

# A Primer on the Role of Securitization in the Credit Market Crisis of 2007

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John D. Martin

1/7/2009

In this paper I review the role of securitization in the credit markets and in particular the possible contribution of securitization to the credit crisis of 2007-2008. Based on this review I make the following observations: (i) over the last three decades the originate-to-distribute via securitization model has come to dominate the U.S. credit markets; (ii) the originate-to-distribute model has many possible advantages but brings with it a potentially fatal principal agent problem in the credit screening process; (iii) the growing complexity of the securitization process has given rise to a “market for lemons” problem that may well have contributed to the collapse of the market for securitized issues; and (v) the collapse of the mortgage backed securities market resulted in the use of distress prices by financial institutions to mark-to-market their portfolios and this may well have contributed to the panic that resulted in the failure of the affected financial institutions.

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# A Primer on the Role of Securitization in the Credit Market Crisis of 2007<sup>1</sup>

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## 1 Introduction

Once upon a time in the not so distant past, the credit markets were dominated by lenders who both originated loans and held them to maturity. Today, the majority of credit is created using the originate-to-distribute model in which the originator of the loan sells it to someone who combines it in a portfolio of similar loans and then issues new securitizes that hold a claim against the income provided by the loan portfolio. The transition from the traditional originate-to-hold model of credit markets to the originate-to-distribute model and its reliance on the capital markets as a continuing source of credit has been blamed by many for the financial crisis of 2007-8. The argument, very simply is the following: if the loan originator does not actually hold the credit it originates, but distributes the loans to others through securitization, the originator has a reduced incentive to monitor the credit granting process. This is a classic principal-agent problem that arises where the incentives of the originator of credit are not aligned with those of the entity that ultimately holds the loan.

In this paper I review the role of securitization in the market and in particular its role in the credit crisis of 2007-2008. Based on this review I make the following observations: (i) over the last three decades the originate-to-distribute via securitization model has come to dominate the U.S. credit markets; (ii) this model has many possible advantages but brings with it a potentially fatal principal agent problem in the credit screening process; (iii) the growing complexity of the securitization process has given rise to a “market for lemons” problem that may well have contributed to the collapse of the market for securitized issues; (iv) mortgage backed securitizations, specifically securitizations of subprime mortgages, are the most troubled area of the credit markets; and (v) the collapse of the mortgage backed securities market resulted in the use of distress prices by financial institutions to mark-to-market their portfolios and this may well have contributed to the panic that resulted in the failure of the affected financial institutions.

## 2 What is Securitization?

Asset backed finance or securitization is a financing technique that first gained popularity in the 1970s in the residential mortgage industry and has since been used to revolutionize virtually every type of credit market and debt instrument. Very simply, securitization involves the pooling of a set of credits or debt securities whose acquisition is financed by the issuance of new debt securities. The new securities go by various names depending on the type of assets in the pool. For example, if the pooled assets consist of residential home mortgages then the new securities are residential mortgage backed securities (RMBS), if the pooled assets consist of business loans then the new securities are known as collateralized loan

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<sup>1</sup> I want to thank Mark McNabb for his comments on earlier drafts of this paper; however, responsibility for any remaining errors is mine.

obligations (CLO), and so forth. The payments of principal and interest on the securities issued in the securitization are derived from the cash flows generated by pools of assets.

Figure 1 provides a classification system for the securitization of credit that includes definitions of key terms. Credit is extended to individuals and to firms, (i.e., consumer debt and corporate debt). For securitization purposes consumer debt is typically divided into two types of credit: mortgage loans and all other types of consumer debt. When residential mortgages are securitized the entity that performs the securitization issues residential mortgage backed securities (RMBS). When credit card debt or other forms of consumer debt are securitized, the securities issued against these pools are referred to simply as asset backed securities (ABS).

