

**Structured Finance in the Crisis of 2007-2008:
A False Sense of Securitization**

by

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Introduction

In the years leading up to the severe disruption of the global financial system in 2007 and 2008, there was exponential growth in the subprime mortgage market in the United States. Many economists consider such growth and the related bursting of the housing bubble to have amplified the meltdown. The loose credit and lending standards which enabled the subprime market to expand would not have existed if it were not for a fundamental change in banking methods to an “originate-to-distribute” model. Through securitization, banks removed illiquid loans from their balance sheets and replaced them with cash in a process that allowed banks to continually extend more credit (Altunbas, Gambocorta, & Marques-Ibanez, 2009).

This paper reviews the rise and fall of securitization and draws on the growing literature on the causes of the financial crisis to demonstrate that securitization was at the heart of the crisis and explain how misuse of the model fuelled the fire that scorched a number of the largest financial institutions in the world. Although a recession may have been inevitable, the impact on the financial sector in the United States and globally would not have been so devastating or widespread if it were not for the damaging impact that structured finance and shadow banking activity ultimately had on the balance sheets of those institutions.

Section I of this paper discusses the transition of the traditional banking model to the originate-to-distribute model. First, it introduces the concept of the new banking model through an explanation of the process of loan securitization and makes note of the financial instruments that will be referred to repeatedly throughout the paper. Second, it demonstrates the rapid and widespread growth in

securitization transactions and financial innovation in the years leading up to the crisis. Third, it discusses two factors that allowed the volume of business to grow so rapidly: low interest rates and heavy reliance on rating agencies. This is followed by a discussion of the perceived benefits of securitization that seemed to fascinate (and perhaps fool) many of the largest financial institutions and some of the brightest minds in the industry.

Section II reviews the role played by securitization in the financial crisis with a particular focus on how it encouraged poor quality loan origination that left bank balance sheets completely impaired, posing significant systemic risk to the global financial system. It becomes apparent that securitization was, by various means, a major contributor to the financial meltdown.

Section III briefly considers reform of the system that might allow for a sustainable adaptation of the new banking model in the long run.

Section I: The Growth of Structured Finance

The New Banking Model

In the traditional model of financial intermediation,¹ banks serve both investors and borrowers by accepting deposits and channelling them into loans, which are held until maturity as assets on the balance sheets of the institutions. In the traditional model, banks also fund loans by issuing their own debt financing instruments with various maturities. These include notes and bonds.² In the period leading up to the crisis, financial innovation led a transformation of this model “to

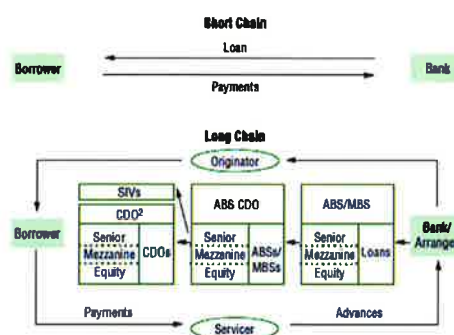
¹ Also referred to in the literature (e.g. Purnanandam 2009) as the “originate-to-hold” model in order to more directly contrast the “originate-to-distribute” model.

² For further discussion, see Van Order (2007) and Brunnermeier (2008).

incorporate an alternative and more complex originate-to-distribute model” (Celent, 2008).

In the originate-to-distribute model, loans are no longer held to maturity by originating banks. Rather, originators transfer the loans and the accompanying risk from their own balance sheets to investors through the use of structured financial instruments and off-balance-sheet entities (OBSEs) along the “securitization chain” (International Monetary Fund (IMF), 2009). Figure 1 illustrates a simplified view of both the traditional banking model and the originate-to-distribute model.³

Figure 1 Illustrative Intermediation Chain



Note: ABS = asset backed security; CDO = collateralized debt obligation; CDO² = collateralized debt obligation-squared; MBS = mortgage-backed security; SIV = structured investment vehicle.

Source: IMF Global Financial Stability Report

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Securitization is the process by which these structured financial instruments including asset backed securities (ABSs), mortgage backed securities (MBSs), and collateralized debt obligations (CDOs) are engineered. ABSs are bonds or notes supported by the cash flow from a portfolio of assets. MBSs are ABSs supported by

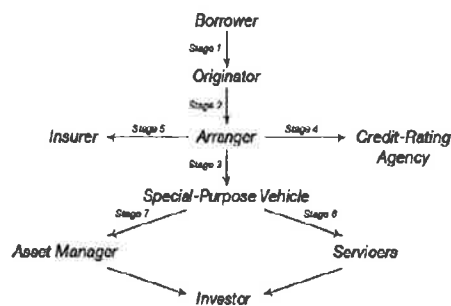
³ Brunnermeier distinguishes between the “originate-to-distribute” model and the “originate and distribute” model. The former refers to loans originated for the purpose of being securitized while the latter refers to cases where the decision to securitize is made after origination. For the purpose of the analysis in this paper, the terms are interchangeable.

