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Financial Crisis 101: A Beginner's Guide to Structured Finance, Financial Crisis, and Market Regulation

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Financial Crisis 101:

A Beginner's Guide to Structured Finance, the Financial Crisis, and Capital Market Regulation

by William Werkmeister

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"Securitization," "special purpose entities," "leverage," "subprime," and "collateralized mortgage-backed securities" are all terms commonly used by financial market experts to describe the mortgage crisis. Yet, these terms mean very little to the average American.

This article seeks to demystify the financial crisis—to explain the mortgage origination and securitization process, the causes of the financial crisis, and finally, some potential ramifications of the crisis and the monetary policy used to target it. We also suggest a new potential contributing factor for the crisis resulting from a disconnect between policy makers and Wall Street.

THE MORTGAGE ORIGINATION AND SECURITIZATION PROCESS

Securitization is the process whereby mortgage, auto, credit card, student, and other types of loans are pooled and used as backing, much in the same way houses back mortgage loans, for the issuance of bonds. The mortgage payments are used to fund future bond interest and payment obligations. The securitization process is vital to helping banks issue new mortgage and business loans by allowing lenders to convert existing loans to cash. The lenders can then use that cash to finance new loans, which will also eventually be securitized and resold.

Just as a wealthy family safeguards its assets using legally separate trusts, a lender's loans are transferred to a trust, which securitizes the loans and issues bonds through an investment bank. The cash from the sale of the securities is used to compensate the lender. This "asset transfer" reduces risk by eliminating the asset's exposure to the general corporate liability of the lender and, therefore, increases the value of the loans.

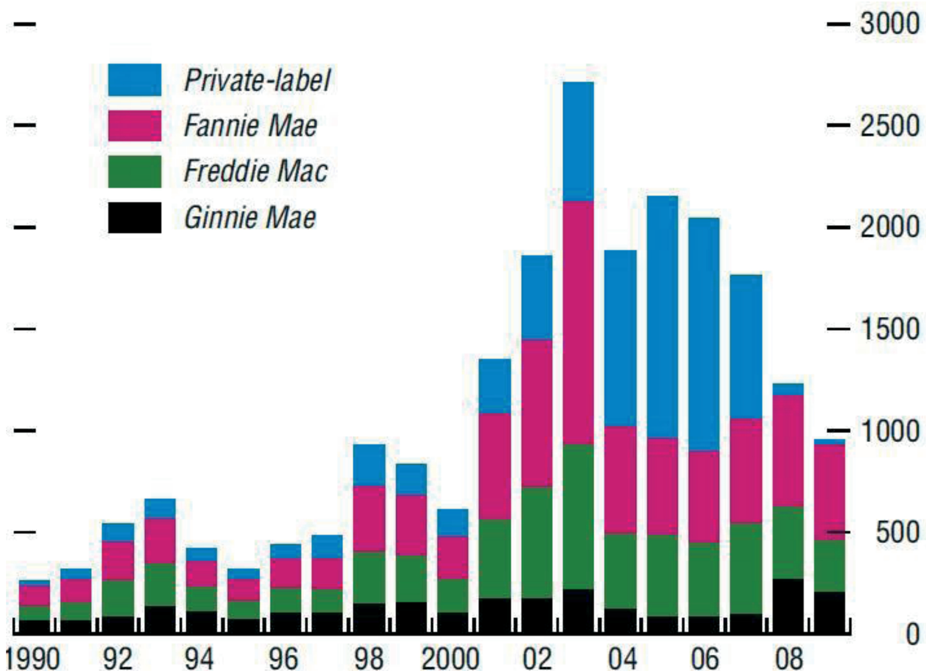
During the mortgage securitization process, investment banks create classes of bonds, varying in their maturity length and risk levels, called mortgage-backed securities (MBS) (see Figure 1). For other assets—car loans, student loans, and business loans—the securities are known as asset-backed securities (ABS). The payments from underlying mortgages are used to fund the mortgage-backed security payments; typically, the mortgaged-backed bonds are paid in a sequential order, with one being completely paid off before the next bond makes any payment. The MBS that

are paid first are considered safer and, generally, carry a lower interest rate than those that pay off later. Much in the way that individuals vary in the degree of risk they take on when making investments, so do investors. As a result, MBS tend to be more appealing to investors than actually buying the underlying mortgage loans because the MBS allow investors to select bonds matching their particular risk preferences. Pension funds and insurance companies typically prefer lower-returning, lower-risk investments, whereas hedge funds seek higher returns and are willing to invest in riskier assets to achieve these returns. In almost all cases, however, most institutional investors would not purchase thirty-year mortgages. Investment bankers also attempt to structure MBS so that they are less risky than the underlying mortgage collateral; the securitization process actually reduces investor risk. For example, the payments made from MBS to investors are typically less than the total interest and principal payments made on the underlying mortgages, a feature termed "excess spread." This excess spread creates a cash cushion if some mortgages end up defaulting.