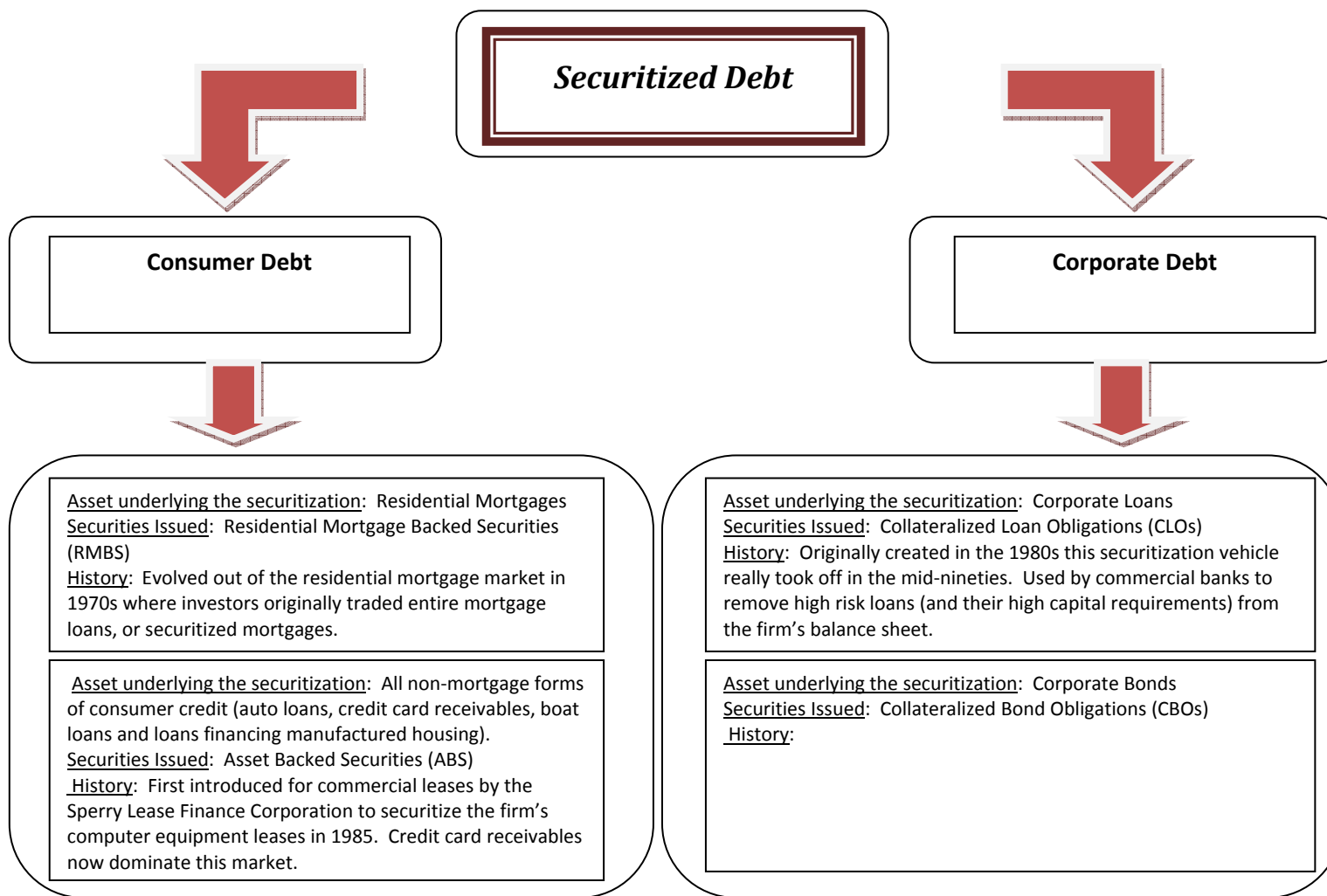
The term collateralized debt obligation (CDO) is sometimes used as the broad umbrella term to refer to all types of securities issued in securitizations involving corporate debt. For example, a collateralized loan obligation (CLO) is issued in conjunction with the securitization of corporate loans whereas collateralized bond obligations (CBO) are issued when the securitization involves a portfolio of corporate bonds.

The characterization of securitization found in Figure 1 is useful but it belies the true complexity of the securitization market. For example, the RMBS issued in the securitization of residential real estate mortgage loans are themselves often securitized in a second tier securitization that issues collateralized debt obligations. Moreover, as Figure 1 points out, the first asset backed securities were not formed around consumer credit but were issued against a pool of corporate computer leases. In other words, CDOs are not always used to securitize corporate credit and ABSs are not always used in the securitization of consumer credit. Finally, CDO securities were at times purchased and pooled in entities that issue additional CDO claims (referred to as CDO<sup>2</sup> or CDO-squared).

An important observation to make at this juncture is that securitization has grown to encompass increasingly more sophisticated and complex structures that make it difficult, if not impossible, to assess the value and risk of a particular security given the myriad of layers through which the security is connected to a particular mortgage, credit card receivable, or corporate loan or bond issue. Our objective is to lay out the basic elements of securitization in such a way as to shed some light on the role it has played in the collapse of the credit markets. Specifically, there are two important features of securitization that provide the focus for our analysis.

- First, consumer and corporate debt originated by lender is distributed to investors in the capital markets. Whereas loans were once held by the lender until repaid, through securitization these loans are pooled and claims on their cash flows are sold to investors around the world. As a consequence, the impact of credit origination problems is no longer limited to the originating institution but is diffused throughout the credit markets.
- Second, the credits are securitized in pools with new securities issued in tranches that have claims on the pooled cash flows. This means that these new securities do not have a direct claim on any specific loan or credit. This fact makes it difficult to sort out the claims a specific credit default.

Figure 1 Classification System Based on the Type of Debt that Underlies the Securitization



## The Mechanics of Securitization

To illustrate the basics of the securitization process consider the mortgage backed securitization process found in Figure 2. The mortgage banker creates or originates mortgage loans in the ordinary course of business. Once a sufficient block of mortgages has been originated, the mortgage banker initiates the securitization process by selling or assigning the mortgages to a special purpose vehicle (or SPV). The SPV can be a trust, corporation or partnership that is set up by the mortgage broker or an investment bank specifically to purchase the originator's mortgages and act as a conduit for the mortgage payment flows. An investment banker then sells mortgage backed securities to investors and uses the proceeds to purchase the mortgages from the mortgage originator. The investment banker uses its expertise to structure the mortgage backed securities (MBS) based on its professional opinion regarding investor demand.