⁴ IMF (2009), Figure 2.11.

the principal and interest payments on a portfolio of mortgages. CDOs typically consolidate fixed income assets, which may include ABSs or MBSs, into a pool which is then divided into tranches with different levels of priority with respect to payment, permitting the cash flow to be directed to investors with different appetites for risk (Brunnermeier, 2009).

As Brunnermeier (2009) explains, the transactions are designed to increase stability in the financial system by transferring risk from banks into the hands of those who are most able and willing to bear it. Figure 2 provides a good visualization of the securitization process and the parties involved.⁵

Figure 2 The Securitization Process



Source: Paligorova (2009)

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First, borrowers are granted loans by the originator, most often a bank. Then, the originator pools these assets in a portfolio which is sold to an OBSE know as a special purpose vehicle (SPV). This transaction occurs through an arranger, most often an investment bank, responsible for setting up the SPV, consulting credit

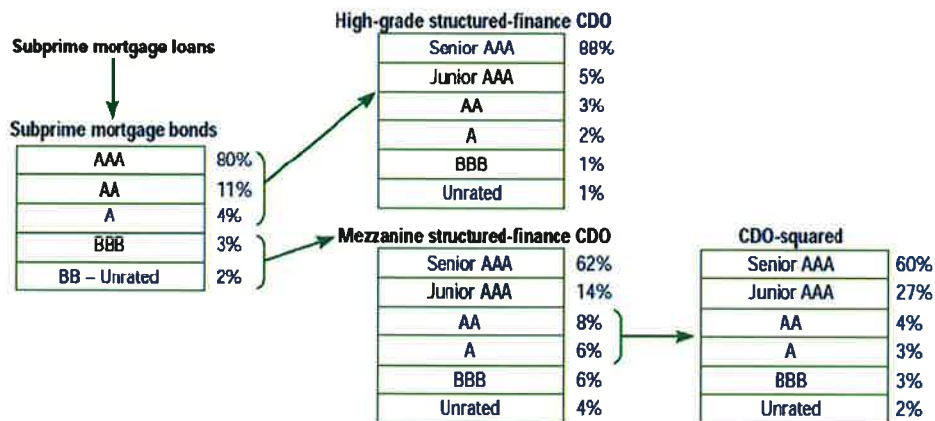
⁵ Paligorova (2009) notes that the various stages of the transaction do not necessarily occur in the order described.

⁶ Paligorova (2009), Figure 1.

rating agencies, and designing securities to be issued to investors (Paligorova, 2009).

These structured instruments are complex. See, for example, Figure 3 which illustrates a typical risk profile for a securitization transaction involving subprime mortgage loans. The mortgage bonds are divided into tranches with different levels of seniority. Note that 95% of the cash flow from the mortgage bonds then goes to a high grade CDO, while the next 5% goes to a mezzanine CDO with a lower level of seniority in the case of default in the underlying loans (Jaffee, Lynch, Richardson, & Van Nieuwerburgh, 2009). Each of the high grade CDO and the mezzanine CDO is also divided into tranches. Then, a portion of the mezzanine CDO is structured into another CDO called a CDO². Although it is not shown here, there are structures that include a CDO³. It is easy to see how problems of transparency could arise as a result of this complexity.

Figure 3 The Complexity of Structured Finance



Source: IMF staff estimates.
Note: CDO = collateralized debt obligation.

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⁷ IMF (2008), Box 2.2

Box 1. Structured Investment Vehicles and ABCP Conduits

The literature on the crisis focuses on the impact of particular SPVs known as structured investment vehicles (SIVs) and asset backed commercial paper (ABCP) conduits that comprised an important part of the shadow banking system when the crisis hit. These SPVs, separate from the bank's balance sheet, are designed to isolate the credit risk (Coval, Jurek, & Stafford, 2009). Before the crisis, SIVs and ABCP conduits held assets of \$400 billion and \$1.4 trillion respectively (IMF, 2008). SIVs and ABCP conduits fund their portfolios, which consist largely of structured products, by issuing debt securities to investors. SIVs typically issue a combination of short-term commercial paper and medium-term notes collateralized by the stream of cash flow from underlying assets (Fitch Ratings, 2008), which may include subprime mortgage loans. ABCP conduits issue short-term commercial paper also collateralized by the stream of cash flow from underlying assets.⁸