DISCONNECT BETWEEN WASHINGTON AND WALL STREET

The mortgage market, which includes brokers, lenders, borrowers, investment bankers, special servicers, and institutional investors, is a complex system. The years preceding the mortgage crisis saw the introduction of mortgage issuance and capital market regulations, with legislators not fully understanding the effects of their new laws, which would later "set the stage" for the mortgage crisis.

Figure 1 — MBS Issuances by Year (in billions of U.S. dollars) (Source: IMF)



One example of these unintended consequences is the Clinton administration's National Homeownership Strategy. An attempt to help people purchase homes, this policy introduced bank quotas for high-risk, subprime loans and loans based on race rather than credit analysis, leading to an overall increase in mortgage risk levels. Subprime loans are loans provided to borrowers with very poor credit whom lenders believe are more likely to default on their debts. The National Homeownership Strategy also introduced "no-doc" loans, mortgage loans for which the borrower is not required to prove his or her income. On top of these policy concerns, appraisers, often hired by mortgage brokers, and in the backdrop of a skyrocketing mortgage market, began vastly inflating estimated housing prices. from the higher risk. Not only did the mortgage loans begin failing more regularly, but when default occurred, losses were more extreme, as lenders began offering higher-levered 90 percent and even 100 percent or more loan-to-value mortgages. As was typical in a mortgage cycle, mortgage losses increased and some higher-risk MBS failed.

The severity of the current mortgage failures was exacerbated by mortgage fraud resulting from falsified, inflated appraisals and the "no-doc" loans policy. These "no-doc" loans had an unintended consequence at the securitization level—far down the mortgage chain from the borrowers the policy was intended to help. Investment bankers, relying on the information provided by borrowers and mortgage brokers, underestimated mortgage risk levels, as borrowers misrepresented their incomes and, therefore, their ability to make mortgage payments. Investment bankers failed to add sufficient credit enhancement to the MBS, due to the misrepresentations. Inflated appraisals and inaccurate data meant that MBS were often rated as far safer than, in actuality, they were, and MBS began to fail at rates higher than predicted by the models.

The securitization process is vital to helping banks issue new mortgage and business loans by allowing lenders to convert existing loans to cash.

Quotas for subprime lending lowered the credit quality of mortgages issued over the past decade. Investment bankers began securitizing lower-quality subprime loans in large scale by the early 2000s. Banking data began to show, on average, deteriorating FICO scores (a measure of borrower credit quality) and loan-to-value ratios. Even though the increasing risk and mortgage default rates led to the failure of riskier bond classes, the effect was largely muted by structured finance bankers who, in securitizing the increasingly riskier mortgage loans, added more "credit enhancement" to deals to protect mortgage-backed bonds

OTHER INSTITUTIONAL CAUSES

While the financial crisis has its roots in the mortgage and structured finance markets, its severity is a result of many regulatory, industry, and structural

factors, including a lax regulatory environment, a lending boom, mortgage fraud, increased leverage and interconnectedness within the financial sector, maturity mismatches at financial institutions, and concentrations of mortgage risk within the banking sector.

Banks had traditionally securitized loans not only to generate liquidity, but also to reduce their exposure to loans and, sometimes, particular classes of loans (e.g., mortgage, auto, etc.). Yet, in the past decade, banks increasingly bought MBS backed by subprime mortgage pools. International banking agreements mandated "risk-weighted" capital adequacy ratios that required a greater ratio of equity capital to be held against riskier asset classes. Many lenders, noting that highly rated MBS required them to hold less than half the capital required for unsecuritized mortgages, began swapping long-term mortgage holdings for mortgaged-backed bonds. While many of the MBS were AAA-rated (a rating shared with safe U.S. Treasury bonds), they were still far riskier than Treasuries yet they had the very same capital requirements as Treasuries. Banks also benefitted, as AAA-rated MBS usually offered much higher investment returns than similarly rated treasuries and corporate bonds. Investment banks also began investing heavily in mortgage-backed securities in 2004, after the U.S. Securities and Exchange Commission allowed them to manage their own credit risk and decide for themselves how much cash to keep against the MBS, as Viral V. Acharya and Matthew Richardson wrote in "Causes of the Financial Crisis" in a 2009 issue of Critical Review.

