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ABSTRACT

This paper explores the economic and legal causes and consequences of the 2007-2008 credit crisis. We provide basic descriptive statistics and institutional details on the mortgage origination process, mortgage-backed securities (MBS), and collateralized debt obligations (CDOs). We examine a number of aspects of these markets, including the identity of MBS and CDO sponsors, CDO trustees, CDO liquidations, MBS insured and registered amounts, the evolution of MBS tranche structure over time, mortgage originations, underwriting quality of mortgage originations, and writedowns of the commercial and investment banks. In light of this discussion, the paper then addresses questions as to whether these difficulties might have been foreseen, and some of the main legal issues that will play an important role in the extensive litigation (summarized in the paper) that is underway, including the Rule 10b-5 class actions that have already been filed against the banks, pending ERISA litigation, the causes-of-action available to MBS and CDO purchasers, and litigation against the rating agencies. In the course of this discussion, the paper discusses three distinctions that will likely prove central in the resolution of the securities class action litigation: (1) "no fraud by hindsight"; (2) "truth on the market"; and (3) loss causation.

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The credit crisis is the foremost economic issue facing the United States today. With housing prices high and interest rates low through 2006, millions of households with weak credit histories purchased homes or refinanced existing homes, using subprime residential mortgage loans, many with adjustable interest rates. Investment banks securitized these loans into residential mortgage-backed securities (RMBS) and collateralized debt obligations (CDOs), selling risk-differentiated tranches to investors. With the rise of interest rates and the decline in housing prices in 2007-2008, as many as two million homeowners have faced or are facing interest-rate resets on loans that will increase mortgage payments by as much as 30 percent. Some cannot or will not be able to pay higher mortgage obligations and will default. The effects of these defaults and foreclosures are being felt by investors in the RMBS and CDO markets, loan originators, credit appraisers, underwriters, bond rating agencies, bond insurers, and others. Having written down and continuing to write down assets, banks in the United States and many areas of the world have faced and are facing liquidity, solvency, and funding issues. The result is heightened counter-party risk and the drying up of lending markets, including leveraged loans, auction rate securities, commercial mortgages, student loans, and others. In this paper we explore the mortgage securitization market, some of the causes and consequences of the mortgage lending crisis, and the impact of these difficulties on various market participants. We investigate the risks that can arise from financial and technology innovations and losses that are uniquely related to correlated events in the setting of loan markets.

The credit crisis is not solely an economic phenomenon, but a legal one as well. It is widely believed that the substantial decrease in the value of asset-backed securities held by the commercial and investment banks and other purchasers that held previously rated investment-grade CDOs with mortgage (and particularly subprime) exposure, as well as junior or mezzanine

tranches of RMBS, will generate substantial, perhaps unprecedented, levels of litigation. The facts so far have been sobering. The percentage of securities class action suit filings in 2007 increased by almost 50 percent year over year. The increase is even higher in 2008. The threat of private litigation and its settlement value have been heightened by recent revelations that the FBI is investigating several major banks with respect to the accounting and pricing of various securities in addition to civil investigations already underway by the Securities and Exchange Commission (SEC) and the Attorney Generals of Connecticut and New York. These government investigations are important not only in their own right, but also because they could potentially reveal information that could further fuel private class action litigation.

The litigation wave includes the filing of Rule 10b-5 class actions against an extensive list of major financial firms, including Citigroup, Merrill Lynch, Morgan Stanley and UBS AG, as well as against a number of mortgage originators, such as Coast Financial Holdings, Countrywide Financial Corp., IMPAC Mortgage Holdings, New Century Financial, Thornburg Mortgage, and Washington Mutual. Predictably, ERISA class action litigation has been filed against a number of firms, including a number of the major financial institutions. Tellingly, State Street Corporation, which is facing multiple ERISA suits concerning the operation of some of its funds, set aside in the fourth quarter of 2007 a reserve of $618 million to cover legal exposure.

Table 1 provides a summary of the securities class action suits filed between 2/8/07 and 2/18/08 against investment banks, mortgage originators, bond insurers and credit rating agencies arising from losses resulting from the credit crisis. The table summarizes the alleged legal basis for liability (Rule 10b-5 of the Exchange Act of 1934; Section 11 and Section 12(a)(2) of the Securities Act of 1933), the filing date of the complaint, and the class period if the action is based on 10b-5. In total, Table 1 covers 136 securities class action suits based on losses (with a

number of the complaints being partially duplicative) against 43 companies. The complaints for these class actions were obtained from Bloomberg.[1] Much of this litigation is directly related to the extensive writedowns banks have had to take. The writedowns up through August 20, 2008 by the largest underwriters of mortgage-backed securities (MBS) in 2007 are summarized in Table 2.

Table 1 surely underestimates, however, and most likely substantially underestimates, the extent and impact of likely litigation. We anticipate three substantial additional sources of litigation: *i*) litigation against companies other than those directly involved in the structured finance market that nevertheless suffered losses due to MBS and CDO exposures; *ii*) non-class action litigation brought by MBS and CDO purchasers (such as money-market mutual funds) and investment banks; and *iii*) governmental action against various participants in the structured finance process (with agencies like the SEC having greater subpoena powers than private parties and the ability to pursue parties based on aiding and abetting theories). An example of the first type of litigation would be litigation brought against and by operating companies that invested corporate cash in securities whose value was tied to a pool of mortgages and suffered substantial losses as a result. The second category of non-class action litigation will include litigation brought by the banks against mortgage originators (a subsidiary of Deutsche Bank has already reportedly filed 15 lawsuits against mortgage originators for violations of repurchase agreements); registered MBS purchasers bringing Section 11 and Section 12(a)(2) claims against MBS underwriters for misleading statements in the offering process; and disputes between different CDO tranche holders as to how to distribute the assets of liquidating CDOs. The third category includes a variety of civil and criminal, state and federal investigations, including the

[1] We are grateful to Bloomberg for specifically pulling complaints from courthouse records that were not available electronically. We also double-checked our list of class action litigation against the records maintained by the Stanford Securities Class Action Clearinghouse.

pending investigations into the role played by the "due diligence" firms responsible for verifying the underwriting quality of securitized mortgages.