The Rise of Securitization

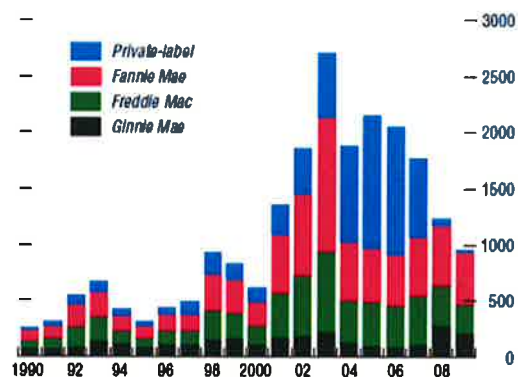
In 1968, the U.S. Government reorganized Fannie Mae, the Federal National Mortgage Association, which was originally established during the Great Depression to inject liquidity into the mortgage market of the day and make home ownership available to low income families (Okongwu & Sabry, 2009). It also established Ginnie Mae, the Government National Mortgage Association. In 1970, the U.S. Government created Freddie Mac, the Federal Home Loan Mortgage Corporation.

⁸ For more information on the characteristics of different SPVs (e.g. SIVs, SIV-lites, ABCP conduits) see Fitch Ratings (2008) and IMF (2008) Box 2.5.

These Government Sponsored Enterprises (GSEs) were designed to lower the cost of borrowing, improve access to residential mortgages, and provide liquidity to the mortgage market by purchasing loans from originating institutions, repackaging them into MBSs, and selling them to investors with the implicit guarantee of repayment from the U.S. government (Coval, Jurek & Stafford, 2009; Okwongu & Sabry 2009). The market for ABSs in the U.S. developed by means of these GSEs (Altunbas et al., 2009).

In the decades that followed, the growth in so-called agency securitization in the U.S. was exponential. GSE-issued MBSs represented 50% of the securitized market in the early 1980s, 64% in 1992, and 73% in 2002 (Jaffee et al., 2009). Thanks to these agencies, millions of modest families all over America became homeowners.

Figure 4 U.S. GSE versus Private-label MBS Issuance (\$ Billions)



Source: *Inside Mortgage Finance*.
 Note: Government-sponsored enterprises include Fannie Mae, Freddie Mac, and Ginnie Mae. Data for 2009 through end-June.

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More importantly, however, at least as it relates to the crisis, is the fact that securitization by GSEs set the stage for growth in non-agency securitization, also

⁹ IMF (2009), Figure 2.7.

called private-label securitization. These securities do not have credit risk protection from GSEs. Non-agency MBSs represented 15% of total mortgage securities in 2003, 23% in 2004, 31% in 2005, and 32% in 2006. In terms of newly issued securities, non-agency MBSs actually surpassed agency securitization for the first time in 2006, reaching 56% of new MBSs (Jaffee et al., 2009).

A critical result of this change in market structure was large increases in the volume of subprime mortgage loans and securitization rates.¹⁰ From 2001 to 2006, subprime loan issuance increased from \$190 billion to \$600 billion while the proportion of securitization in the subprime mortgage market increased from 50.4% to 80.5% (Table 1).

Table 1 Subprime Origination and Securitization, 2001-2006 (\$Billions)

	Subprime (\$)	Subprime MBS (\$)	% Securitized
2001	190	95	50.4
2002	231	121	52.7
2003	335	202	60.5
2004	540	401	74.3
2005	625	507	81.2
2006	600	483	80.5

Source: Restoring Financial Stability: How to Repair a failed System

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There was also remarkable growth in CDO issuance over the same period, reaching \$314 billion in 2006 (Table 2). The institutions responsible for CDO issuance were, as Jaffee et al. (2009) described, a “who’s who” of the financial crisis.

¹⁰ See Angell & Rowley (2006) and Kiff & Mills (2007).

¹¹ Jaffee et al. (2009), Table 1.3

Table 2 Book Runners of Worldwide CDOs (\$Billions)

	2004	2006	2007	2008
Citigroup	7	40	40	5
Merrill Lynch	16	54	38	5
Deutsche Bank	12	31	31	12
Barclays	0	18	28	2
Wachovia	11	24	24	2
Goldman Sachs	7	33	24	5
ABN Amro	0	5	23	1
UBS	8	22	20	0
Lehman Brothers	6	17	18	18
JP Morgan	7	22	18	3
Bear Stearns	7	25	16	0
Bank of America	4	23	15	2

Source: Restoring Financial Stability: How to Repair a Failed System ¹²

Overall, non-agency or private-label securitization worldwide increased from almost no activity in 1990 to over \$2 trillion in 2002 and peaked at nearly \$5 trillion in 2006 (IMF, 2009).

Factors Affecting Growth

In order for non-agency securitization to explode the way it did in the 2000s, there must have been strong incentives in place for investors to demand structured products and for issuers to supply them. There are two primary reasons why investors were so keen to buy in: the low interest rate environment and the actions of credit rating agencies.

