



THE WALL STREET VORTEX

From there to here
From here to there
Funny things are everywhere.

– Dr. Seuss, *One Fish, Two Fish, Red Fish, Blue Fish*

OUTLANDISH HAPPENINGS

If you've watched and participated in the financial markets as long as I have, you know that impossible-seeming things happen there all the time. Even so, the startling events of September and early October represent more than just run-of-the-mill market corrections. Here's a quick run-down: The US government placed the two mortgage agencies, Fannie Mae and Freddie Mac, into conservatorship, effectively nationalizing them. Lehman Brothers Holdings, Inc., abruptly announced it would file for bankruptcy protection. Bank of America agreed to acquire Merrill for about \$50 billion over a weekend, mirroring the collapse of Bear Stearns in March. American International Group, a major insurer, had to scramble for liquidity and the Federal Reserve stepped in and floated an \$85 billion loan to AIG on punishing terms, including a 79.9% equity stake in the firm. Washington Mutual and Wachovia both suddenly agreed to sell themselves to stronger firms. Perhaps most dramatic, at the height of the 2008 election campaign season, the US Treasury, led by Secretary Hank Paulson and with the support of Fed Chair Ben Bernanke and President Bush, approached Congress seeking an emergency \$700 Billion "bailout" of Wall Street, forcing posturing and hasty votes with unusual risks to both Democratic and Republican candidates. On September 29th, the Dow fell 777 points when the bill failed to pass. The markets recovered a bit, then fell further on October 3, after Congress passed a modified version of the bill that included an additional \$150 billion in tax breaks and earmarks.

When century-old financial institutions fail one after the other, the stock market sells off, and credit tightens so much that nominally free-market oriented government officials respond with massive injections of liquidity and extraordinary interventions, clearly something is wrong with Wall Street. The obvious questions on everyone's minds are: "How did this crisis situation come about?" and "Are the government's policy responses the correct ones?"

To understand what on Wall Street is not working and how to fix it, it helps to examine some of the specific financial characteristics of the failed firms. In particular, let's focus on the four primary drivers that had major impacts both on the firms' prior success and their spectacular failures: leverage, mismatched funding, asset "repackaging" and risk transfer. The failed Wall Street firms made highly-leveraged moves into the markets in securities that led to their downfall. They also all had the problem of funding mismatch, where short-term financing supported long-term assets. These firms were heavily involved in dealings with assets that had been "repackaged," where claims and cash flows were pooled and then divided by differing agents in different ways. And lastly, the firms also traded heavily in risk transfer agreements, where they estimated and traded the risks of the repackaged assets, trying to unload their own risks onto others. Let's examine each of these factors.

THE USE AND ABUSE OF LEVERAGE

Our financial system, and by extension our economy, relies on leverage to create the capital underlying the productive enterprises that are the engine of economic growth. Traditional banking provides a familiar example. Banks take deposits from their customers, pay interest, provide services like checking and savings accounts, and provide a safe place for people to keep their money. Bankers, however, don't just take the cash and keep it in their vaults; they retain a small portion (a federally required reserve), and use the rest of their depositors' cash to make loans to businesses and homeowners. The deposits go on the bank's balance sheet as liabilities, and the loans and reserve become assets (almost contrary to common sense). In essence, the bank is borrowing from the depositors to make loans amounting to many times its own capital and reserved cash, which provides it with leverage to earn income.

Leverage has a direct effect on any financial institution's profitability. As of March 31, 2008, Wells Fargo Corporation showed tangible net worth of just over \$35 billion, and total assets of about \$595 billion. During 2007, Wells Fargo earned about \$8 billion on business driven primarily by the size of its asset base, not the size of its capital base. If Wells had been able to increase its leverage (i.e. maintain a smaller percentage in reserve), it could conceivably have earned even more, increasing its return on its capital. To see why, imagine that you bought a house for \$500,000, putting \$100,000 down of your own money and borrowing the rest. That's 4 to 1 leverage. Now suppose that later, you were able to sell the house for \$750,000, a gain of \$250,000, or 50% on your original purchase price. But the gain on your original cash investment of \$100,000 would be 250%. Now suppose you had been able to buy a house for \$1 million with the same \$100,000 down payment (9-to-1 leverage), and sell it for \$1.5 million, the same 50% gain. Your gain relative to your original cash equity in that case would be 500%, or twice as much.