As Figure 3 illustrates, the securities are issued in classes or tranches (French for slices) that have different priorities in terms of when their owners are paid. For example, the AAA/Aaa tranche is paid out of the cash flows from the mortgage pool before the AA/Aa tranche and so forth. The lowest rated tranche is typically referred to as the equity tranche as the holders of this tranche suffer the first losses experienced by the SPV and realize any residual return that remains after all other tranches have been fully paid. It is customary to refer to the A rated tranches as the senior tranche, the B rated tranches as the mezzanine tranches, and the unrated tranche as the equity tranche.

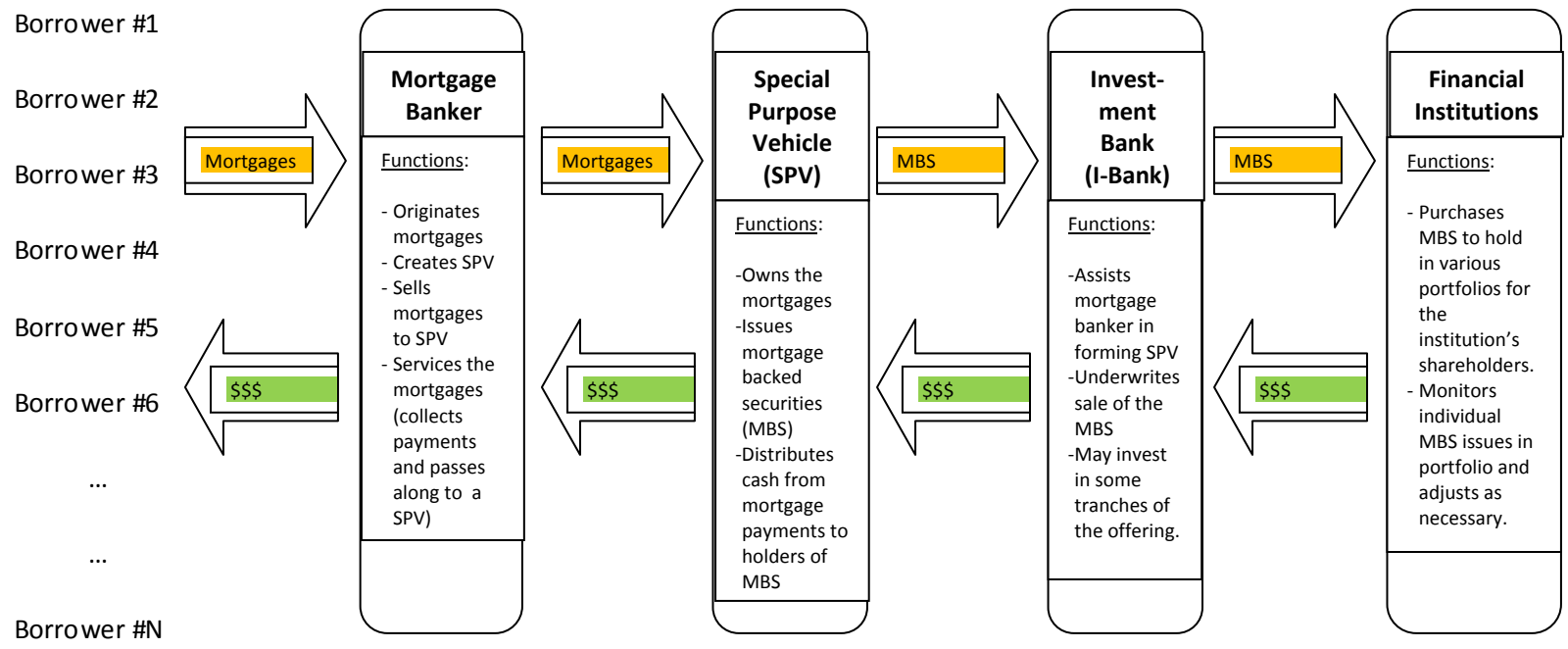
## Credit Enhancement

Virtually all MBS are rated by one of the major credit rating agencies (Moody's, Standard and Poor's, or Fitch). Achieving a high rating for the securities is critical to the marketability of the issues and the MBS issue will often receive some type of credit enhancement that helps raise the credit quality of the securities in an attempt to attract investors.

The credit enhancement can come from the assets themselves or from an external source. Examples of the former include the subordination of different tranches to higher rated tranches and over collateralizing the asset pool, (i.e., issuing a smaller dollar value of securities against the pool of mortgages).

Alternatively, the SPV can seek out external credit enhancements such as purchasing a surety bond or a letter of credit from a financial institution. Both these alternatives provide guarantees to investors that they will receive the promised payments associated with the MBS. An important source of credit enhancement involves the purchase of credit insurance from monoline insurance companies (so named since they offer insurance in only one industry). These firms (Ambac Financial Group Inc and MBIA Inc are the dominant firms and both were formed in the 1970s to insure municipal bonds) sold credit default insurance to bond issuers. If the issuer failed to make a principal or interest payment the insurance company would step in and make it.