Low interest rates in the first part of the decade had two primary effects. First, it increased the incentive of banks to borrow and pursue greater lending activity and the corresponding incentive of homeowners and businesses to borrow. It also caused investors including pension funds, investment banks, and hedge funds to seek more rewarding investment opportunities (Crouhy et al., 2008). This is often

¹² Jaffee et al. (2009), Table 1.4

referred to as the “hunt for yield.” When structured products came along with more appealing yields than the available alternatives, investors, from the most conservative pension funds to the high risk hedge funds, began to buy in. This was only possible, however, because the credit rating agencies, Moody’s, Standard and Poor’s, and Fitch, were willing to give a large majority of these securities a AAA rating. As Schwarcz (1994) explains, “Given that most investors...have neither the time nor the resources to fully investigate the financial conditions of the companies in which they invest, these ratings take on special significance” (p. 136). According to Fitch Ratings (2008), roughly 60% of all structured products were given the highest AAA rating, while less than 1% of corporate securities received such a rating. The sense of security felt by investors was further supported by booming house prices and the availability of insurance contracts in the form of credit default swaps.

Concurrently, when banks were greeted with this “hunt for yield” environment, they had much to gain (or so they thought) by feeding the frenzy and growing the business. From the originator’s perspective, securitization is an immediate injection of liquidity acquired from the sale of illiquid loans to OBSEs. As Jaffee et al. (2009) state, this “allows for a credit risk transfer from the originators of the loans to capital market investors willing to hold the risk, thus allowing the particular market for credit to expand” (p. 68). Okongwu and Sabry (2009) quantify this increase in available credit. They find that a 10% increase in secondary market

purchases of mortgage loans increases mortgage loans per capita by 6.43% for a given Treasury rate of 4.5%.¹³

Another perceived benefit that securitization provided to originators, as Brunnermeier (2009) explains, was the ability to escape international regulatory capital requirements set by the Basel I Accord. The Accord required that banks hold capital of no less than 8% of the loans on their balance sheets (Brunnermeier, 2009). By transferring pools of loans off-balance-sheet to SIVs, the banks were able to reduce the amount of capital they otherwise would have been required to maintain while still officially conforming to regulations (Brunnermeier, 2009). In the circumstances, banks were able to lend aggressively and grow the business while maintaining low capital that was not adequate for the risk of their asset portfolio.^{14 15} It has been widely reported in the press that such growth was further stimulated by compensation schemes that rewarded bankers based on short term profit.

Section II: The Role of Securitization in the Crisis

The Downfall

Starting in 2007, a series of events began to strip away the financial complexity that the securitization model had built up to reveal that trillions of investor dollars and the solvency of many of the largest financial institutions rested

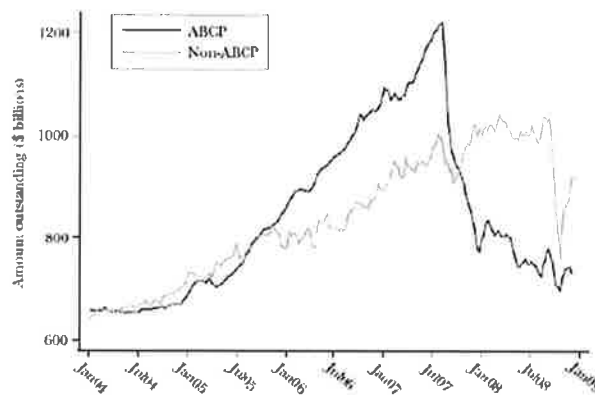
¹³ See IMF (2009), p. 79

¹⁴ The Basel II Accord, implemented in Europe and soon to be implemented in the United States, reduces some of the difference in capital requirements between on and off-balance sheet financing, but to little avail (See Brunnermeier (2009) and Archarya & Schnabl (2009)).

¹⁵ For a more in depth analysis of perceived the benefits of securitization, see Okwongu and Sabry (2009).

on delinquent subprime mortgages. As borrowers defaulted early in 2007, Moody's, Standard and Poor's, and Fitch began to downgrade ratings of tranches from subprime deals (Brunnermeier, 2009). Shortly thereafter, various hedge funds, led by certain funds operated by Bear Stearns and BNP Paribas, were frozen or bankrupt, primarily as a result of heavy investment in CDOs (Acharya, Philippon, Richardson, & Roubini, 2009). There were runs on various SIVs as investors started to become uneasy about the hidden risks associated with their AAA rated structured security holdings. Investors reverted to Treasuries and SIVs were unable to roll over their ABCP (Figure 5), forcing them to turn to their sponsoring banks (Crouhy et al., 2008). As markets deteriorated, banks began hoarding funds and both the market for ABCP and the bank lending channel were effectively frozen. When banks pulled back from lending, it limited the flow of important credit to households and businesses (United States Department of the Treasury, 2009).

Figure 5 Outstanding Commercial Paper



Source: Federal Reserve Board.