This is how increased leverage can greatly increase profitability. The trouble is that leverage also amplifies losses. In our home-buying example, let's suppose that instead of

increasing by 50%, the value of your house fell by 20%. Now your \$500,000 house would fall to \$400,000, just wiping out your \$100,000 in equity. But if you bought a house for \$1 million, its value would fall to \$800,000, and you would have lost your equity, plus another \$100,000. Now, if you're still living in that house, and still making your mortgage payments, then the change in its value is more theoretical than anything else. But if you were forced to sell that house, you would realize only \$800,000, but you would still owe \$900,000 — you would have to find another \$100,000 in cash to complete the sale.

Leverage adds risk. It does so by amplifying gains and losses, but it can also cause trouble in other ways. Leverage amplifies all of the effects of external changes in the market. Most notably, leverage can force investors to sell their holdings at disadvantageous times. Imagine a bank that has suffered enough losses that it needs to add to its reserves to reduce leverage. When the losses come as a result of a market downturn, as they usually do, this can both increase the amount of capital the bank needs to raise, and reduce the value of any assets it might sell, thereby limiting its ability to strengthen itself.

FUNDING MISMATCH

Any investor who has levered an investment with borrowed funds understands the direct effects of leverage in a shifting market, in terms of amplifying gains and losses, and possibly forcing sales on disadvantageous terms. Within most financial institutions, the risks of leverage are compounded with yet another source of uncertainty and risk: mismatched funding. A funding mismatch is a situation in which an entity borrows funds on a short-term basis to finance the acquisition and holding of long-term assets. It's as though you want to buy a house, but you can only borrow money through a loan that comes due in a month. To stay in your house, you need to roll over the loan month after month, re-borrowing the necessary funds each month to repay the previous month's loan. So long as your ability to refinance the loan each month remains stable, you should have no problem. But if you suddenly find you can't pay, you could be in default in one month.

An astonishingly large portion of the financial world operates with just such a funding mismatch. Brokers and banks dealing in securities need to finance them elsewhere. The main institutional source of such funding is in the market for secured, short-term lending — much of it overnight lending — so holders have to roll the borrowing daily. In this market, lenders provide funding collateralized by the securities the borrowers are trying to finance. (These loans usually take the form of repurchase agreements, or repos, but think of them as secured loans.)

Lenders in these short-term funding markets face the risk that the value of the collateral may slip during the life of the loan. If the borrower defaults in that circumstance, the lender could suffer a loss because the value of the collateral could quickly fall below the amount of the

loan. To guard against this risk, lenders typically apply a “haircut,” advancing less than 100% of the value of the collateral. The result is that, at least at first, the loan is over-collateralized. It also means the borrower must finance at least part of the position from other, unsecured borrowing or with its own capital. While the overnight funding markets usually function well, the fact remains that a securities firm seeking to finance its book on an ongoing basis with overnight repurchase agreements must be sure that it has access to the funding markets every day, or it could find itself insolvent literally overnight. The high-frequency rollover requirement in particular can spell trouble when great market fluctuations inhibit the ability of the firm to refinance. The effect is a stunningly fast credit disaster, such as we’ve seen lately.

ASSET REPACKAGING & TRADING OF RISKS

Leverage and mismatched funding set the backdrop to the action we have witnessed on Wall Street. To understand it more fully, we also have to take a closer look at two of the primary ingredients of the toxic alphabet stew of our current financial markets, Collateralized Debt Obligations (CDOs) and Credit Default Swaps (CDSs). A year ago I wrote about the mortgage securitization market and CDOs,¹ so what I’ll offer here is just a brief review.

CDOs. Unlike the classic image of local bankers making mortgage loans to local homeowners, consumer mortgages today are really part of the global financial system. Mortgage lenders often don’t keep mortgages on their own books, but instead sell them to syndicators, who typically gather up mortgages, place them into pools, and then issue securities – mortgage-backed securities, or MBS – against those pools. Buying mortgages and issuing MBS is the basic business of Fannie Mae and Freddie Mac, and as long as Fannie and Freddie stuck primarily to dealing in so-called “conforming” mortgages, which met well-established standards of size, credit quality, and collateralization, the system worked well, providing ordinary Americans access to capital for home loans, probably reducing the rates they paid on their mortgages.