An example of the potential for extensive litigation arising out of losses from mortgage exposure is the situation of Luminent Mortgage Capital, Inc., a REIT that purchased MBS that resulted in substantial losses. Luminent Mortgage Capital is currently suing Merrill Lynch (and various Merrill Lynch subsidiaries and affiliates) for alleged misrepresentations with respect to the sale of junior MBS tranches as well as HSBC Holdings for allegedly improperly placing too low a value on nine subprime mortgages that a subsidiary of Luminent Mortgage Capital had put up as collateral. Luminent Mortgage Capital, in turn, has five Rule 10b-5 class action suits filed against it for false statements as well as a counter-suit by HSBC Holdings for breach of contract. There is speculation that Luminent Mortgage Capital will be subjected to ERISA lawsuits as well. And Luminent Mortgage Capital is just one of many players in the RMBS and CDO marketplace.

Of course, at this point in the credit crisis losses suffered by a wide range of actors have now extended well beyond securities tied to the value of mortgages, including declines in the values of leveraged loans (which actually exhibited signs of stress in early 2007), auction rate securities, and commercial mortgages, among other instruments. It nevertheless remains true that the most significant source of losses in the financial sector, and in particular the losses underlying many of the writedowns announced by the commercial and investment banks to date, has been driven by the poor performance of mortgages.

The remainder of this paper is organized as follows. Section I describes the process by which loans to homeowners are securitized and discusses the role of various participants in the mortgage securitization market. Section II discusses the causes and consequences of the current

mortgage lending difficulties with a focus on subprime lending, while Section III explores reasons why market participants may have underestimated risks related to the credit crisis. We present some original data analysis in the course of our discussion including information on MBS tranche structure and on the number of MBS bookrunners.

We review the legal issues facing market participants in Section IV. We focus in Section IV on the causes of actions available to MBS and CDO purchasers and three securities law principles we believe will play an important role in the class action litigation that has been filed against the banks, mortgage originators and others with publicly-traded securities. These three principles are: (1) "no fraud by hindsight"; (2) "truth on the market"; and (3) loss causation. We summarize our findings in Section V.

I. Residential Mortgage-Backed Securitization and Collateralized Debt Obligations

The United States has one of the highest rates of home ownership in the world. Home ownership in the U.S. has risen in recent years, from 64.0 percent in 1994 to 68.8 percent in 2006.[2] In part this increase has been facilitated by aggressive lending standards that have allowed people from a broader economic spectrum to own homes and by the use of mortgage securitization that increased mortgage capital and distributed the risk of loans more broadly. Mortgage-backed securities are debt obligations whose cash flows are backed by the principal and interest payments of pools of mortgage loans, most commonly on residential property. In this section we describe the process by which loans are originated, securitized, and sold to investors, a process, depicted graphically in Figure 1, that begins with the origination of homeowners' loans.

[2] Bureau of the Census, U.S. Department of Commerce.

A. Homeowners and loan originators

The road to home ownership typically depends on the availability of financing. Lenders establish underwriting guidelines, evaluate prospective homeowners' credit, and make loans. Having done so, lenders generally hold only a fraction of the loans they originate in their own portfolios. Most are sold to the secondary market, where they are pooled and become the underlying assets for RMBS.

Individuals with strong credit qualify for traditional mortgages, whereas those with weak credit histories that include payment delinquencies and possibly more severe problems, such as charge-offs, judgments, and bankruptcies, qualify for subprime loans. Subprime borrowers may also display reduced repayment capacity as measured by credit scores and debt-to-income ratios or have incomplete credit histories. As can be seen in Figure 2, subprime mortgages are an important part of the overall mortgage market, and the share of subprime mortgages in total mortgage originations has risen over time. In 2001, 8.6 percent ($190 billion) of the more than $2.2 trillion mortgages originated were rated subprime. By 2005, this percentage had risen to 20.0 percent, and over $600 billion subprime mortgages were originated.

Most of the subprime mortgage loans that have been originated in recent years are ARMs, interest-only mortgage loans (IOMs), and negatively amortizing mortgage loans (NegAmMs), rather than fixed-rate mortgage loans (FRMs). Many of the loans are "2/28" and "3/27" hybrid ARMs. A typical "2/28" hybrid ARM has a low fixed interest rate and mortgage payment (teaser) during the initial two-year period. After two years, the rate is reset every six months for the next 28 years based on an interest rate benchmark, such as the London Inter-Bank Offered Rate (LIBOR). Payments are often much higher when they are reset at the end of the initial fixed-rate period.

Most subprime loans are made by mortgage banks and mortgage brokers, rather than by commercial banks or other depository institutions. Mortgage banks originate subprime residential mortgage loans and then sell them to investment banks, whereas mortgage brokers originate subprime residential mortgage loans on behalf of investment banks. Independent mortgage companies sell loans for securitization to other financial services firms. Banks and thrifts, which are more highly regulated than mortgage banks and mortgage brokers, deal primarily in lower-priced prime mortgages, selling to government sponsored enterprises (GSEs) such as Fannie Mae and Freddie Mac that securitize conventional conforming loans.[3] Over the past decade, the market shares for loan originators have changed dramatically. Originations moved out of banks and thrifts to mortgage banks, brokers, and independent mortgage companies. At the same time, the market consolidated: As of 1990, the top 25 originators made approximately 28 percent of the industry total of roughly $500 billion, whereas in 2005 the top 25 originators market share rose to approximately 85 percent out of an industry total of $3.1 trillion.[4]

B. Issuers

MBS sponsors or originators purchase mortgage loans from loan originators, assemble them into asset pools, and structure them into mortgage-backed securities. After a large enough portfolio of mortgages is pooled, it is sold to a special purpose vehicle (SPV), which is the issuer of the MBS, formed for the specific purpose of funding the loans. Once the loans are transferred to the issuer, there is normally no recourse to the originator (putting aside repurchase agreements, discussed later). The issuer is "bankruptcy remote," meaning that if the originator

[3] William Apgar, Amal Bendimerad, and Ren S. Essene, *Mortgage Market Channels and Fair Lending: An Analysis of HMDA Data*, Joint Center for Housing Studies, Harvard University, April 25, 2007, p. 6.
[4] Id.

goes into bankruptcy, the assets of the issuer will not be distributed to the creditors of the originator.