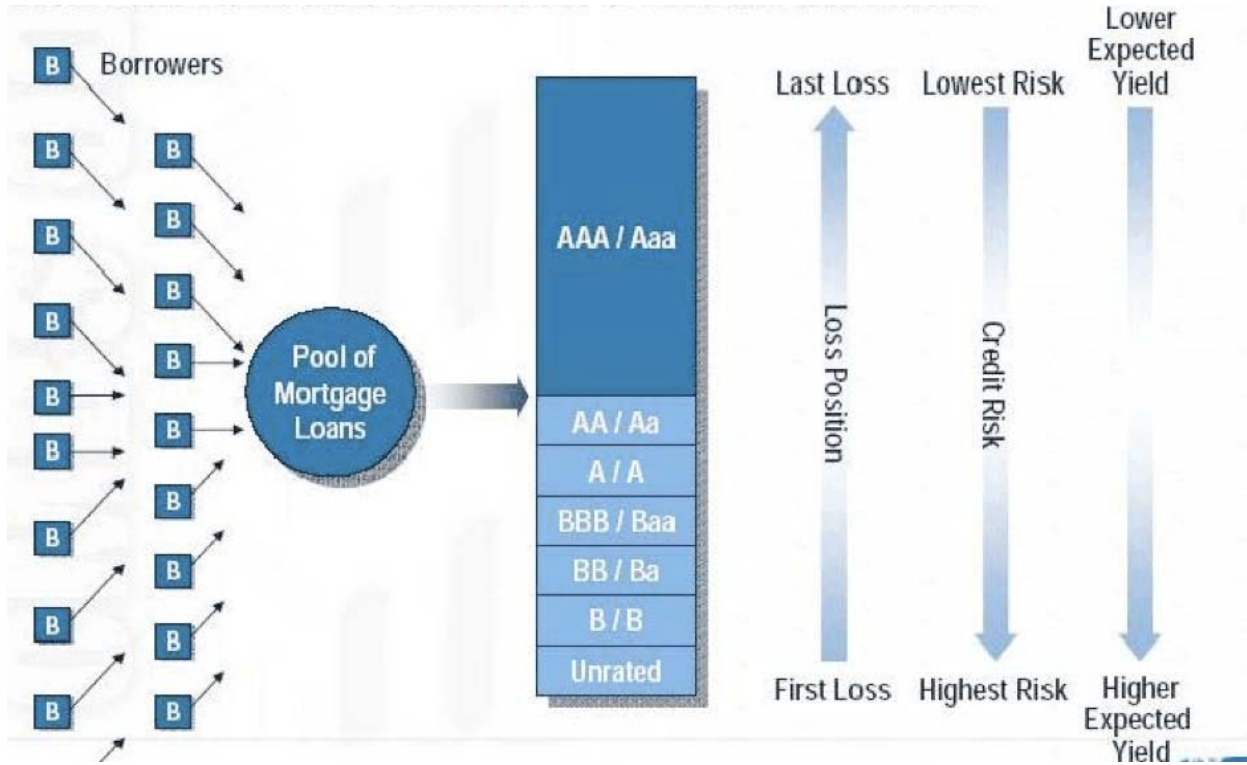
**Figure 2 Financial Intermediation using Securitization of a Portfolio of Mortgages**



**Figure 3. Mortgage Backed Securitization**

Mortgages from many different borrowers are sold/transferred to a SPV to form a pool of mortgage loans.

SPV issues securities in multiple tranches where the holders of the highest rated tranche are paid before the lower rated tranches. Due to the favored status of the higher rated tranches they face lower risk of loss and lower credit risk which results in a lower expected yield.



Legend: There are three types of mortgage backed securities (MBS): (i) mortgage pass through securities, (ii) collateralized mortgage obligations, and (iii) stripped mortgage-backed securities. For a detailed discussion of each type see Fabozzi (2005), Chapters 22-25.

## Secondary Market for Securitization Issues

The secondary market for the securities issued in securitizations is a dealer market. That is, just like bond markets, dealers make a market so that the securities are traded over the counter rather than on one of the exchanges. Therefore, it is the willingness of dealers to maintain an inventory, or make a market, as well as their financial position that provides liquidity to this market. Moreover, the continued existence of this market, like any financial market, is contingent on maintaining some symbolism of informational symmetry between buyers and sellers. If either party feels they are less well informed than the other, there is the very real possibility that the less well informed party will not transact in fear of being taken advantage of by the better informed party. This is precisely the market for lemons problem.<sup>2</sup>

## Why do Firms Securitize Assets?

Note that the originating firm that creates the mortgage loan, credit card receivable, or commercial bank loan that makes up the securitization pool, assigns or sells the loan to an entity that then securitizes it along with a portfolio of similar credits. This, in turn, monetizes the asset and in so doing frees up the cash the originator had tied up in the loan. Once the asset has been monetized it is no longer on the books of the originating firm and the originator now has liquidity that can be used to originate new loans and investments. This can be of particular importance to commercial banks that make higher risk loans and did not want those loans to impact their reserve requirements.

Alternatively, the firm could issue debt or equity to raise additional capital to fund new investments while holding the investments it has already made. Thus, a very important question to ask ourselves is the following: When would we expect securitization to be a more cost effective form of financing than firm or corporate financing? To gain some perspective on this issue let us consider the possible advantages and disadvantages of asset based finance or securitization as opposed to firm financing.

There are two potential benefits to the originating firm that can be derived from securitization as opposed to firm financing:

- Lower-cost financing—it is possible that firms with relatively poor credit histories can acquire assets (receivables, loans, leases, etc.) that are of high quality. If the financial markets are unable to discern the quality of these assets when combined with the firm's other investments, then it may be possible to obtain better financing terms through a securitization than as part of a corporate financing. Specifically, by securitizing the firm's assets they are separated from the originating firm, thereby making the quality of the asset-backed security issued in the securitization independent of the creditworthiness of the originator. This argument would suggest that firms that securitize would tend to have weaker credit quality than comparable firms that do not securitize their assets.<sup>3</sup>
- Comparative advantage—some firms may be very good at originating investments but because of their small size or lack of expertise in obtaining financing, may not be good at arranging

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<sup>2</sup> Akerlof (1970).