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By mid-2008, structured finance activity had effectively shut down (Coval et al., 2009). CDO issuance dropped from \$314 billion in 2006 to \$55 billion in 2008

¹⁶ Brunnermeier (2009), Figure 2.

(Table 2, above). Banks incurred massive write-downs, rating agency revenues disappeared, and existing products continued to be downgraded, often from AAA to junk (Coval et al., 2009).¹⁷ According to the Bank of International Settlements, Moody's downgraded 31% of all tranches for asset-backed CDOs in 2007, 14% of which were initially rated AAA (Coval et al., 2009). Many of the largest financial institutions either failed (e.g. Bear Stearns, Lehman Brothers, and Wachovia) or had to be bailed out (e.g. Merrill Lynch, Citigroup, and UBS) (Jaffee et al., 2009). It was clear that "once lack of financial market transparency and increased opacity of these markets became an issue, the seeds were sown for a full blown financial crisis" (Acharya et al., 2009, p. 5).

How it Went So Wrong

Until early 2007, the originate-to-distribute model appeared to be functioning effectively and the results seemed to serve the best interests of investors, originators, and borrowers. People had every reason to believe that products were safe. The new model, however, had almost exclusively seen the good state of the world in the years prior to the onset of the crisis.¹⁸ This changed dramatically and rapidly when subprime delinquencies increased and the housing bubble burst, revealing the substantial flaws in the securitization model that lay beneath much of the financial activity.

¹⁷ For example, 27 of 30 CDO tranches underwritten by Merrill Lynch in 2007 were downgraded from AAA to junk (Coval et al., 2009).

¹⁸ For a discussion on the reasons why the dot-com crash of 2001 was not nearly as severe in comparison, see Acharya et al. (2009), p. 14-19.

The literature suggests that the ability to securitize assets amplified the crisis by various means, including: (1) the deterioration of subprime lending decisions through agency conflicts along the securitization chain, resulting in lower quality loans and house price appreciation, (2) excessive leverage through misuse of the model that led to growth of the shadow banking system and left banks holding a large portion of toxic tranches on their books, and (3) a lack of transparency posed by increasing complexity on Wall Street and the performance of credit rating agencies.

Deterioration of Lending Decisions

In March of 2009, Bank of Canada Governor Mark Carney said that the misalignment of incentives among participants in the securitization process played a major role in the financial market turmoil (Paligorova, 2009). In the wake of the crisis, a number of economists have tested this supposition that moral hazard and asymmetric information in the securitization model led to weaker screening and underwriting standards on the part of lenders, resulting in the origination of lower quality loans in the years leading up to the crisis.¹⁹ As Mian and Sufi (2008) demonstrate, this contributed to house price appreciation and the subsequent rise in mortgage defaults.

Keys, Mukherjee, Seru, and Vig (2008) analyze the relationship between securitization and borrower screening standards in the context of subprime mortgage loan origination. They test whether securitization, by creating distance between originators and the ultimate bearers of default risk (the investors), may

¹⁹ A discussion on specific proxies for deterioration of loan quality (e.g. Loan to Value ratios and limited documentation %) occurs in Acharya et al. (2009), p. 20.

reduce incentive on the part of lenders to conduct appropriate due diligence, thus resulting in increased subprime mortgage lending. Using data on more than two million subprime mortgages from 2001 to 2006, the authors find that the probability of default within the first two years is 20% higher for mortgages that are easier and less costly to securitize. They believe this suggest that as the ease of securitization increases, there is reduced incentive for lenders to process “soft information”²⁰ on borrowers when they do not have to bear the risk of loans they originate.

Dell’Ariccia, Igan, and Laeven (2008) made the first attempt to empirically link lending standards and delinquency rates in the subprime mortgage market. Using application denial rates and loan-to-income ratios for over 50 million loan applications, the authors find that lenders denied fewer applications and approved larger loans in the subprime mortgage industry during its expansion. This suggests that the lending boom was associated with a decrease in lending standards. Furthermore, denials rates were lower and loan to income ratios were higher in regions where a greater proportion of mortgage loans were securitized and in areas with more pronounced housing booms.

Purnanandam (2009) contributes to the literature by looking at the liquidity freeze in the secondary mortgage market in 2007 to identify the effect of the originate-to-distribute model on loan quality. By showing that banks which held large numbers of loans originated in the “pre-disruption period” were (1) unable to

²⁰ As opposed to observable “hard information” (e.g. the FICO scores of borrowers), “soft information” refers to the more costly, unobservable information that assesses the credit-worthiness of borrowers (e.g. future income stability) (Keys et al., 2009).

sell these loans (had higher mortgage charge-offs) in the “post-disruption period” and (2) experienced higher default rates, Purnanandam (2009) concludes that these loans were of inferior quality.²¹ Banks with a high portion of securitized loans when the disruption occurred were left holding a disproportionately large number of inferior quality mortgage loans on their balance sheets. Thus, after accounting for bank characteristics that might influence credit quality,²² Purnanandam (2009) confirms the belief that the lack of screening incentives in the originate-to-distribute model contributed to the origination of inferior quality mortgage loans before the onset of the crisis.