The SPV issues securities to fund the purchase of the loans. Securities are generally split into tranches differentiated by maturity and credit risk. Tranches are categorized as either senior, mezzanine or subordinated/equity, according to their degree of credit risk. If there are defaults or the mortgages otherwise underperform, scheduled payments to senior tranches take priority over payments to mezzanine tranches, and scheduled payments to mezzanine tranches take priority over those to subordinated/equity tranches. Senior and mezzanine tranches are typically rated, with the former receiving ratings of AA to AAA (investment grade) and the latter receiving ratings of A to BBB. The ratings reflect both the credit quality of underlying collateral, as well as how much cash-flow protection a given tranche is afforded by subordinated tranches. In recent years, senior MBS represent over 85 percent of the value of a typical pool, whereas mezzanine pieces account for around ten percent of the security and are used primarily in CDOs.[5] The most junior class (often called the equity class) has the highest credit risk and account for about five percent of the value in the pool. In some cases the equity class receives no coupon (either fixed or floating), but only the residual cash flow (if any) after all the other classes have been paid. There may also be a special class that absorbs early repayments of mortgages, which is an important source of credit risk. Since any early repayment is passed on to this class, it means the other investors have a more predictable cash flow. Often the sponsor or MBS originator retains the equity class.

As a result of pooling assets and issuing MBS, the SPV structures described above arguably fit under the broad definition of "investment company" as defined in the Investment

[5] Steven Drucker and Christopher Mayer, "Inside information and market making in secondary mortgage markets," Working Paper, January 6, 2008.

Company Act of 1940 and, hence, would be subject to the extensive requirements of the Act.[6] These requirements are widely viewed, including by SEC staff, as being inconsistent with the normal operations of SPVs and, hence, virtually all SPVs have been structured so as to enjoy an exemption from the Act. The primary exemption relied upon is Rule 3a-7 of the Investment Company Act, which provides an exemption from the Act if an SPV issues fixed-income securities that, at the time of sale, receive one of the four highest categories of investment quality from a "nationally recognized rating agency" (typically S&P, Moody's or Fitch). Pursuit of this exemption is one reason why it is important for an SPV and the securities it issues to be structured such that they receive the necessary investment-grade ratings.

The SPV has a trustee whose primary role is to hold all the loan documents and distribute payments received from the loan servicer to the bondholders. Although trustees are typically given broad authority with respect to certain aspects of loans under Pooling and Servicing Agreements, they may delegate authority to servicers, described below.

Between 2001 and 2007, the size of the MBS market grew dramatically, peaking at over $2.7 trillion in 2003. The percentage of subprime mortgages securitized (based on dollar values) rose from a low of 50.4 percent in 2001 to 81 percent in 2006.[7] Much of the MBS volume transferred from agency to non-agency sponsors, with agency-sponsored MBS representing less than half of the MBS market in 2005 and 2006.[8] Using data from Securities Data Corporation, Figure 3 indicates that agency-sponsored mortgage-backed securitization peaked in 2003, and virtually all was registered and publicly traded. In contrast, private-label (i.e. non-agency) sponsored mortgage-backed securitization was at its highest level in 2005, and private-label

[6] See Section 3(a)(1)(A) and 3(a)(1)(C) of the Investment Company Act of 1940.
[7] *The Subprime Lending Crisis: The Economic Impact on Wealth, Property Values and Tax Revenues, and How We Got Here*, U.S. Congress Joint Economic Committee, October 27, 2007; Data from Inside Mortgage Finance, The 2007 Mortgage Market Statistical Annual, Top Subprime Mortgage Market Players & Key Data, 2006.
[8] Data from Inside Mortgage Finance, Mortgage and Asset Securities Issuance, 2007.

equity-line-of-credit securitization peaked in 2006. Although the private-label 144A market was much smaller than the private-label registered market, it too was robust throughout the period, with private-label sponsored 144A mortgage-backed securitization peaking in 2005 and private-label 144A equity-line-of-credit securitization at its highest level in 2006.

The biggest sponsors of private-label MBS in 2007 tend to be the banks. As shown in Table 2, the MBS industry in 2007 was relatively concentrated with most deals being structured by one of the top 20 sponsors. Each of the top five sponsors structured at least seven percent of market.

The riskier tranches of MBS are often packaged into CDOs.[9] Like an MBS, a CDO has a sponsoring organization, such as an investment bank, that establishes an SPV that issues securities, typically multiple tranches differentiated by maturity and credit risk, to raise money to invest in financial assets. Most debt financing the purchase of CDO assets is floating rate off LIBOR and can include short-term debt, such as commercial paper (often called asset backed commercial paper or "ABCP"). ABCP is also issued against conduits that hold various CDO tranches, often the most senior ones. ABCP's maturity is quite short, running anywhere from one to 270 days, and thus is generally much shorter than the maturity of the CDO's or conduit's underlying assets. This difference can create a problem if a CDO or conduit holding CDO tranches has troubled refinancing or rolling the paper. Consequently, CDOs and conduits typically contract with standby liquidity providers that guarantee liquidity for a fee. CDO sponsors often retain senior tranches for investment purposes. Like the market for RMBS, the

[9] According to the Securities Industry and Financial Markets Association, aggregate global CDO issuance totaled $157 billion in 2004, $272 billion in 2005, and $549 billion in 2006. Available at www.sifma.org/research/pdf/SIFMA_CDOIssuanceData2007q2.pdf.

market for CDOs has grown dramatically over the past 10 years, as has the ABCP market.[10] The growth slowed significantly in 2007, however, as housing prices fell, loan delinquencies rose, foreclosures increased, and the performance of recent-vintage RMBS declined.[11]

Many CDOs, although not all, are actively managed, which entails buying and selling CDO assets. For instance, many CDO agreements with investors merely outline the type of assets that can be purchased and various restrictions on when assets can be bought or sold. The party entrusted with managing a CDO's assets, subject to these limitations, is the "collateral manager." These limitations are often a function of the conditions under which the CDO must operate to maintain favorable credit ratings from the rating agencies for various CDO tranches. Even if a collateral manager does not have the authority to trade CDO assets on an on-going basis, many CDOs raise funds prior to the purchase of all of their assets (the so-called "ramp-up" period). With respect to the CDO's uninvested funds, the collateral manager will have the obligation to invest these funds consistent with the CDO's asset strategy. In some ways, actively managed CDOs can resemble hedge funds (including the fact that the purchasers of CDO interests are not retail investors).