The success of mortgage securitization, along with a steady rise in housing prices, an extended period of low interest rates, and arguably the relaxation of regulation, spawned a market for private securitization of mortgages that did not meet the requirements of conforming loans. Up sprang a network of mortgage brokers (many of them small-time operators with suspect trade practices), mortgage lenders (like the late, unlamented Countrywide), syndicators (Bear Stearns comes to mind), and investors (innumerable hedge funds, German *landesbanken*, and the apt-sounding SIVs), which funded questionable loans and found buyers for the resulting securities. Eventually, this market tolerated loans that hardly met any requirements at all, the so-

¹ Jonathan Tiemann, “A Pyramid of Little Golden Crumbs,” August 31, 2007, <http://www.tiemann.net/GoldenCrumbs20070904.pdf>

called sub-prime mortgages. Each party in the process figured that it could do its bit, collect its fee, and pass the risk of the bad loan on to the next hand in the chain.

Securitization of sub-prime mortgages bore some important differences from securitization of conforming loans by Fannie and Freddie. For the most part, when Fannie and Freddie issue securities against pools of conforming mortgages, the securities are pass-throughs, which simply forward the borrowers' payments of principal and interest (after the deduction of fees, of course) directly to the security holders. The conforming loans behind Fannie's and Freddie's pass-throughs had to meet reasonable credit standards, and the agencies themselves guaranteed the payment of principal and interest (part of the genesis of the government's need to nationalize them), so credit wasn't such a big issue in that arena.

With securities backed by sub-prime mortgages, of course, credit is a much bigger deal, with higher expected rates of default. Most sub-prime securities weren't straight pass-throughs. Instead, in a sub-prime deal the structure creates a range of securities that have been packaged with different claims against the aggregate cash flows (the principal and interest payments) that the mortgages in the pool generate. The structure slices these cash flows up among the different securities. For this reason we call the various securities *tranches*, from an Old French word meaning *slice*. In a typical structure, the most senior tranche will have first claim to the cash flows from the pool, after which a series of more junior securities stand in line for their share. The most junior security, the "equity" tranche, receives whatever, if anything, is left over.

Each pool represents a unique collection of individual loans, so the universe of CDOs is a chaotic mass of idiosyncratic securities. Investors have little information on the value or soundness of the underlying mortgages, and in some cases, they may have difficulty assessing where their security falls in the rankings of seniority. Though widespread, the process of creating CDOs was not standardized, making side-by-side comparisons difficult. And to make matters worse, drafting errors in the legal language of some of these securities, from either fraud or negligence, may create legal ambiguity over which tranche is entitled to which cash flows. In a worst case scenario, this would give rise to legal conflicts among holders of different tranches – what you might call tranche warfare. (This is clearly one benefit of the Treasury plan to buy most or all of the tranches in a CDO deal. It could potentially reunify the slices, get a handle on risks, and eliminate conflicts among tranches.)

CDSs. While dodgy CDOs are enough to cause plenty of trouble, they aren't the only financial weapons of mass destruction stocked in munitions dumps around the financial system. A second, potentially larger problem lies in the market for credit default swaps (CDSs). CDSs are over-the-counter agreements (that is, private contracts, rather than standardized securities traded on an exchange) in which one party promises to compensate the other in the event that a default occurs on a particular security, usually a bond. In the simplest form, if I hold a corporate bond from a particular issuer, I may wish to buy a CDS from a dealer to protect myself from a default

on that bond. If the bond defaults, then my counterparty has an obligation to buy it from me at par. This is a way that firms hedge the credit risk of a particular deal.

Like many other derivatives, CDSs are useful instruments for pricing and transferring risk. But they also have the potential to increase leverage and transmit financial distress with alarming efficiency. As financial market participants buy and sell CDSs, these obligations accumulate on their books. A firm that trades actively in the CDS market may buy a contract from one firm and sell a similar contract to another. While the two contracts may seem to offset one another from a risk management point of view, the offsetting trades actually double the notional amount of CDSs outstanding. The result, after several years of trading in these instruments, is an almost impenetrable web of cross-firm exposures. If a default actually occurs in a security underlying a large volume of CDSs, it can trigger the need to settle a long chain of CDS obligations. A break in that chain can cause losses to crop up in unexpected places.

Because the dollar value of a credit default swap is generally a small fraction of the value of the underlying instrument, CDSs have the potential to increase the leverage in the financial system vastly. In addition, many traders use CDSs to make what are essentially side bets on the behavior of financial instruments they do not themselves hold. Given the speed with which trading in the CDS market takes place in normal times, large firms can end up with surprisingly big exposures both to the underlying instruments and to other firms. Before long, it's difficult for any firm to evaluate and manage its own exposure, and it becomes impossible for them to know what's on the books of their trading counterparties. Some reports have it that AIG, for example, ran into trouble because of a large imbalance in its CDS book.

