit risk exposures to financial firms, including over-the-counter derivatives and securities financing transactions, should also be taken into account. The House legislation directly addresses this concern.

While the international standard imposed through Basel II did expand the notion of risk for financial institutions, in hindsight, the accord chose simplicity over accuracy in determining how capital should be treated. In the United States, there was a heavy reliance on rating agencies to provide the appropriate measure of risk. It seems reasonable to consider not only the credit risk of defaultable assets, but also liquidity, funding, market and specification risks.* While the House legislation does not describe how risk-based capital requirements should be applied, elsewhere in the legislation in a section entitled "Accountability and Transparency in Rating

* Specifically, liquidity risk refers to the ability of the holder to convert the security or asset into cash. Funding risk refers to the mismatch in the maturity of the assets and liabilities. The systematic risk refers to the non-diversifiable portion of the asset. Specification risk, which is rarely discussed, refers to the fact that the measurement error of risk varies across assets. All of these risks should be part of the consideration for risk-based capital, not least because securities faced with these risks tend to offer higher yields. There is no free lunch. This is especially true for market risk and liquidity risk, and the risk-weights should be even greater as the spreads are being very much driven by crisis-like events.

Agencies Act,” the bill calls for the removal of statutory references to credit ratings and requirements of reliance on credit ratings in preference of standards set by the respective regulator.*

In terms of the House bill, countercyclical capital requirements are sensible. As a crisis approaches, and financial firms begin to struggle to meet their regulatory minimum, these firms are forced to sell assets and/or raise capital. Of course, the firms are being forced to take these actions, e.g., fire sales, during the least advantageous times, thus, increasing the risk of a liquidity spiral. There is a drawback, however, of having time-varying capital buffers. The incentive for financial institutions to risk shift is greatest when asset volatility and/or leverage is at its highest. Asset volatility tends to be very countercyclical, i.e., high in a crisis, low in normal times. Thus, if capital requirements are relaxed in a crisis, financial firms will have an even greater incentive to take excessive risk.

Both congressional bills, and many international reforms, call for both risk-based capital requirements and a plain vanilla leverage ratio. To some analysts, this might seem like overkill, but we believe it is a reasonable idea. Risk-based measures are not perfect and can be gamed, so a simple, non-risk-based leverage constraint can serve as a minimum requirement. In fact, in most of the empirical research applied to the crisis, leverage measured this way is a primary input, and it has considerable explanatory power for fingering which firms ran aground.

Liquidity Requirements

Liquidity risk matters. Illiquid securities offer a spread because there are periods when it is difficult to convert these securities into cash equivalents. Particularly important to prudential regulation of financial firms is that these periods are usually associated with financial crises. Liquidity issues are more serious when the financial institution faces significant funding risk, i.e., a mismatch between the maturity of its assets and liabilities. Specifically, there is a tendency for financial institutions to hold long-term assets collateralized using cheap short-term funding. But this exposes the institution to greater risk of a run, if short-term funding is removed during a crisis.

The Congressional bills are mostly silent on what precisely they mean by liquidity requirements, with the only reference being the possible restriction on short-term debt accumulation. The restriction seems somewhat arbitrary. In general, it would be useful to know how much “liquid” assets the financial institution has against short-term funding. One could imagine that the higher the ratio, the less an institution is subject to a liquidity shock, and therefore the less risky it is. The House bill would be better off taking this approach.

A more regulatory approach would be to impose liquidity requirements on financial institutions that are similar in spirit to the way capital requirements are imposed. The basic idea would be to require that a proportion of the short-term funding must be in liquid assets -- that is, ones that can be sold immediately in quantity at current prices. This requirement might also be sufficient to prevent runs. It will, in effect, increase the cost of financial institutions’ taking on carry trades and holding long-term asset-backed securities.

* H.R.4173, Sec. 6009 and 6010.

For example, consider the securitization market. The business model of securitization was developed under the premise of “originate to distribute.” In this crisis, financial firms did not follow this model. Instead, firms held onto these securities and funded these purchases short term, creating a significant mismatch, and making them susceptible to runs. Of course, by imposing liquidity requirements, these trading activities would naturally migrate to the capital market at large (e.g., pension funds, mutual funds, hedge funds, and trading accounts of wealthy individuals) where they arguably belong.

That said, the problem is greatly complicated by the fact that some institutions benefit from a government guarantee of their short-term funding, in the form of deposit insurance and the implicit too-big-to-fail guarantee. If the guarantee is credible, then there is no systemic risk. But the purpose of the guarantee (at least in the case of deposit insurance) is that banks can provide loans to the real sector of the economy without the threat of a run, not so they could load up on illiquid, long-term securities. Of course, once they enter this market, and if their guarantee is mispriced, then their activities will distort other market participants and possibly prices.