CDOs are often designed to meet specific investor needs. Investors can specify the desired maturity and credit-risk characteristics of securities, which results in more highly-tailored, but less liquid securities than might otherwise be available. The information exchange and time necessary to confer with investors in many instances precludes them from being publicly tradable on registered exchanges or markets. Investors must therefore rely on dealers to execute trades.

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[10] Douglas J. Lucas, Laurie S. Goodman, and Frank J. Fabozzi, *Collateralized Debt Obligations*, John Wiley & Sons, Hoboken, NJ, 2006.

[11] Brant Maller and Rick Antonoff, "Spillover effect from subprime collapse; News; As legislation and liability get sorted out, modern real estate lending process faces a big test," *New York Law Journal*, January 14, 2008, 239 (9), p. S6, col. 1.

C. Collateral appraisers

MBS sponsors and underwriters typically hire firms, known as collateral appraisers or "due-diligence firms," to review and verify the quality of loans sold to SPVs. These reviews evaluate the credit and collateral risks of loans in a pool and verify the information provided by loan originators to MBS sponsors. Reviews include verifying a borrower's identity, place of residence, and employment status. They typically review note, mortgage riders, title, and mortgage insurance details and may include a property appraisal, as well as a review of the loan originators' property and closing procedures. The information verified by these firms, as the legal discussion will emphasize, is at the heart of much of the mortgage crisis litigation. Collateral appraisers in 2007 included Clayton Holdings, First American, LandAmerica Financial Group, and Stewart Information Services Corporation.

D. Sources of credit enhancement

The creditworthiness of MBS and CDOs are typically credit enhanced, meaning that their credit risk is reduced below the credit risk of the asset pool. Credit enhancement is designed to absorb all or a portion of credit losses, thereby increasing the likelihood that investors receive contractual cash flows and raising the securities' credit ratings.

Credit enhancement can either be internal or external. Internal sources of credit enhancement include but are not limited to providing for "excess" interest; including a spread or reserve account that guarantees that funds remaining after expenses such as principal and interest payments, charge-offs, and other fees have been paid are available for use if the SPV's expenses are later greater than its income; over-collateralization; and structuring transactions to include subordinated classes of securities that absorb cash-flow shortfalls. CDOs are structured such that the cash flows of the assets are sufficient to cover the interest and principal payments of tranches

with prescribed levels of certainty. These levels are based on the par value of the assets in a CDO that are not in default relative to the par value of a given tranche's securities. CDOs can also establish advance rates that limit the debt that can be borrowed against particular assets. CDOs value assets regularly to ensure adequate assets. If there is a shortfall, a CDO must often either sell assets or the equity holders must contribute cash to prevent the CDO from liquidating.

External sources of credit enhancement include third-party letters of credit, repurchase agreements that require loan originators to buy back loans that become seriously delinquent or go into foreclosure within a specified time from SPVs, and bond insurance. In this regard, it is worth noting that standby liquidity arrangements for CDOs and ABCP conduits do not necessarily provide insurance against credit risk *per se*, but rather provide insurance against liquidity risk; that is, the risk of not being able to roll over the commercial paper.

Bond insurance has historically been important source of credit enhancement. Bond insurance is a commitment by an insurance company to make contractual payments should the issuer of a bond be unable to do so. Historically, bond insurers insured primarily municipal bonds, but began entering the structured finance market in the 1990s. In 2006, insurers wrote $606 billion of new coverage, with a net par value of insurance outstanding of $2.4 trillion by the end of the year.[12] The largest insurers of structured finance products in 2007 were MBIA Insurance Corporation, Ambac Assurance Corporation, and Financial Security Assurance Inc., a subsidiary of the Belgian-French bank Dexia. Insurance provided on 2006 and 2007 MBS issuances, broken down by bond insurer, is provided in Table 3.

[12] "Credit FAQ: The Interaction Of Bond Insurance And Credit Ratings," Standard & Poor's, December 19, 2007. Available at www2.standardandpoors.com/portal/site/sp/en/us/page.article/3,1,1,0,1148450123839.html.

E. Credit rating agencies

Credit rating agencies, such as Standard & Poor's, Moody's, and Fitch, assess the creditworthiness of obligors with respect to specific financial obligations. The agencies take into consideration the cash-flow risk of the underlying assets and the creditworthiness of guarantors, insurers or other forms of credit enhancement on the obligation.[13] In at least some instances, credit rating agencies reviewed the reports or summaries of reports of due-diligence firms in evaluating credit risk.

F. Investors

Hedge funds, corporations, banks, life insurers, pension funds, mutual funds, and wealthy individuals buy RMBS and CDOs. In certain instances, institutional bond buyers are subject to legal limitations that permit them only to buy investment-grade or AAA-rated debt. For ERISA fiduciaries, who must "use care, skill, prudence, and diligence" in the course of investing plan assets,[14] purchasing unrated RMBS and CDO securities runs the legal risk that these instruments will be deemed to be imprudent. Moreover, if an SPV issues securities that are deemed to be "equity," then the mortgages will as a general matter be deemed to be part of the "plan assets" with the legal result that if a bank is deemed to be an ERISA fiduciary, they cannot act as sponsor of the SPV (as this would arguably constitute a prohibited "self-dealing" transaction barred by ERISA). One way to avoid the label of "equity," thereby removing a potential bar from a bank acting as a sponsor of a SPV, is to obtain an investment-grade rating on the MBS. The importance of obtaining "debt" (rather than "equity") status is primarily an issue for CDOs (which are almost never registered), as the Department of Labor's regulations exempt registered securities (which MBS typically are) from this bar on acting as sponsor and ERISA fiduciary.

[13] Id.
[14] 29 U.S.C. 1104(a)(1)(B).

Another way to avoid the bar, often used by CDOs, is to ensure that no more than 25 percent of purchasers of CDO equity are ERISA plans (in conjunction with certain specified benefit plans).