<sup>3</sup> Anecdotally this appears to be the case for Chrysler back in 1992 when it securitized its auto loan portfolio. The firm had been downgraded to B+ earlier in the year.

financing. Moreover, compared to the originators of the underlying loans, financial institutions that manage securitizations may possess a comparative advantage in structuring and managing securitization pools.

On the negative side, securitization may lead to a severe principal agent problem where the firm that originates the credits that will ultimately be sold and securitized, retains little or no interest in the pool of securitized assets. If bad loans can be passed on through the securitization process, the loan originator does not have the same incentive to pay attention to the credit worthiness of its customers as would be the case where the loan is not passed on for securitization. In fact, many now attribute much (if not most) of the blame for the collapse of the securitized mortgage market to the low quality of subprime mortgage originated in the waning years before the market's collapse. The notion that securitization reduces the incentive to monitor the screening process has gained a lot of support as an important contributor to the collapse of the subprime mortgage market.<sup>4</sup>

### Who Purchased MBS and Why?

Following the dot.com crash in 2000 and the attacks on the world trade center in 2001 the Federal Reserve Bank followed a policy of maintaining low rates of interest in an attempt to provide a growth stimulus to the economy. As a result of this policy interest rates offered to savers in the economy remained very low. With the banking system offering very low rates the non-banking component sought ways to enhance returns to attract savers through the use of financial leverage.<sup>5</sup>

How was it that MBS could offer higher “safe” rates of interest through securitization? There are two possible responses to this question. First, the mortgages that were combined in a securitization were not free of default risk and carried correspondingly higher rates of interest. By issuing MBSs in tranches and using credit enhancement, the securitization was able to offer very low default risk AAA/Aaa tranches that offered attractive yields. Moreover, so long as the credit enhancements built into the securitization were in place, the risk of owning the highest rated tranches seemed very low to yield starved investors.

The second method for enhancing yields on securitized portfolios relates to the use of financial leverage. For example, collateralized debt obligations were issued to purchase portfolios of RMS in which the majority of the funds came from fixed return CDOs.

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<sup>4</sup> The principal-agent problem becomes an issue where a principal hires an agent and cannot monitor the activities of the principal perfectly.

<sup>5</sup> Finance 101 tells us that if we can earn a rate of return on our investments that exceeds the cost of borrowing money then borrowing (i.e., using financial leverage) can lead to a higher return on our equity invested in project. Of course, financial leverage is a double edged sword that reduces the equity rate of return where the investment no longer earns a rate higher than the cost of borrowing.

### 3 Did Securitization Contribute to the Credit Market Crisis?

Although the root causes of the credit market crisis of 2007-8 are only now being ferreted out, there is growing support for the theory that changes in the debt markets over the last 25 years led to deterioration in the quality of the credit granting process.

#### Potential Agency Problem in the Originate-to-Distribute Model

In today's credit market, loan origination is a precursor to the distribution of those loans through securitization via the so called originate-to-distribute model. Under this model lenders originate loans that are then distributed through securitization such that the lender retains little or no exposure to the loan. This change, many now argue, gave rise to the problems that are at the very heart of the credit crisis. Specifically, Mishkin (2008) summarizes the problem as follows:

The originate-to-distribute model, unfortunately, created some severe incentive problems, which are referred to as principal-agent problems, or more simply as agency problems, in which the agent (the originator of the loans) did not have the incentives to act fully in the interest of the principal (the ultimate holder of the loan). Originators had every incentive to maintain origination volume, because that would allow them to earn substantial fees, but they had weak incentives to maintain loan quality. . . .

Support for this idea is not universal, however. Gorton (2008) rejects this theory based on the following observations:

- First, the originate-to-distribute theory proposes nothing to explain why problems arose with the securitization of subprime mortgages. It would seem that the agency problem created by the originate-to-distribute model would apply to all forms of securitization, not just sub-prime mortgages.
- Second, significant losses have been incurred throughout the subprime mortgage chain. In fact, many originators, securitization structurers, and underwriters have gone bankrupt. Those that did not go bankrupt have had to do massive write-downs.

Why were the originators, securitization structurers, and underwriters subjected to the risk of bankruptcy? The originate-to-distribute model argues that any bad risks they created through lax lending policies were simply passed on to investors in the securitization process. Obviously this was not the case. Specifically, there were two sources of risk to the originators and facilitators of the securitization process:

- Warehousing risk—the originator must warehouse the mortgages it originates until a sufficient volume of mortgages is accumulated so that they can be transferred to an underwriter for securitization.

