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THE ROLE OF CAPITAL AND LEVERAGE IN THE FINANCIAL MARKETS DEBACLE OF 2007–2008

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DURING THIS CURRENT financial crisis, the terms “capital” and “leverage” have figured prominently in discussions about the causes of and the possible solutions to alleviate the crisis. They also provide important tools for understanding some of the causes of bank “runs.”

This Mercatus on Policy clarifies these concepts as they apply to financial institutions and the debacle of 2007–2008 and explains how these concepts should affect the roles that prudential regulators can play in maintaining the safety and soundness of the banking system.

EXPLAINING “CAPITAL” AND “LEVERAGE”

TO EXPLAIN THESE terms, I’ve created a stylized balance sheet of a typical manufacturing corporation, as portrayed in figure 1. This hypothetical firm has assets of \$100, consisting of plant, equipment, inventories, accounts receivable, cash on hand, etc. Its direct obligations to creditors are \$60, consisting of loans owed to banks, any bonds owed to bond investors, accounts payable, etc. **By simple subtraction**, its net worth or owners’ equity—the value of its assets minus the value of its direct obligations—is \$40.

This firm has a leverage ratio—its ratio of assets to net worth—of $2\frac{1}{2}$ to 1. The sense of the leverage ratio can be seen as follows: If the firm’s assets increase by \$10 (to \$110)—because it makes and retains operating profits of \$10, or its assets simply appreciate by \$10—without an increase in its direct obligations, then its net worth also increases by \$10 (to \$50). Thus a 10 percent increase in the value of its assets results in a 25 percent increase in its net worth—a notion of “leverage” that is comparable to the high school physics example of a plank and a fulcrum. Leverage also works in reverse: A 10 percent decrease in the value

of the firm's assets results in a 25 percent decrease in the value of its net worth.

FIGURE 1: THE BALANCE SHEET OF A TYPICAL MANUFACTURING CORPORATION

ASSETS	LIABILITIES
\$100 (plant, equip., inv., cash, etc.)	\$60 (bank loans, bonds issued, accts. payable, etc.)
	\$40 (net worth, owners' equity)

Keep one other point in mind: In a legal system of “limited liability” for the shareholder-owners of a corporation, those shareholders cannot be required to support the company beyond their initial contributions. Thus, if the company's assets were to fall below \$60 (which would wipe out its net worth) and thus be inadequate to cover the claims of the company's creditors, those creditors normally have no claim against the owners. The creditors will simply have to divide the (inadequate) assets among themselves to satisfy their claims, usually in a bankruptcy proceeding.

Accordingly, from the creditors' perspective, the level of net worth is the extent of the buffer that protects them against a fall in the value of the assets that would expose them to a loss. The thicker the buffer (other things being equal), the more assured the creditors should feel. Typically, the terms of a bank's lending agreement or the covenants in bonds will allow the creditors to place greater restrictions on the actions of a company as that company's net-worth buffer gets thinner.

Since net worth is also owners' equity, the extent of net worth is also a measure of the disincentive for the owners to take large risks. A larger net worth means that the owners have more to lose and are farther away from the limit on their losses that limited liability provides.

THE CONCEPT OF “LEVERAGE” IN BANKING

NOW WE TURN to a commercial bank or thrift institution. Figure 2 provides a stylized balance sheet of a healthy bank or thrift. Its \$100 of assets are primarily the loans that it makes and the bonds that it owns. Its direct obligations of \$92 are primarily its deposits. Again by **simple subtraction**, this institution has \$8 of net worth or owners' equity. For financial institutions, **this net worth is also called “capital.”** Note that this bank has a substantially thinner net worth (capital) buffer than does the manufacturing firm. Equivalently, it is much more leveraged: 12½ to 1. A 10 percent increase in the value of the bank's assets yields a 125 percent increase in the bank's capital. Note also that

“capital” is not “money” or “cash” or “liquidity.” It is net worth. Although a bank can increase its capital by getting a “cash injection” from investors, the increase in capital occurs because the additional cash adds to the assets of the bank and therefore to its net worth. If the bank lends or invests the cash, its capital is still augmented by the investors' infusion. By contrast, a loan of an equivalent amount of cash to the bank would not increase its capital (and would instead increase its leverage).

FIGURE 2: THE BALANCE SHEET OF A HEALTHY BANK OR THRIFT

ASSETS	LIABILITIES
\$100 (loans, bonds, investments)	\$92 (deposits)
	\$8 (net worth, owners' equity, capital)

Again, leverage also works in reverse. A 10 percent decrease in the value of the bank's assets (to \$90), wipes out its capital (to -\$2) and exposes its depositors to losses (again, because of the limited liability of the bank's owners). This insolvent bank is portrayed in figure 3. Of course, a larger decline in the value of the bank's assets would mean an even deeper insolvency.