The advent of investment-grade MBS and CDOs dramatically changed the investment opportunities for many pension funds. Before investment-grade MBS and CDOs, pension funds were largely precluded from investing in real estate. Investment-grade MBS and CDOs allowed them to have in real estate exposure in their portfolios, while limiting credit risk (although the availability of CDOs is still somewhat restricted given the utilization of the less than 25 percent test by some CDOs). Mortgage-loan securitization permitted real estate investments to be classified as passive rather than active investments, and to be considered traditional rather than alternative investments.[15]

G. Servicers

Servicers are hired to collect mortgage payments from borrowers and pass the payments less fees (including guarantee and trustee fees) through to trustees, who then pass payments on to investors that hold the MBS. Servicers can affect the cash flows to investors, because they control collection policies, which influence the proceeds collected, the charge-offs, and the recoveries on loans. Any income remaining after payments and expenses is usually accumulated in reserve or spread accounts or returned to sellers. A loan originator is often its servicer, because servicers need expertise that is similar to that needed for loan origination. If the loan originator is the servicer, it has even more developed financial incentives to ensure that loan repayments are paid to the SPV and subsequently distributed to investors. The due-diligence firms, pursuant to Item 1122(d) of Regulation AB, often attest to the procedures created to ensure compliance with the terms of the servicing agreement in the MBS registration statement.

[15] Brant Maller and Rick Antonoff, "Spillover effect from subprime collapse; News; As legislation and liability get sorted out, modern real estate lending process faces a big test," *New York Law Journal*, January 14, 2008, 239 (9), p. S6, col. 1.

II. Crisis in the Mortgage Lending Market

From 1997 to the middle of 2006, nominal U.S. housing prices rose by an average of 7.5 percent a year, whereas real U.S. housing prices increased by an average of 5.0 percent a year.[16] As shown in Figure 4, the annual rate at which housing prices increased accelerated between 2001 through 2005. Rising housing prices and the availability of ARMs persuaded many potential homeowners with marginal incomes, limited net worth, and poor credit histories to buy or refinance their homes. In some instances, homeowners, knowing that they could not service loans from their income, still bought homes, anticipating that they could quickly flip their homes for a profit or refinance with accumulated equity. The demand for home financing by borrowers with weak credit histories and the specter of additional fees for mortgage originators from an expanded pool of borrowers resulted in some mortgage originators lowering their underwriting standards. As depicted in Table 4, the share of loans originated for borrowers unable to verify information about employment, income or other credit-related information (low or no documentation loans) increased from 28 percent to more than 50 percent, and borrowers' total debt payments rose relative to income from 2001 to 2006. At the same time, the share of ARM originations on which borrowers paid interest only (no principal) increased from zero to more than 22 percent. ARMs' share of the subprime market increased from about 73 percent to more than 91 percent.

Evidence is now mounting that at least some mortgage bankers and mortgage brokers may have submitted false appraisals and financial information to qualify otherwise unqualified households for subprime mortgage loans. Others purportedly did not document or verify the income, net worth, and credit history of subprime mortgagers. According to an analysis by Fitch

[16] *Irrational Exuberance*, 2nd Edition, 2005, by Robert J. Shiller, Figure 2.1 as updated by author.

of a small sample of early defaults from its 2006 Fitch-rated subprime RMBS, as much as one-quarter of the underperformance of the 2006 vintage of subprime RMBS may have resulted from inadequate underwriting and fraud.[17] Fitch concludes in its report that there was "apparent fraud in the form of occupancy misrepresentation; poor or a lack of underwriting relating to suspicious items on credit reports; incorrect calculation of debt-to-income ratios; poor underwriting of 'stated' income loans for reasonability; and substantial numbers of first-time homebuyers with questionable credit/income."[18] BasePoint Analytics LLC, a fraud analytics and consulting firm, found results consistent with Fitch's findings. BasePoint analyzed over 3 million loans originated between 1997 and 2006 (the majority being 2005–2006 vintage), including 16,000 non-performing loans that had evidence of fraudulent misrepresentation in the original applications. Its research found that as much as 70 percent of early payment default loans contained fraud misrepresentations on the application.[19] The New York Attorney General's office is investigating loan originators' appraisals, and has filed suit against real estate appraiser First American Corporation and its subsidiary eAppraiseIt for allegedly colluding with the loan originator, Washington Mutual, to inflate appraisal values.[20]

The gatekeepers to detect loan-origination frauds or lax underwriting standards are the due-diligence firms that review and verify loan information and loan-originator policies and procedures. Several of these firms are currently under investigation by the New York and Connecticut Attorney Generals' offices and the SEC. Linked to these investigations are allegations that some MBS sponsors may have ignored or withheld information about the credit

[17] *The Impact of Poor Underwriting Practices and Fraud in Subprime RMBS Performance*, Fitch Ratings Ltd., November 28, 2007. Available at www.americansecuritization.com/uploadedFiles/Fitch_Originators_1128.pdf.
[18] Id.
[19] *Broker Facilitated Fraud: The Impact on Mortgage Lenders*, BasePoint Analytics, 2006.
[20] The People of the State of New York v. First American Corporation and First American Eappraiseit (Supreme Court of the State of New York, County of New York)

risks of the mortgage pools and may have even pressured due-diligence firms to overlook credit issues on loans. Government officials are investigating whether MBS and CDO sponsors failed to disclose information about high-risk loans, known as exceptions, that failed to meet credit standards to credit-rating agencies and investors. Deutsche Bank, for instance, underwrote $1.5 billion of New Century mortgages in 2006 that included a "substantial" portion of "exceptions." According to the *New York Times*, these loans suffered from unusual levels of defaults and delinquencies.[21] The number of loans reviewed by due-diligence firms fell from about 30 percent in 2000 to five percent by 2005.[22] Even with respect to loans reviewed, due-diligence firms encountered obvious challenges in reviewing loans that lacked standard documentation or, indeed, any documentation. In assessing these practices, one must bear in mind that RMBS originators purchased many of these "exception" loans at discounts to face value and, in turn, sold them to SPVs at discounted prices. Whether the market discounts on "exception" loans or other loans being extended to subprime borrowers reasonably reflected the *ex ante* probability of losses from defaults is an issue that will be discussed further in Section IV.