Demyanyk and Van Hemert (2009) find that loan quality in the subprime mortgage market decreased for six consecutive years before the crisis. The authors demonstrate that the increase in risk of subprime loans was associated with a *decrease* in the sub-prime mortgage rate spread. Since this mark-up, in theory, accounts for the higher default risk of subprime loans, it should have increased in the years before the crisis. It could never have been sustainable to continue advancing lower cost and riskier loans. As Alan Greenspan (2010) explained, “there was little room for the further underpricing of risk” (p. 8). Based on their results, Demyanyk and Hemert (2009) suggest that the true risk of the growth in subprime mortgage loans should have been apparent to securitizers, but instead was masked by the rapid appreciation in housing prices.

²¹ The pre-disruption period is defined by the authors as the period up to the first quarter of 2007 and the post-disruption period as all quarters that follow.

²² For example, a bank’s geographical location.

On April 14, 2009, speaking to the students and faculty at Morehouse College in Atlanta, Ben Bernanke explained that the housing boom was fuelled in large part by the expansion of mortgage lending that was poorly done. The loans often involved "little or no down payment on the part of the borrower or insufficient consideration by the lender of the borrower's ability to make the monthly payments" (Bernanke, 2009).

Mian and Sufi (2008) empirically demonstrate this connection between subprime lending and housing prices by showing that the rapid expansion in mortgage lending to risky borrowers, driven by the transition to the originate-to-distribute model, explains a large fraction of house price appreciation before the crisis and the subsequent increase in default rates. Mian and Sufi (2008) use specific zip-code level data and demonstrate that zip-codes with the highest mortgage securitization rates experienced the greatest house price appreciation and subsequently, the highest default rates. The paper makes a particularly novel contribution to the literature by allowing us to connect other securitization studies (such as those discussed in previous paragraphs) directly to the impact on housing prices.

Leverage and the Shadow Banking System

Once rising subprime mortgage defaults and fear of a housing bubble began to concern investors structured products, it was not long before the market for ABCP had frozen and bank lending had come to a halt. Fear of liquidity shortages increased as SIVs and other off-balance-sheet conduits began to turn to their sponsoring commercial banks as they failed to roll over commercial paper.

Securitization was designed to diversify risk, but banks misused the model by focusing on short term profits in the years before the crisis and not considering what might happen to their balance sheets if nationwide house prices were to level off or decrease. This misuse occurred in two primary forms: (1) SIVs and other OBSEs had recourse to banks through liquidity backstops, lines of credit, and concerns of loss of bank reputation, and (2) a large percentage of securitized products actually remained in the banking system.

As it turns out, many OBSEs were not truly off-balance-sheet at all. They were recognized as such for accounting purposes, which allowed banks to circumvent capital requirements and boost lending. However, when the SIVs and ABCP conduits ran into liquidity problems, banks were left with no choice but to bring the assets back onto their books (Acharya et al., 2009). Many OBSEs had been offered liquidity backstops from the sponsoring banks (IMF, 2008). Consequently, Brunnermeier (2009) explains, "the banking system still bears the liquidity risk from holding long-term assets and making short-term loans even though it does not appear on the banks' balance sheets" (p. 80). Other banks whose vehicles did not have full recourse brought assets back onto their balance sheets in fear that their reputations depended on it. Gorton (2005) refers to this as "implicit recourse" or "moral recourse". Effectively, a substantial part of the off-balance-sheet world had recourse to sponsoring banks. When these assets came back on balance sheet, it became evident that institutions were extremely highly leveraged and much more so than any accounting ratios might have suggested to investors. At the end of 2008, off-balance-sheet assets at Bank of America, Citigroup, JP Morgan Chase, and Wells

Fargo, the largest U.S. banks, totalled \$5.2 trillion dollars (Reilly, 2009). On November 28, 2007, HSBC became the first bank to officially bail out its OBSEs, bringing \$45 billion of securitized assets back onto its balance sheet (Crouhy et al., 2008). The aforementioned industry leaders followed closely behind. This led to the need for significant government intervention that likely prevented a complete collapse of the financial system. As Acharya and Schnabl (2009) attest, "Banks clearly played the leverage game well, at significant costs to the economy and in some cases even to themselves" (p. 99).