Investment banks also placed many mortgages, either pre- or post-securitization, onto off balance sheet entities called conduits and structured investment vehicles (SIVs). SIVs bought MBS that could not be placed with other investors, and conduits were used to store mortgages until enough were available for a securitization deal (typically, $2 billion to $3 billion in mortgages were needed to complete a bond offering). The entities issued short-term—less than one year—notes securitized by the conduit's assets, termed asset-backed commercial paper (ABCP). The banks often guaranteed the ABCP, yet, because the guarantees were less than one year in term, the banks were not required under international banking rules to hold capital against the guarantees. Thus, the banks were still essentially exposed to the risk of the mortgages and collateralized mortgage-backed obligations and yet did not hold equity capital against the risk.

In addition to bank guarantees of conduits, financial insurers guaranteed MBS and other securities, and many banks engaged in "interbank" lending. This created the risk that the large-scale failure of MBS, or the failure of a large bank, could cause adverse effects or failures at other institutions. AIG was driven to reorganization by the rapid failure of many bonds it guaranteed. At the time of its bankruptcy, Lehman Brothers was in default on more than $8 billion in debt to Citigroup. Interconnected guarantees for MBS helped to spread the financial crisis from one institution to the next.

MORAL HAZARD AND CONFLICTS OF INTEREST

While the National Homeownership Strategy increased home ownership levels in the United States, particularly among the poor and minority classes, it also had the unintended effect of fostering

mortgage fraud and reducing the reliability of credit data used by the capital markets. Many argue that the crisis was further perpetuated by moral hazard and perverse incentive structures throughout the credit markets—hazards that need to be addressed to reduce the risk of future crises. The most prominent issues of moral hazard include the following:

- **Mortgage broker compensation and regulation**. Mortgage brokers are compensated on a fee basis relative to the value of mortgages originated and, therefore, are incentivized to work with appraisers to inflate values and borrowers to inflate reported incomes.
- **Appraisers**. Until recently, banks often allowed mortgage brokers to choose appraisers versus using independent ones.
- **Bank securitization**. The securitization process allows banks to "sell off" loans on a regular basis, eliminating their long-term exposure, except perhaps reputational, to the loans they originate. A structure, similar to Small Business Administration loans, where lenders hold a small portion of the loans in the long term would still facilitate liquidity in credit markets while at the same time forcing banks to take a long-term interest in the loans they originate.
- **Rating agencies**. Rating agencies, which grade the bond tranches investment bankers structure, are compensated on a per-rating basis, not by investors, but, rather, by the investment banks. Some argue the compensation structure incentivizes rating agencies, which wish to maintain long-term relationships with the banks for future deals, to compromise on ratings.

BANKRUPTCIES, BAILOUTS, AND THE AFTERMATH

The effects of the U.S. mortgage crisis were far-reaching, affecting not only credit market participants, but also spreading to the U.S. real markets and, eventually, sparking a global economic recession. Insurance companies and pension funds, while not suffering significant investment losses, were affected by ratings downgrades on the bonds they purchased. Such downgrades lowered the credit quality of their investment portfolios. Insurance companies were forced to cut back on issuance of new policies, attempt to raise more capital, and swap out lower-rated assets for higher-rated ones.

By 2007, the ABCP market had dried up, and banks were unable to refinance the one-year commercial paper backing the longer-term assets in their conduits and SIVs. Some banks attempted to take the SIVs back onto their balance sheets, and at one point, the federal government proposed the funding of a master SIV to purchase the toxic assets. The master SIV never came to fruition. Bear Stearns, one of the originators of the structured finance markets, had associated SIVs leveraged between five and fifteen times. Other investors in high-risk tranches sold directly into the market, such as hedge funds, suffered significant losses. With hedge funds, insurance companies, and SIVs unable or unwilling to buy MBS, banks no longer had an outlet to sell their MBS and, therefore, convert existing mortgages to cash; mortgage issuance by banks slowed, and by 2008 mortgages were issued to only the very best borrowers.

Some market participants received federal aid, others did not. The U.S. federal government invested hundreds of billions of dollars to shore up Freddie Mac and Fannie Mae, quasi-governmental agencies (with private investors) that guarantee loan pools—and also buy, pool, and issue mortgage-backed securities and pass-through certificates. While helping to sustain liquidity in the mortgage markets, perhaps the biggest beneficiaries of the Freddie and Fannie bailout were insurance companies and other institutional investors holding Freddie and Fannie securities, or securities benefitting from Freddie and/or Fannie guarantees on underlying collateral. Some have argued that rather than supporting old Freddie and Fannie guarantees, it would have been cheaper to create new institutions with stricter credit policies—a move that would still have maintained liquidity in the credit markets. However, pension funds, insurance companies, and other MBS and pass-through investors of Freddie and Fannie would have suffered significant losses, with potential contagion spreading effects resulting from financial institution "interconnectedness."