By mid-2006, housing prices began to decline nationally, dropping by about 1.5 percent between 2006 and 2007. Although this decline seems small, some markets were hit more than others. Home sales fell as well, as shown in Figure 5. Interest rates increased, and more than two million homeowners faced interest-rate resets on their mortgages by February of 2008.[23] Mortgage payments increased by as much as 30 percent from earlier payments,[24] and many homeowners could not afford them. In the past when housing prices rose, ARM borrowers sold

[21] Vikas Bajaj and Jenny Anderson, "Inquiry focuses on withholding of data on loans," *New York Times*, January 12, 2008, p. A1.
[22] Id.
[23] C. Cagan, *Mortgage Payment Reset: The Issue and the Impact*, First American Core-Logic, 2007 estimates that 2.17 million subprime ARMs will have their first reset between 2007 and 2009. Available at www.facorelogic.com/uploadedFiles/Newsroom/Studies_and_Briefs/Studies/20070048MortgagePaymentResetStudy_FINAL.pdf. pp. 42-43
[24] Id.

or refinanced their homes to pay off loans before they reset to unaffordable rates. But given flat or declining housing prices, homeowners' options dwindled and many became delinquent in their payments or in default. Using data from the Mortgage Banker's Association, the General Accountability Office (GAO) found that ARMs experienced relatively steeper increases in default and foreclosure rates compared to fixed-rate mortgages and accounted for a disproportionate share of the increase in the number of loans in default and foreclosure. Fitch also found the delinquency and foreclosure rates of subprime ARMs have increased sharply, and it expects them to continue to rise.[25]

Whereas many outstanding subprimes are ARMs, there are many other subprime borrowers who are also at high risk of default. Several studies of subprime mortgages show that cumulative delinquencies and foreclosures have been quite high. Using data on subprime mortgages originated between 1998 and the first three quarters of 2006, Schloemer, Li, Ernst, and Keest (2006) estimate cumulative foreclosures of 2.2 million, with losses to homeowners of $164 billion.[26] This estimate is probably low, given housing prices have declined more than the study's authors may have originally anticipated. Using data from the Mortgage Banker's Association and Moody's, the GAO found defaults and forecloses to be rising overall, with the largest share being subprime: Subprime loans comprise less than 15 percent of loans serviced, but about two-thirds of the overall increase in the number of mortgages in default and foreclosure from the second quarter of 2005 through the second quarter of 2007.[27]

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[25] *The Impact of Poor Underwriting Practices and Fraud in Subprime RMBS Performance*, Fitch Ratings Ltd., November 28, 2007. Available at www.americansecuritization.com/uploadedFiles/Fitch_Originators_1128.pdf and *The Subprime Lending Crisis: The Economic Impact on Wealth, Property Values and Tax Revenues, and How We Got Here*, U.S. Congress Joint Economic Committee, October 27, 2007; Data from Inside Mortgage Finance, The 2007 Mortgage Market Statistical Annual, Top Subprime Mortgage Market Players & Key Data, 2006.

[26] Ellen Schloemer, Wei Li, Keith Ernst, and Kathleen Keest, *Losing Ground: Foreclosures in the Subprime Market and Their Cost to Homeowners*, Center for Responsible Lending, December 2006.

[27] Home Mortgage Defaults and Foreclosures: Recent Trends and Associated Economic and Market Developments, Briefing to the Committee on Financial Services, House of Representatives, GAO-08-78R, October 10, 2007.

By late 2006, banks reduced their purchases of subprime mortgage loans from loan originators, and some banks and larger mortgage lenders tried to enforce repurchase agreements from previous deals, requiring loan originators to buy back troubled mortgages originated in 2005 and 2006.[28] Because some originators were thinly capitalized, they faced financial distress. By the end of 2007, more than 25 subprime mortgage originators, including New Century Financial Corp. and American Home Mortgage Investment, had filed for bankruptcy. Bank of America announced it would buy Countrywide Financial, which had fallen on hard times. Ameriquest Mortgage Co. has stopped taking mortgage applications and has numerous lawsuits pending. A number of originators are under investigation for fraud, predatory lending practices, and other illegal acts.

Over the summer of 2007, unanticipated delinquency and default rates on subprime residential mortgages caused market participants to re-evaluate the credit risk inherent in subprime RMBS and CDOs.[29] The ABX-Home Equity Index (BBB-credit rating), a widely used indicator of investors' estimation of the risk of funding subprime mortgage loans through secondary markets, fell from 97.47 in January 2007 to 31.96 in August 2007.[30] Moody's and other credit rating agencies began downgrading securities. For example, by September of 2007, Moody's had downgraded about $25 billion, or roughly five percent of the $460 billion of subprime MBS it rated in 2006. In comparison, Moody's had only downgraded 2.1 percent by

[28] Carrick Mollenkamp, James R. Hagerty, and Randall Smith , "Banks go on subprime offensive --- HSBC, others try to force struggling smaller players to buy back their loans," *Wall Street Journal*, March 13, 2007, p. A3.
[29] Testimony of Michael Kanef, Group Managing Director, Moody's Investors Service, Before the United States Senate Committee on Banking, Housing and Urban Affairs, September 26, 2007.
[30] In using the ABX index, however, one must keep in mind how the index is constructed and its limitations. For example, the ABX index, by its nature, does not reflect the various waterfall features inherent in CDOs tranche structures.

dollar volume in the subprime RMBS sector for the combined 2002–2006 time period, and one percent by dollar volume for all of RMBS.[31]

In the face of such downgrades, financial institutions had to write down mortgage-related and other assets whose values were impaired. As documented in Table 2, the biggest underwriters in 2007 reported huge losses tied to mortgages and other assets. In February of 2008, UBS analyst Philip Finch reported, "writedowns for collateralized debt obligations and mortgage-related losses already total $150 billion. That may rise by a further $120 billion for CDOs, $50 billion for structured investment vehicles, $18 billion for commercial mortgage-backed securities, and $15 billion for leveraged buyouts."[32] By August of 2008, asset writedowns and credit losses at more than 100 of the world's biggest banks and securities firms had ballooned to $506.1 billion.[33] Losses were being recognized by a broad range of financial firm on assets that were not just subprime related, including alt-A and prime mortgage securities, asset-back commercial paper, syndicated loans, consumer loans, and other instruments.