Table 3 ABS Exposure Concentrations

Type of Institution	% Buyer of AAA ABS
Banks	30
Conduits	12
SIVs	8
Hedge Funds	2
Money Market Funds	26
Credit Funds	17
Other	5

Source: Restoring Financial Stability: How to Repair a Failed System ²³

Misuse of the securitization model extends further. When the ABCP market froze, banks found themselves stranded with a combined \$1.325 trillion dollars worth of damaged securitized assets directly on their books (Acharya et al., 2009). Banks, GSEs, and broker-dealers together held \$791 billion worth of AAA rated CDOs (Acharya et al., 2009). How could this happen when the purpose of securitization was to diversify risk by transferring the credit risk to capital market investors? Shockingly, even the banks were blind to the true risks that lay beneath the AAA ratings. Since they would only incur losses in the extremely rare event that

²³ Acharya & Schnabl (2009), Table 2.2

the most senior tranches got hit, the banks believed that it was appropriate to retain tranches that were not passed on to investors (Coval et al., 2009). Banks were actually among the most active buyers of structured products (Table 3). As a result, the credit transfer never truly took place in the way it had been designed. Acharya and Richardson (2009) consider this extreme misuse of the business model of securitization to be a primary cause of the credit crisis.

Complexity and the Creation of an Opaque System

As discussed in Section I, the structured products became increasingly complex before the onset of the crisis. Regardless of who was holding these products (be it the originating bank, an OBSE, a pension fund, a money market fund, or a hedge fund), there was one thing that was almost certain: they did not have a sufficient understanding of the associated risk.

For investors, regardless of appetite, it was impossible to understand the true risk associated with their investments. First, most investors were not nearly sophisticated enough to be able to value complex structured products. Assets in a collateral pool of a MBS might have consisted of thousands of subprime mortgages with a variety of different borrower characteristics (Crouhy et al., 2008). As products became more complex (e.g. CDO² and CDO³) the links between tranche payments, seniority, and the underlying loan performance became increasingly unclear and difficult to value (Fender & Mitchell, 2009).

Furthermore, the extent to which institutions were misusing the model was relatively unknown to most investors. There was no way of quantifying the magnitude of commitments banks had given their OBSEs, either in the form of

liquidity enhancement or implicit recourse in the case of a serious disruption (Crouhy et al., 2008). The types of assets within OBSEs were also, for the most part, hidden from investor view.

As a result of the incredibly opaque nature of the system, in order to take advantage of the attractive yield provided by these instruments, investors had no choice but to rely on others with the appropriate expertise to conduct due diligence and perform the valuation on their behalf. Enter the credit rating agencies.

As discussed above, the securitization model was only able to grow as rapidly as it did because of the willingness of the big three credit rating agencies to give tranches of structured products the highest ratings (Richardson & White, 2009). These ratings were of particular importance to conservative investors (e.g. pension funds and money market funds) who are legally obliged to invest only in “investment grade” AAA rated securities. Before the crisis, nearly all investors relied on ratings as a sufficient metric for risk management (Crouhy et al., 2008). With the advantage of hindsight, having witnessed a continuous stream of rating downgrades from investment grade to junk as the crisis unfolded, it is clear that rating agencies either had faulty methods or were influenced by their own misaligned incentives. It turns out, not surprisingly, to be a combination of both.

The statistical valuation models used by rating agencies provided overly optimistic forecasts about structured products. This was primarily due to the fact that methods were largely based on low mortgage default rates and consistent house price appreciation and thus did not properly reflect the complexity and risks

of the securities (Brunnermeier, 2009; Coval et al., 2009).²⁴ There was also no clear distinction between ratings of structured products and other securities such as corporate bonds, making it difficult for investors to understand the fundamental differences in risk (Fender & Mitchell, 2009).

The more troublesome problems, however, emerge from the “issuer pays” model that leads to potential conflicts of interest.²⁵ These conflicts arise because investors are looking for accurate ratings while institutions, who pay for the ratings, are interested in maximizing the number of AAA rated securities (Paligorova, 2009). This encourages issuers to create a competitive environment among the agencies, indirectly forcing them to provide more favourable ratings in a process referred to as “rating shopping” (Richardson & White, 2009; Paligorova, 2009).

Looking back at Figure 3, it now seems preposterous that a senior AAA rated tranche could emerge in a CDO² from what originally was a BBB rated MBS. It is not surprising that it is now a widely accepted view that rating agencies played a significant role in masking the underlying complexity in the system by contributing to, rather than relieving, the opaque nature of the system before the crisis.

Misuse of the originate-to-distribute model had made the system and the products so complex and sufficiently rewarding that it encouraged the credit rating agencies, investors, financial institutions, and borrowers to be guided by greed and

²⁴ Brunnermeier (2008) explains that the United States had not experienced a nationwide drop in house prices in the post World War II era. This suggested to rating agencies that there was a low cross-regional correlation of house prices, generating a diversification benefit that increased the perceived value of structured products.