TRANCHE WARFARE AND FINANCIAL WEAPONS OF MASS DESTRUCTION

In most areas of life, technology amplifies our ability to do work, and it also magnifies the consequences of our mistakes. The alchemy of modern securitization, along with the end of a long-term run-up in housing prices, left our financial system replete with impaired assets, which have led to large losses. These large losses have eaten into financial institutions' capital, impairing their balance sheets and forcing them to liquidate assets and raise new capital on punishing terms. At the same time, their leverage has increased and the value of their holdings as collateral in the funding markets has fallen.

As losses have mounted and counterparty exposures have become harder to evaluate, financial firms have become increasingly reluctant to lend to one another. The longer this reluctance persists, the more difficulty some financial firms have remaining solvent. The end result is the cascade of financial failures we have witnessed over the past several months, accelerating in September. Credit problems in the banking sector soon cause general market liquidity to decline, and the ability of the financial system to support productive enterprise

decreases. Eventually, the distress of the financial system can percolate to the real economy, with negative impacts on economic activity, including jobs, wages, and overall output.

As the startling financial events of 2008 unfolded, it was essentially the combination of high leverage, a serious funding mismatch and repackaged assets of increasingly dubious value that proved fatal to so many firms. Some held sizeable portfolios of the infamous sub-prime mortgage securities. The problems with these securities became apparent during 2007, as real estate values began to slip and overextended homeowners began to fall behind on the underlying mortgages. Holders of securities backed by sub-prime mortgages, whether they were the end purchasers or brokers holding them in inventory in anticipation of later resale, suffered losses. The losses affected the end purchasers first; among the first casualties were two Bear Stearns hedge funds and Sachsen LB, a state bank in Germany. As those losses came to light, potential buyers for new sub-prime securities vanished, the sub-prime assembly line halted, and market participants throughout the system found themselves with assets they couldn't finance, could barely value and couldn't sell except at sacrifice prices. Meanwhile, the interlocking obligations from the credit default swap market transmitted distress throughout the financial system.

Among the holders of troubled, impaired, and now illiquid securities, were the investment banks. Investment banking is always a highly leveraged business, so as the value of the securities they ended up holding fell, they announced substantial write-downs. Rapidly falling asset values left Wall Street firms facing an unpleasant choice. The only way to reduce their exposure would have been to sell off large portions of their book of securities into an unreceptive market, as Merrill Lynch ultimately did. By doing so, though, they would establish an observable market price for securities resembling their remaining inventory, which would potentially force them to take further write-downs. Even worse, those revaluations could easily reduce those securities' value as collateral in the funding market, restricting the firms' access to overnight funding.

If a firm's cumulative losses have substantially reduced its capital, if the value of its holdings as collateral in the short-term funding markets has fallen substantially, and if liquidity in the secondary market for the securities it most needs to sell has disappeared, then the firm is in serious danger of insolvency. That appears to have been what happened to Lehman Brothers and Merrill Lynch. This is the problem that Treasury Secretary Paulson's \$700 billion bailout seems aimed at addressing. The key to understanding the strategy is in remarks from Fed Chair Ben Bernanke before the Senate Banking Committee on September 23, 2008:

Let me come to the critical point: I believe that under the Treasury program, auctions and other mechanisms could be devised that will give the market good information on what the hold-to-maturity price is for a large class of mortgage-related assets. If the Treasury bids for and then buys assets at a price close to the hold-to-maturity price, there will be substantial benefits.

First, banks will have a basis for valuing those assets and will not have to use fire sale prices. Their capital will not be unreasonably marked down. Second, liquidity should begin to come back to these markets. Third, removal of these assets from balance sheets and better information on value should reduce uncertainty and allow the banks to attract new private capital. Fourth, credit markets should start to unfreeze. New credit will become available to support our economy. And fifth, taxpayers should own assets at prices close to the hold-to-maturity values, which minimizes their risk.²

The main idea is that as firms have shed assets in an effort to reduce leverage, the financial market distress has expressed itself in “fire sale” pricing of many mortgage-related securities. The fire sale pricing in turn exacerbates the distress by limiting holders’ ability to access sufficient short-term funding to support their balance sheets, continuing the downward spiral. Mr. Bernanke is expressing the hope that these fire sale prices are substantially below the value inherent in these securities to an investor willing and able to hold them for the long term. If he’s right, then Treasury, which presumably has as long a holding period and as large a balance sheet as necessary for the operation, could provide some relief to distressed financial firms by clearing up the tranche mess and using public funds to pay prices that more closely reflect what Mr. Bernanke called the “hold-to-maturity” price. Treasury could then collect the resulting cash flows until either the instruments matured, or liquidity returned to the market and Treasury could then sell them at market prices approximating the “hold-to-maturity” values. If such a scenario were to obtain, the bailout would still use substantial amounts of public capital, but would not result in major losses – in fact, it could result in a gain – to taxpayers.