In response to asset writedowns, many financial firms needed to raise capital to meet regulatory capital requirements. By late August of 2008, 100 of the world's biggest banks and securities firms had raised $352.6 billion in capital.[34] Alternatively or in addition, firms needed to sell assets, especially unwanted inventories of mortgage-related assets. Banks' inventories of mortgage-related debt typically includes *i*) debt they only have because they have not yet sold it to a structured investment vehicle or it is a remnant of an already completed securitization; *ii*) debt that is part of a structured investment vehicle that was consolidated onto the banks' balance

[31] Testimony of Michael Kanef, Group Managing Director, Moody's Investors Service, Before the United States Senate Committee on Banking, Housing and Urban Affairs, September 26, 2007.
[32] Poppy Trowbridge, "Banks at risk from $203 billion writedowns, Says UBS," Bloomberg.com, February 15, 2008.
[33] Yalman Onaran and Dave Pierson, "Banks' Subprime Market-Related Losses Reach $506 Billion," Bloomberg.com, August 27, 2008.
[34] Id.

sheet for some reason; and *iii*) debt held as a result of proprietary trading. Because so many financial institutions were trying to raise capital and sell mortgage-related assets, the market was one-sided and highly illiquid. The result was market prices were generally unavailable, and firms faced deep discounts on asset prices. The problem was further compounded, because many institutional investors were trying to sell downgraded assets as well. Institutions such as pension funds can only invest in highly rated securities because of ERISA, other legal requirements, and their own stated investing criteria. They therefore were selling and may continue to need to sell downgraded securities. This selling in turn has caused bond values to fall even further, resulting in further writedowns by financial institutions.

These writedowns and deep-discount asset sales raised fears among market participants about the credit worthiness of a number of financial institutions, which in turn resulted in runs on the funding of some of these firms. Whereas in the Great Depression, depositors of commercial banks withdrew their deposits, here providers of capital withdrew secured and unsecured funding from banks. The result has been a massive reorganization of the financial services industry. In March of 2008, JP Morgan Chase & Co. acquired Bear Stearns Companies, Inc., and Bank of America bought Merrill Lynch & Co. in September. Market pressures the same month forced Morgan Stanley and Goldman Sachs Group, Inc. to become commercial bank holding companies, and on September 15, 2008, Lehman Brothers Holdings Inc. announced that it would file for bankruptcy protection. Commercial banks have not been immune to market pressures: IndyMac Bancorp was taken into federal receivership. Washington Mutual, Wachovia, and numerous other banks merged or were taken over. The U.S. government seized control of Fannie

Mae and Freddie Mac,[35] signed a definitive agreement with AIG for a two-year, $85 billion revolving credit facility, and bought preferred shares at a number of banks.[36]

Since the end of 2007, bond insurers have also suffered. The top seven insurers "enhance the credit of some $2 trillion worth of debt securities held by investment banks, pension funds, mutual funds, and other investors around the globe."[37] At this time, many of the bond insurers' financial-strength ratings have been lowered. Without a AAA rating, issuers are unlikely to use these firms to insure securities, further undermining the insurers' well being. As bond insurers' credit ratings fall, so too will the ratings of the securities they have backed. If securities' ratings fall far enough, pension funds and other investors that have to hold highly rated securities may need to sell them, creating a glut in the market and further downwards price pressure. This cycle could yet mean additional writedowns for investors and banks.

III. What Went Wrong?

The question then is, how could the credit crisis have happened? At this time, there are perhaps more hypotheses than answers and a full analysis is obviously far beyond the scope of

[35] Under the plan, the Treasury will receive $1 billion of senior preferred stock, with warrants representing ownership stakes of 79.9 percent of Fannie and Freddie. The Treasury can purchase up to $100 billion of a special class of stock in each company as needed to maintain a positive net worth. It will also provide secured short-term funding to Fannie, Freddie and 12 federal home-loan banks, and purchase mortgage-backed debt in the open market. The government will receive annual interest of 10 percent on its stake. The FHFA will take over Fannie and Freddie under a so- called conservatorship, replacing their chief executives and eliminating their dividends. As a condition for the assistance, Fannie and Freddie will have to reduce their holdings of mortgages and securities backed by home loans. The portfolios ``shall not exceed $850 billion as of Dec. 31, 2009, and shall decline by 10 percent per year until it reaches $250 billion,'' the Treasury said. Fannie's portfolio was $758 billion at the end of July, and Freddie's was $798 billion.

[36] As part of the deal, AIG will issue a series of Convertible Participating Serial Preferred Stock to a trust that will hold the new securities for the benefit of the Treasury. The Preferred Stock will get 79.9% of any dividends paid on AIG's common stock and will give the government almost 79.9% of the voting power. The securities will then be converted to common stock at a special shareholder meeting.

[37] Tomoeh Murakami Tse, "Insurer of bonds loses top rating," *The Washington Post*, January 19, 2008, p. D01.

this paper.[38] In part the answer will likely involve the experience or lack thereof of market participants with this particular underlying asset class and with what were perhaps unanticipated declining loan underwriting standards. The credit risks of the pools of mortgages that included subprime loans, especially hybrid ARMs, were different than the credit risks of many of the mortgage pools previously securitized. It appears borrowers may have been qualified to borrow money based on low teaser rates in the early years of loans, rather than higher rates in later years, and that loan originators may have waived minimum down payments, reducing homeowners' equity. In addition, the mix of mortgages underwritten, which included a higher percentage of ARMs than in the past, had greater exposure to key risks, including interest rates and housing prices and was supported by persons with limited resources. Between 2001 and 2006, the number of subprime mortgages increased and the percentage that ARMs comprised of the total subprime MBS rose from 60.8 percent to 74 percent.[39] These changes, coupled with lower underwriting standards, may not have been fully appreciated by market participants. The market had limited experience understanding the credit risks of such loans and their high representation in MBS was new to the industry.

Other risks, created by changing origination and appraisal policies, may also have contributed to the unpredictability of how various pools of mortgages would perform under different market conditions. For example, loan originations shifted away from depository institutions to mortgage brokers and firms specializing in loan originations. These originators, in contrast to banks and thrifts, tended to have more focused financial incentives, including fees and

[38] Steven L. Schwarcz, "Protecting financial markets: Lessons from the subprime mortgage meltdown," Duke Law School Legal Studies Paper No. 175, November 2007. Available at SSRN: http://ssrn.com/abstract=1056241.
[39] Sandra Thompson, Director of the Division of Supervision and Consumer Protection, Federal Deposit Insurance Corporation "Mortgage Market Turmoil: Causes and Consequences," Testimony before the US Senate Committee on Banking, Housing, and Urban Affairs, March 22, 2007; Data from LoanPerformance.

yield-spread premiums, to close as many loans as possible at terms favorable to lenders.[40] Other structural changes in the residential mortgage origination industry may have contributed to lower credit standards and permitted fraudulent loan underwriting. Mason and Rosner (2007) note the impact of increasingly automated valuation and underwriting systems.[41]