Similarly, while AIG (the world's largest insurer), Bear Stearns, Citigroup, and Goldman Sachs all received government support, Lehman Brothers did not. Understandably, a failure of AIG, with hundreds of billions in insurance policies outstanding, or Citigroup, with its large obligations to numerous other banks, may have caused interbank failures. But neither Bear Stearns, one of the originators of the MBS markets, nor Lehman Brothers were large commercial banks; the Treasury supported JP Morgan's purchase of Bear Stearns, while not intervening to help save Lehman. Both accumulated significant exposure to MBS throughout the 1990s and 2000s.

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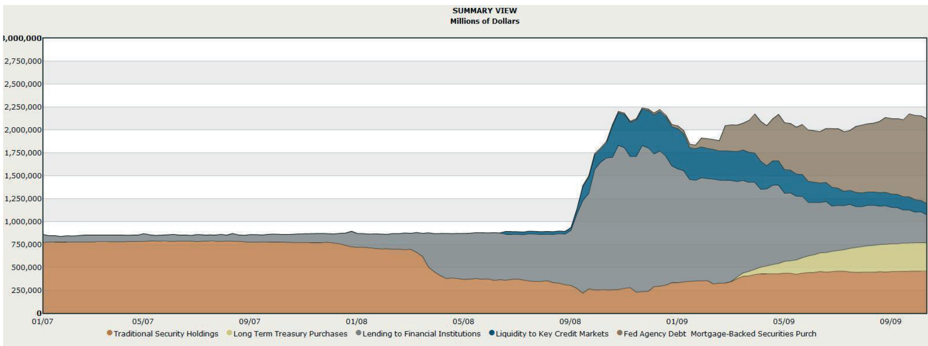
Some theorize former U.S. Treasury Secretary Henry Paulson's decision to save Goldman Sachs and Bear but not Lehman Brothers was politically motivated. Paulson was, in fact, the ex-CEO of Goldman and a bitter enemy of Lehman CEO Dick Fuld.

With insurance companies and other key institutional investors suffering from capital shortfalls, and unwilling and unable to purchase new MBS, liquidity in the credit markets vanished. As a result, banks were unable to clear mortgages off their balance sheets and, with increased credit standards, were reluctant to issue loans to all but the very highest-quality borrowers. The financial crisis, then, through the channels of tight credit markets (business as well as real estate credit) and investor losses became a real crisis, resulting in falling output in the U.S. goods and services markets and, eventually, spreading to the rest of the world.

In addition to declining real output and tightening credit markets, the financial



Federal Reserve Bank Assets Versus Time (Source: Federal Reserve Bank of Cleveland)

crisis caused significant monetary policy ramifications. Between September 2008 and September 2009, the Federal Reserve Bank tripled the money supply in an attempt to stimulate the economy and fight liquidity issues; many individuals and organizations began hoarding money, and the "velocity" (or turnover rate) for cash declined. The composition of the Fed's asset base (see Figure 2), which had historically consisted of safe U.S. government bonds, loans to banks, and foreign reserves, changed dramatically. By September 2009, with the Fed buying up toxic structured debt, nearly half of the Fed's assets were asset and mortgage backed bonds. In essence, the U.S. money supply was backed in large part by the toxic structured debt. As SIVs discovered during the financial crisis, MBS weren't exactly the best collateral!

As the U.S. real economy begins to improve, and the velocity of money increases, the Fed is now tasked with developing a strategy to shrink its balance sheet and rein back in the money supply, or risk significant inflationary pressures. However, this undertaking is complicated by the fact that the Fed must find buyers for its large asset- and mortgaged-back investment portfolio in order to reduce the money supply.

CONCLUSION

The current financial crisis resulted from a combination of origination fraud, a credit boom, easing capital market regulations and origination standards, perverse incentive structures, financial innovation, and increased leverage/debt ratios. Many of these issues, in turn, occurred as a result of the unintended effect of legislation introduced in the two decades preceding the financial crisis. As we enter a new decade, the Obama administration is now working to establish a new regulatory framework to prevent another financial market crisis while, at the same time, struggling to stimulate real economic growth within the tight confines of a burgeoning budget deficit and expanded money supply. The economic challenges we face are greater than any since the Depression, but eighty years later we are fortunate to have more advanced fiscal and monetary policy tools at our disposal to stimulate growth and curtail inflationary pressures.