- Residual interest risk—Originators of mortgages end up retaining a residual interest in the mortgages they originate in the form of valuable servicing rights as well as retained interest. The latter refer to the lower tranches of the securitization that are most difficult to sell.<sup>6</sup>

### **The Evidence: Declining Credit Standards for Mortgages**

If the originate-to-distribute model is the real culprit in the credit crisis then there should be evidence of deteriorating credit standards for mortgages originated in 2006 that ultimately performed so poorly in 2007-8. There is anecdotal evidence to support this thesis. For example, the percentage of low or no documentation (both Alt A and subprime mortgages) rose dramatically over the period 2001-2006. These loans constituted 28.5% of new subprime mortgages in 2001 and 50.8% in 2006. At the same time adjustable rate mortgages (ARMs) rose from 73% to 91.3% of all subprime mortgages. Interest only loans were 0% of subprime mortgages in 2001 but rose to 37.8% in 2005 before dropping to 22.8% in 2006.

Keys, et. al. (2008) provides direct empirical evidence that securitization did reduce the quality of loan screening for subprime loans. They found that a portfolio of subprime mortgages that is more likely to be securitized defaults around 20% more than a similar risk profile group with a lower probability of being securitized. The implication being that securitization does have an adverse affect the screening incentives of lenders.<sup>7</sup>

### **Complexity and Loss of Information**

Earlier we described the creation of mortgage backed securities and the securitization process. However, this is not the complete story since there is yet another layer of securitization for these mortgage backed securities themselves. Specifically, collateralized debt obligations (CDOs) are special purpose vehicles that purchase structured products such as mortgage backed securities by issuing long term liabilities in the form of tranches. In the context of Figure 2 CDOs are inserted between the investment bank and the financial institution that purchases the mortgage backed securities. Now we have two special purpose vehicles that issue securities in tranches and ultimately share claims against the same pool of mortgages. The increasing complexity of the structures and opaqueness of the connection of the financial claim on a specific mortgage is illustrated in Figure 4. In the first tier of securitization SPVs are formed to invest in mortgages and to issue claims (RMBSs) that are based on a portfolio of mortgages. In the second tier of securitization the RMBS claims are dispersed among a different set of SPVs that issue CDOs. Finally, in the third tier of securitization an additional set of SPVs are formed that invest in the CDO securities from the second tier securitization. The net result as you can see is a dispersal of claims against specific mortgages that makes it extremely difficult to trace a third tier securitization CDO back to a particular mortgage on which it has a partial claim.

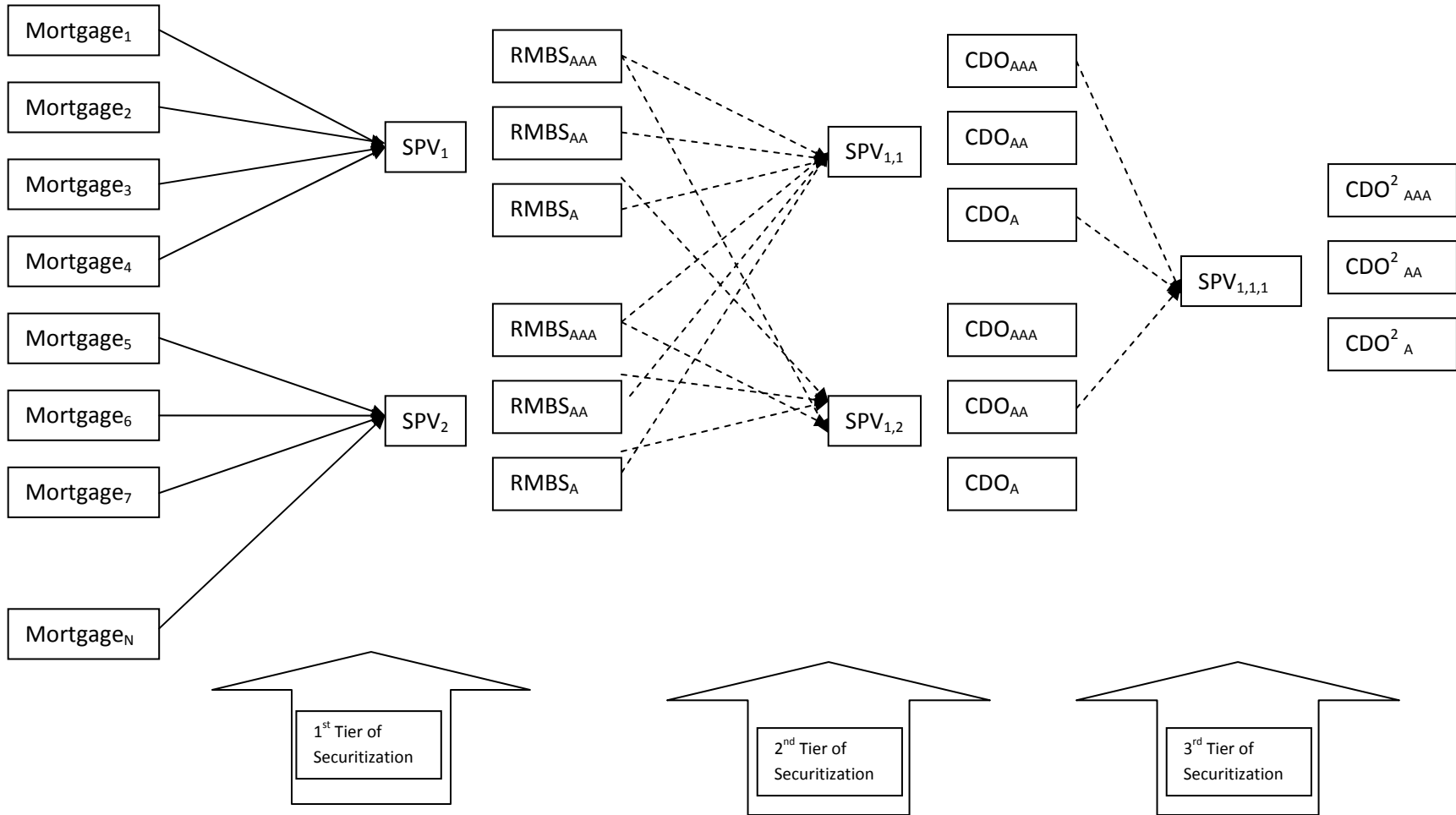
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<sup>6</sup> In its 2007 annual report Merrill Lynch (p. 357) reported a \$137 million exposure related to warehouse lending and losses for the year of \$(31) million. The exposure to residuals at year-end was \$855 million however losses for the year were \$(1,582) million.