FIGURE 3: THE BALANCE SHEET OF AN INSOLVENT BANK OR THRIFT

ASSETS	LIABILITIES
\$90 (loans, bonds, investments)	\$92 (deposits)
	-\$2 (net worth, owners' equity, capital)

If some depositors are unsure about the value of the bank's assets but are worried that the assets may be inadequate to satisfy all depositors' claims, those depositors may want to “run” to the bank to withdraw their funds before other depositors get the same idea. Other depositors, seeing or hearing about the first group's actions, may similarly rush to withdraw their funds. IndyMac Bank of California faced a similar fate before it was taken over by the Federal Deposit Insurance Corporation (FDIC) in July 2008. Although its deposits were FDIC insured, depositors were apparently still uncomfortable keeping their money in a bank that was being subject to a run by other depositors.

This general depositor run on the bank can be exacerbated by the realization that even a solvent bank is illiquid, in the sense that it has loaned out almost all of the depositors' funds and keeps

only a small amount of cash on hand to deal with withdrawals. (Think of Jimmy Stewart's efforts in *It's a Wonderful Life* to stop his depositors' run by explaining to them that their money is not in the till but has been loaned to their neighbors.)

In addition, if depositors in the bank across the street see a run on the first bank and they fear that the same problems may apply to their bank as well, the depositors in this second bank may start a run on their bank. Thus can a “contagion” or “cascade” of bank runs develop.

THE DEBACLE OF 2007–2008

A CONCERN DURING the current debacle was the fear that large investment firms, such as Merrill Lynch with assets exceeding \$1 trillion, could fail, which could lead short-term creditors and counterparties to “run” on these firms, a scenario with all the characteristics of a classic bank run. These firms had thin capital levels. The high leverage maintained by these firms—so that even modest (in percentage terms) losses could threaten their solvency and lead to runs that, at a minimum, would create liquidity problems for them—further compounded these problems.

Figure 4 portrays a highly leveraged investment bank. Its \$100 in assets are its investments in bonds, loans, shares of stock, real estate, and just about any other asset—real or financial. Its \$97 in direct obligations are in the form of loans, bonds, commercial paper, and other obligations. **By simple subtraction**, it has only \$3 in capital. The investment bank's leverage ratio is 33-1/3 to 1. Only a modest decrease in the value of its assets can expose its creditors to losses. It's easy to understand how creditors would become nervous and begin a run on such an institution, especially when the investment firms in question are so large and intertwined with the rest of the financial sector.

FIGURE 4: THE BALANCE SHEET OF A HIGHLY LEVERAGED INVESTMENT BANK

ASSETS	LIABILITIES
\$100 (loans, bonds, stocks, real estate, investments)	\$97 (bonds, loans, c.p.)
	\$3 (net worth, owners' equity, capital)

PRUDENTIAL REGULATION

UNTIL MARCH 2008, investment banks did not have access to the Federal Reserve for liquidity, the U.S. Securities and Exchange Commission (SEC) was a weak prudential regulator, and there was no creditor insurance. A new prudential

regulatory regime that intends to bring large financial firms (which remain outside the current regime) under its purview must consider capital and leverage as crucial elements in promoting safety and soundness. Such a regime should look roughly similar to the one that is in place for commercial banks and savings institutions. A key element to such a regime is minimum risk-based capital requirements. Firms with thinner capital buffers can create nervousness among counterparties, creditors, and investors, which could further spur runs akin to commercial bank runs. For this reason, as such firms' capital buffers become thinner, regulators should tighten restrictions on their activities, so as to help prevent greater risk-taking.

A highly leveraged firm has the potential to cause a financial panic... By properly accounting for and requiring adequate capital and limits on the leverage positions of such firms, appropriate prudential measures could help provide stability in the financial system.

CONCLUSION

NOT ONLY ARE the concepts of capital and leverage fundamental to understanding the financial debacle of 2007–2008, they are also crucial to policy debates on financial regulation. A highly leveraged firm has the potential to cause a financial panic. The troubling signals that this type of firm sends to investors about its stability could induce bank “runs,” and these runs, in turn, could create drastic systemic effects. By properly accounting for and requiring adequate capital and limits on the leverage positions of such firms, appropriate prudential measures could help provide stability in the financial system.



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Drawing upon the Mercatus Center's long-standing expertise in regulatory analysis and research into regulatory outcomes, the Financial Markets Working Group combines academic research on finance and banking with a deep understanding of the regulatory policy process to offer productive ideas to address the serious problems in financial markets.

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