²⁵ A number of authors discuss this conflict of interest in the credit rating process. See Richardson & White (2009); Crouhy et al. (2008); and Coval et al. (2009).

their own self-interest, never once stopping to think about what might happen to the economy when, as former Citigroup CEO Charles Prince said, “the music stops.”²⁶

Section III: The Future of the Originate-to-Distribute Model

The misuse of the originate-to-distribute model certainly stopped the music. In 2008, financial activity came to a standstill in what was a full blown liquidity crisis. The question then became: where does the model go from here?

Some economists, such as Paul Krugman (2009), believe that the failure in the banking model was too substantial to justify restoring the securitization market. It is important, however, to remember the many benefits that diligent use of the originate-to-distribute model can provide lenders, borrowers, and investors. Although the crisis certainly revealed many flaws in the system, this should not “invalidate its economic rationale” (IMF, 2009, p. 78) In the circumstances, efforts on the part of regulators have been directed at striking a balance in the model that would allow the benefits to coexist with long-term financial stability (IMF, 2009). This requires aligning the incentives of lenders and borrowers by encouraging more meticulous underwriting standards, assessing the methods of credit rating agencies, and increasing transparency in the system.²⁷

As the recent literature suggests, securitization lengthened the intermediation chain and created a series of agency problems that resulted in lenders not properly assessing the creditworthiness of borrowers. This was the

²⁶ Full quote appears in Coval et al. (2009) and Greenspan (2010).

²⁷ These efforts with respect to the securitization model are being made along side the broader efforts to reform the financial sector, which include consideration of the capital maintained by banks and the compensation schemes mentioned previously in this paper.

major reason why countless numbers of unworthy borrowers found themselves with mortgages in excess of the value of their homes when the housing bubble burst. The most common proposal intended to promote proper underwriting standards is to make the originator retain some portion of each securitization in order to guarantee that the originator is never without direct exposure to the risk of default. This method is referred to in the literature as “tranche retention”, ensuring that originators have “skin in the game”.²⁸ Some have suggested that originators hold the equity tranche with the least seniority forcing them to incur the first losses in the event of default, while others believe originators should retain a vertical slice or randomly selected share of the entire portfolio. In either case, the hope is that originators, who have learned from their mistakes, would be encouraged to conduct careful due diligence to avoid reengaging in dangerous lending activity.

The U.S. Treasury²⁹ has proposed that the compensation of those involved in the securitization process be linked to the long-term performance of the securitized assets. Commissions distributed over time would allow appropriate adjustments to be made if problems of quality were to emerge in the future.

It is also critical that regulators address the conflicts of interest that arise in the credit rating process as a result of the “issuer pays” model. Since the end of 2008, the Securities and Exchange Commission has been working with the rating agencies to institute necessary reform and attempt to restore investor confidence in the ability of agencies to provide reliable ratings. This requires more open

²⁸ For example, see IMF (2009) and Fender & Michell (2009).

²⁹ See: United States Department of the Treasury. (2009, June). Financial Regulatory Reform: A New Foundation.

disclosure of methodologies, a clearer distinction between ratings of structured products and corporate debt, more conservative assumptions regarding model parameters, and a decrease in competition among agencies to eliminate the ability of firms to shop for favourable ratings. These changes will not only improve the credibility of rating agencies, but hopefully allow investors to assist in performing their own due diligence.³⁰

In order to further reduce investors' reliance on rating agency models, there must be increased transparency and reduced complexity in the banking system. The Asset Securitization Forum program RESTART suggests that investors be provided with loan-level data on underlying pools (e.g. loan-to-value ratios and borrower incomes) in order to increase awareness of the true risk associated with their holdings (Fender & Mitchell, 2009). The relationship between banks and associated OBSEs should be made explicitly clear to investors. If incentive problems along the securitization chain are adequately addressed, there is no reason for the most complex structured products, such as CDO² and CDO³, to reemerge at all (IMF, 2009).

Concluding Remarks

The damage to bank balance sheets that resulted from misuse of the securitization model posed significant system risk to the financial system. Reform that brings more transparency and diligent use of the securitization model should permit originators to "redistribute risk to others in the economy without the undue use of leverage and complexity, removing the impetus to return to the "high octane"

³⁰ For examples of specific policy changes and proposals, see U.S. Department of the Treasury (2009), Crouhy et al. (2008), and Richardson & White (2009).

markets of 2005-2007” (IMF, 2009, p. 79). If this is indeed the case, securitization may once again be able to serve the role for which it was originally intended in its simplest form: allowing ordinary citizens greater access to affordable mortgages. In this connection, it is interesting to note that Canada Mortgage Bonds, issued by the Canada Housing Trust and fully guaranteed as to timely payment of principal and interest by the Canada Mortgage and Housing Corporation, have been performing this function effectively in the Canadian market since inception of the program in 2001.

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