<sup>7</sup> There have been other studies that have documented the effects of securitization on other aspects of banking behavior. For example, Loutskina (2005) found that securitization serves as a substitute for traditional liquid funds on banks' balance sheets.

Gorton (2008) argues that a root cause of the current crisis was in fact the loss of information due to the complexity that arises with multiple levels of securitizations. As we saw in Figure 4, CDO investors and investors in other instruments that have CDO tranches in their portfolios (so called CDO squares or CDO<sup>2</sup>) cannot penetrate the chain backwards and value the chain based on the underlying mortgages. They relied on modeled values and the certification of a credit rating agency

**Figure 4** Complexity and Multiple Tiers of Securitization



## 4 Triggering the Panic of 2007-8

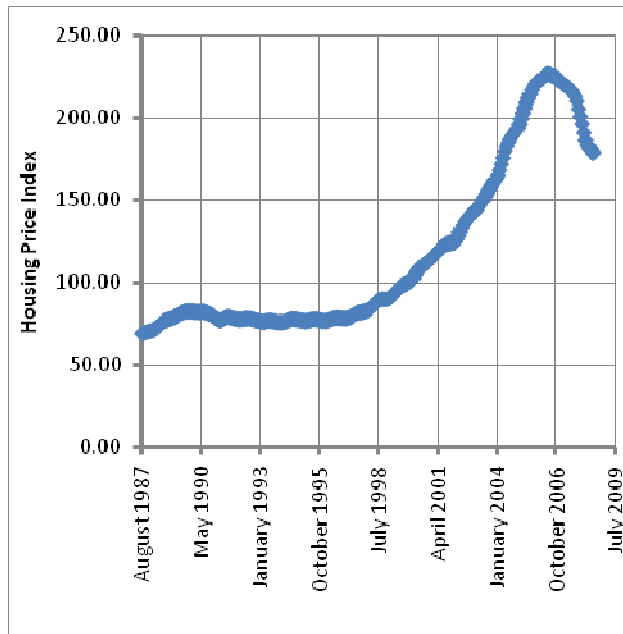
The forces underlying the collapse of the market for securitization were in place for a number of years. However, the resulting financial crisis was triggered by changing economic conditions in the residential real estate market and the subsequent forced revaluations of mortgage backed security portfolios by the financial institutions that held them.

### Falling Real Estate Prices

So long as the value of residential real estate continued to rise, home mortgages and the securities issued against them in the securitization market remained solvent. However, when real estate prices began to fall in mid 2006 as indicated in the CSXR composite index of real estate prices found in Figure 4, the lower quality mortgages (those with little or no down payment) became insolvent.<sup>8</sup>

Thus, falling residential real estate prices put in motion a sequence of events that eventually led to panic in the RMBS market that spread throughout the credit markets. Falling housing prices in and of themselves should not lead to panic and a collapse of mortgage backed security markets. However, as we noted above, the complexity of the residential mortgage backed security market and the resulting loss of information may have been such that a market for lemons type problem might have arisen in which buyers of mortgage backed securities would not trade at any price once flaws in the system became obvious.

**Figure 4 CSXR Housing Price Index: January 1987 - July 2008**



<sup>8</sup> The CSXR index of home prices is an index of the top 10 metropolitan areas in the U.S. The index is published by Standard and Poor's and uses the Case and Shiller method which tracks repeat sales of houses.

[http://www2.standardandpoors.com/spf/pdf/index/SPCS\\_MetroArea\\_HomePrices\\_Methodology.pdf](http://www2.standardandpoors.com/spf/pdf/index/SPCS_MetroArea_HomePrices_Methodology.pdf)

## Mark-to-Market Accounting and the Absence of Market Prices

Most firms' balance sheets report assets based on the price the firm paid for them less any depreciation in value since their acquisition. This is the historical cost method of accounting. However, for those assets that are held for re-sale such as mortgage or asset backed securities, firms must account for the values of those assets on their books using mark-to-market accounting under FAS 157. This method of accounting assigns a value to an asset (usually a financial instrument or security) based on its current market price or an estimated price based on similar assets.

