

## Chapter 12 – Bank Capital and the Financial Crisis

The financial crisis of 2007-09 and the Great Recession that it triggered wiped out an estimated \$1 trillion of bank capital in the United States.<sup>1</sup> For comparison, the total capital of U.S. depositories before the crisis began was about \$1.3 trillion.<sup>2</sup> Had the U.S. government not provided massive support to the banking system, many banks probably would have been *insolvent* – unable to repay their debts because their liabilities exceed their assets.

What is bank capital? Why do banks hold it? Through what mechanism did the crisis erode capital?

As Chapter 12 highlights, a bank's capital is its net worth – the difference between the value of its assets and its liabilities. Capital cushions a bank against many risks, including declines in the market value of assets – so-called *market risk*. The larger a bank's capital cushion, the less likely that it will be made insolvent by an adverse surprise.

One of the key lessons from the financial crisis is that capital was insufficient to cushion U.S. intermediaries against the market risk that they faced. Put another way, banks were too leveraged: they had too many assets for each unit of capital, making them vulnerable to a decline in asset value.

How did market risk arise in the crisis? The process began in 2007 when the surge in subprime mortgage defaults drove down the value of subprime-related securities (see the Chapter 7 module: Subprime Mortgages). Lower-rated mortgage-backed debt plunged first and deepest. By 2008, even some higher-rated *super-senior* mortgage-backed debt – designated by rating agencies as having lower default risk than even AAA bonds – had lost nearly one third of its market value (see the Chapter 7 module: Structured Products).<sup>3</sup>

U.S. banks had retained a large share of such mortgage-related debt on their balance sheets. At the end of 2006, for example, mortgages represented 33% (\$3.4 trillion) of commercial bank assets and 62% (\$1.1 trillion) of savings institutions' assets.<sup>4</sup> Some banks were particularly exposed to the super-senior securities that had

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<sup>1</sup> See IMF *Global Financial Stability Report*, April 2009, Table 1.15.

<sup>2</sup> According to the Federal Deposit Insurance Corporation (FDIC), total capital of insured depositories climbed to \$1375 billion in March 2009 from \$1280 billion in June 2007. However, the 2009 figure includes capital that was raised to replace crisis-driven losses. It also does not take account of crisis- and recession-related losses that are still to occur.

<sup>3</sup> These instruments – typically collateralized debt obligations (CDOs) – became difficult to trade, so banks estimated their value from the trading prices of indexes of subprime mortgage-backed securities (MBS).

<sup>4</sup> These figures do not include the mortgage securities backed by government agencies and government-sponsored enterprises (GSEs).

offered a modest yield spread over highly rated corporate debt and had lower regulatory capital requirements.<sup>5</sup>

How did market risk arise even on securities that did not default? *Mark-to-market* accounting rules require banks to adjust the recorded value of the assets on their balance sheets when their market value changes.<sup>6</sup> When the market price rises, assets are written up on the balance sheet. When the price falls, assets are written down. Consequently, mark-to-market *writedowns* can occur even when an asset is *performing* -- that is, even when a borrower continues to make interest payments on time. Naturally, writedowns reduce a bank's capital, while *writeups* increase it.

Why did banks choose not to hold a larger capital cushion against market and other risks? The answer is that capital is costly. Financial institutions must pay for capital, compensating the investors that provide it with dividends and the like. To boost profits, intermediaries try to reduce all costs, including those arising from the use of costly capital.

To increase profits at a given level of capital, an intermediary typically must take greater risk. Increasing leverage is one way of taking risk, and increasing profit, in good times. As we saw in Chapter 5, leverage is the practice of borrowing to finance part of an investment. The more leverage, the greater the possible reward for each unit of costly capital. At the same time, the more leverage, the greater the risk of failure from an adverse surprise.

In the run-up to the financial crisis, some important financial firms had assets that were more than thirty times their capital – their leverage exceeded 30. Others concealed leverage off their balance sheets, only to have it return in the crisis.<sup>7</sup> Highly leveraged firms are vulnerable even to modest market risk. When a borrower is leveraged more than thirty times, a drop in asset prices of as little as 3% can wipe out the capital cushion and lead to bankruptcy.

In this environment of high leverage, the plunge in the value of mortgage-related assets rendered the U.S. banking system nearly insolvent. The capital shortfall, in turn, triggered other mutually reinforcing systemic threats. Bank efforts to deleverage diminished market liquidity (assets became difficult to sell) and funding liquidity (creditors sought to cash in their claims). A financial system cannot safely

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<sup>5</sup> Bank regulators had applied a lower capital requirement to collateralized debt, despite its complexity and lack of market liquidity.

<sup>6</sup> As noted in footnote 3, many mortgage-related assets became difficult to trade in the crisis, so banks typically estimated their value from the market prices of traded MBS indexes.

<sup>7</sup> When banks' special investment vehicles (SIVs) could not roll over their funding, their founders were compelled to bring the assets back on balance sheet. This increased leverage precisely when banks wished to deleverage. The result was a desperate scramble for scarce funding and capital.

deleverage all at once: It's like asking a ship's passengers to walk a narrow gangplank all at the same time.