The House of Representatives failed to approve a revised version of the Paulson Plan on September 29, 2008, and the stock market fell sharply, with the S&P 500 dropping about –9% on that day. Perhaps because of the market reaction, Congress remained in session in spite of members’ desire to concentrate on elections just five weeks away and passed a revised version of the bailout bill at the end of the same week.

A LOOK AHEAD

Times of uncommon stress invite speculation about what happens next. Part of the great range of uncertainty is due to the political environment of an election year. The stock market reacted to the initial defeat of the Paulson bailout bill with a sell-off that cost market participants

² See “Bernanke’s comments on asset auction process,” Reuters, Sept. 23, 2008 at <http://www.reuters.com/article/marketsNews/idUSN2338396920080923>

\$1.2 trillion in stock market value. Nevertheless, while many object to a plan that appears to bail out wealthy Wall Street firms, and others object to government interference in the operation of the capital markets, few want to risk dire and long-term economic consequences from a freezing up of credit and the disastrous slowing of economic activity that would likely be the result

We have already seen significant changes in the financial landscape. The fate of Bear Stearns, Lehman Brothers, Merrill Lynch, AIG, Fannie Mae, Freddie Mac, Washington Mutual, and Wachovia, not to mention overseas institutions that have also failed, merged, or been nationalized, seem to many to mark the end of an era. Goldman Sachs and Morgan Stanley have voluntarily become bank holding companies, and so the US market now no longer has any large, independent, purely investment banking firms. With this many firms changing so radically, and even with recent capital infusions to Goldman Sachs and Morgan Stanley, we are actually seeing a vast withdrawal of capital from the financial sector, as the market turns its impersonal capital allocation mechanism against that part of our economy. Financial firms are still actively reducing their excess leverage, resulting in a rapid shrinkage of their asset holdings and their financial capacity. This is the way the free market punishes Wall Street and directs its flows towards more productive portions of the economy.

The market routinely reallocates capital, but when the sector losing capital is the financial sector, the process is particularly disruptive. Hopefully, the Paulson bailout plan will ease the process. To succeed in truly fixing the causes of this crisis, government action has to focus on facilitating an orderly unwinding of the financial sector's large volume of excess security holdings and address regulatory corrections to the primary drivers that contributed to these problems. The Fed's and Treasury's credit infusions should avert a full-on financial collapse, where credit would substantially disappear, causing a major deceleration of economic activity. Then, the best hope is for a cathartic recession, with a complete clearing out the dead underbrush of thorny, interweaving CDOs, CDSs and sub-prime mortgages—to make room for new lending growth. It may take a little time, but need not be catastrophic.

Once the emergency has passed and the results of this November's election are in, Congress will inevitably need to re-examine the regulatory regime under which the current financial mess arose. In all likelihood, Congress will seek to re-regulate much of our financial system. In my view, any new regulation has to address three key principles:

1. Those that take risk should be able both to win and to lose. Nationalizing losses while gains remain private only fosters imprudent risk-taking.
2. In some areas, like deposit insurance, public policy should seek to provide protection. Institutions that enjoy such protections should have to accept constraints on their activities. Without those constraints, we would be back to nationalizing losses while gains remain private. For all its faults, the Glass-Steagall Act, repealed in 1999,

- separated investment banking and commercial banking, making tractable the issue of differentiating between protected depositors and providers of capital to riskier firms.
3. Some institutions are so large that their failure would imperil the financial system. As such, they enjoy an implicit guarantee, which could, again, force us to nationalize their losses. But we need for all financial firms that run the risk of failure to be able to do so without causing a widespread financial meltdown. The most interesting part of the debate should be on this point, whether we could break these firms into smaller pieces, limit their activities, or find a way to compartmentalize the risks that their various business units take. Finding the right solutions will take some time and, no doubt, iteration.

In the meantime, if credit is to tighten, then those firms with strong, steady cash flows and low leverage will be in the best position to thrive, and to take advantage of new opportunities as they arise. Whatever happens, innovation, investment, and production will not come to an end, and investors with their eyes on capturing the gains available to those able to finance productive enterprise may have opportunities for returns that previously had gone to the financial sector.

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October 6, 2008