Proponents of mark-to-market accounting argue that it promotes transparency in that firms that hold investments whose value has declined must reflect this drop in value of these assets in their financial statements. The problem that arose with the recent credit crisis is that the market for mortgage backed securities ceased to function such that there were no market prices with the exception of fire sale prices. Consequently, when firms marked their investments in mortgage backed securities to market they were forced to use fire sale or liquidation prices as these were the only ones available.<sup>9</sup>

In response to this problem on September 30, 2008 the Securities and Exchange Commission (SEC) issued a clarification of fair value accounting.<sup>10</sup> Among other things, the clarification stated that in the absence of an active market for a security the firm could substitute management estimates that incorporate current market participant expectations of future cash flows, and appropriate risk premiums. The important point was that fire sale or liquidation prices did not have to be used to value the affected assets. Under Financial Accounting Standard (FAS) 157 many companies had been forced to mark-down the value of their mortgage backed security portfolios drastically. The clarification recognized that such write-downs were not orderly and the mark-to-market rules should be more liberally applied so as to reflect the expected cash value of the underlying assets.

## 5 Summary Comments

So what are we to conclude about the role of asset backed finance or securitization in the financial crisis of 2007-8? First of all, the securitization of mortgages, in particular subprime mortgages, was at the very heart of the crisis. The downturn in real estate prices made it impossible for subprime borrowers (who put down little or no down payment) to refinance their homes. Faced with escalating interest rates these homebuyers found themselves "under water".

Second, although many attribute the problems in the securitization market to the separation of credit origination from investing (holding) that occurs with securitization, it is not clear that this was the only problem. Specifically, the subprime mortgage originators were also driven out of business with the collapse of the market. Another possible contributor to the problems of subprime mortgage securitizations is the sheer complexity of the structures that were being built and the resulting loss of information that accompanied it. With multiple levels of securitization it was no longer possible to trace

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<sup>9</sup> Merrill Lynch's sale of its portfolio of risky mortgage debt for \$0.22 on the dollar in July 2008 is an oft cited incident that could well have contributed to wholesale write-downs among other financial institutions.

<http://money.cnn.com/2008/07/29/news/newsmakers/thain.denial.fortune/index.htm?ref=patrick.net>.

<sup>10</sup> <http://sec.gov/news/press/2008/2008-234.htm>.

the securities back to specific assets. Although this certainly appears to be the case one has to wonder why it took so long to cause a problem. The trigger for the collapse of the securitization market came when real estate prices started to decline. So long as real estate prices were rising there was no reason to be concerned about the ambiguity of claims of the securities on specific assets.

Finally, mark-to-market accounting may well have failed where the market for securities issued by the loan securitizers collapsed. Nonetheless, firms continued to mark down the value of their asset backed securities to distress prices since no orderly market existed. The SEC recognized the problem belatedly and offered holders of asset backed financing securities the opportunity to estimate market values in the absence of normal prices.

## References

George Akerlof, 1970, The Market for 'Lemons': Quality Uncertainty and the market Mechanism, Quarterly Journal of Economics 84 (3): 488-500.

Frank Fabozzi, 2005, The Handbook of Fixed Income Securities, 7<sup>th</sup> ed., (New York: McGraw Hill Publishing Co.).

Gary Gorton, 2008, The Panic of 2007, Unpublished paper, Yale School of Management and NBER, Prepared for the Federal Reserve Bank of Kansas City, Jackson Hole Conference, (August).

Benjamin J. Keys, Tanmoy Mukherjee, Amit Seru, and Vikrant Vig, 2008, Did Securitization Lead to Lax Screening? Evidence from Subprime Loans," Unpublished Working Paper, University of Michigan, April 2008.

Elena Loutskina, 2005, Does Securitization Affect bank Lending? Evidence from Bank Responses to Funding Shocks, Unpublished Working Paper, Boston College (September).

Frederic Mishkin, 2008, On Leveraged Losses: Lessons from the Mortgage Meltdown, Speech at the U.S. Policy Forum, NY, NY (February 29).

Roberto G. Quercia, Michael A. Stegman and Walter R. Davis, 2005, The Impact of Predatory Loan Terms on Subprime Foreclosures: The Special Case of Prepayment Penalties and Balloon Payments, Unpublished paper on file with the Fordham Law Review.

## Appendix

### Alphabet Soup—Glossary of Securitization Terms

ABS—asset backed securities are securities backed by specific assets and the payments on which are tied to or derived from the cash flows produced by the underlying assets. In the U.S. usage of the term ABS excludes securities based on mortgages, corporate bonds and loans. However, outside the U.S. the term ABS is inclusive of all the above. For our purposes we will refer to all forms of asset securitizations (regardless of the underlying asset) as asset backed securities.

CBO—collateralized bond obligation is an actively managed pool of rated bonds that serves as collateral backing for other debt securities.

CDO—collateralized debt obligation is a catchall term used to refer to CBOs and CLOs, collectively.

CLO—collateralized loan obligation is an asset backed security that is based on a portfolio of commercial bank loans.

Credit enhancement—techniques that are used to raise the credit quality of a securitization such that the senior tranches to obtain a AAA/Aaa rating.

RMBS—residential mortgage back security is a security backed by specific residential mortgage loans. The payments to the RMBS are tied to the cash flows produced by the underlying mortgage loans.

Securitization—a financing method whereby a company raises money by issuing securities that are backed by specific assets. In most cases the assets are loans such as credit card debt, mortgage loans, or auto loans.

Tranche—French for slice. In the context of a securitization this refers to a class of securities where multiple classes are issued. The most senior tranches are paid before the junior tranches.