The issues raised by these changes may have been masked to many market participants. Low interest rates in the economy, low teaser rates on ARMs, and high housing prices through mid-2006 staved off many loan delinquencies and foreclosures (Demyanyk and Van Hemert (2008)).[42] Besides interest rates being low overall, many ARMs had low teaser rates that had not yet reset to higher levels. Low rates helped protect homeowners against delinquencies and defaults. According to Fitch Managing Director Diane Penndel, "during the rapidly rising home price environment of the past few years, the ability of the borrower to refinance or quickly re-sell the property prior to the loan defaulting masked the true risk of these products and the presence of misrepresentation and fraud." So although loan quality appears to have declined between 2001 and 2006, loan performance did not immediately deteriorate. In fact, aggregate delinquency and foreclosure rates for subprime loans *declined* during 2001-2005.[43] Similarly, subprime mortgages originated during 2001-2005 had performed *better* than those originated in 2000.[44] The strong credit performance of subprime loans between 2001 and 2005 may have resulted in MBS ratings being too high in hindsight. Calomiris (2008) argues that because subprime loan products were relatively novel, MBS and CDOs with subprime collateral in 2004, 2005, and 2006 were rated

[40] *Broker Facilitated Fraud: The Impact on Mortgage Lenders*, BasePoint Analytics, 2006.
[41] Joseph R. Mason and Joshua Rosner, "How resilient are mortgage backed securities to collateralized debt obligation market disruptions?" Working Paper, February 15, 2007.
[42] Yuliya Demyanyk and Otto Van Hemert, "Understanding the subprime mortgage crisis," Working paper, August 19, 2008. Available at SSRN: http://ssrn.com/abstract=1020396.
[43] *The Subprime Lending Crisis: The Economic Impact on Wealth, Property Values and Tax Revenues, and How We Got Here*, U.S. Congress Joint Economic Committee, October 27, 2007; Data from Mortgage Bankers Association.
[44] Id.

based on estimates of defaults and losses from 2001, 2002, and 2003.[45] This period was unusual, because although the economy was in a mild recession, housing prices boomed. Of course housing prices eventually flattened out and began to fall, revealing borrowers' financial weakness. Noticeably higher delinquency rates appeared for loans originated in 2006 and 2007. As late as 2006, Lucas, Goodman, and Fabozzi (2006) substantiated the creditworthiness of CDOs based on an analysis of securities issued between 1996 and 2003.[46] By 2007, they had revised their estimates of defaults.[47]

In part the answer may also involve the experience or lack thereof of market participants with RMBS and CDOs that had somewhat different structures, were more complex, and less transparent than in the past. RMBS, for example, changed dramatically over time. In addition to holding more complex collateral, private-label RMBS deals, as shown in Figure 6, increased in size over time, peaking in 2005. This increase in average size was accompanied by an increased likelihood of multiple bookrunners, which may have arisen as a way to better share the risk of larger deals. At the same time, the average number of tranches for these transactions decreased from a high of 11.9 in 1999 to 2.18 at the peak of the market in 2005. Not surprisingly, the main tranche of private-label MBS offerings in 1999 comprised 20 percent of total offering principal, whereas it was 91 percent in 2005. Similar patterns exist for agency-sponsored RMBS and 144A deals. The reduction in MBS-structure complexity arose in part as a response to the development of highly customizable CDOs. Previous RMBS catered to the needs of investors for tailored duration and risk exposures. With the rise of CDOs, RMBS did not need to fulfill this demand. In

[45] Charles W. Calomiris, "The subprime turmoil: What's old, what's new, and what's next," Working paper, August 20, 2008.
[46] See Douglas J. Lucas, Laurie S. Goodman, and Frank Fabozzi, *Collateralized Debt Obligations: Structures and Analysis* (Second edition), John Wiley & Sons, New Jersey, 2006.
[47] See for example, Laurie S. Goodman, Daniel Newman, Douglas J. Lucas, and Frank J. Fabozzi, "Event of Default Provisions and the Valuation of ABS CDO Tranches," *Journal of Fixed Income*, 2007, 17 (3), pp. 85-89.

contrast to RMBS, CDOs have more tranches than ever before, and tranches are increasingly complex with interest-only and principal-only strips and other difficult-to-value securities.[48] In addition, the credit risk of the underlying assets is relatively opaque to market participants, who are removed from the actual loan underwriting and verification process. By purchasing securities that distribute risk more broadly, investors must rely on information produced and verified by third parties, who in turn rely on information produced further down the chain. A compromise in quality at any point in the chain can result in unanticipated risks for market participants further up it. CDOs especially have experienced substantial changes in the last eight years in terms of asset distribution and transaction structure.[49] Although it is tempting to point a finger at MBS originators as knowingly contributing to the complexity and opacity of securities, it is difficult to believe that they would have chosen to keep securities on their books that would later be written down by more than $506 billion if they had known the inherent risks.

The market appears to have not fully anticipated the probability or effect of correlated market events or the very small probability of an extremely negative outcome. So, for example, SPVs wrote repurchase agreements to protect against mortgage fraud and defaults. That protection is of limited value, however, if many repurchase agreements are exercised and loan originators declare bankruptcy. Similarly, securities were insured against shortfalls of cash flow, but such guarantees are not very useful if the credit ratings of insurers are downgraded or they go bankrupt. Consistent with this thesis, Mason and Rosner (2007) suggest that credit-rating models may underestimate the correlation of defaults and hence understate risk.[50] In turn, MBS sponsors

[48] Joseph R. Mason and Joshua Rosner, "How resilient are mortgage backed securities to collateralized debt obligation market disruptions?" Working Paper, February 15, 2007.
[49] Jian Hu, "Assessing the credit risk of CDOs backed by structured finance securities: Rating analysts' challenges and solutions," NMI, August 31, 2007. Available at SSRN: http://ssrn.com/abstract=1011184.
[50] Joseph R. Mason and Joshua Rosner, "Where did the risk go? How misapplied bond ratings cause mortgage backed securities and collateralized debt obligations market disruptions," Working Paper, May 2007.

may not have fully appreciated the probability or impact of bond insurer downgrades on investor purchases and sales of securities and the subsequent effect on market liquidity and bond prices. Another potential source of correlation appears to have been in the structuring of CDOs tranches to garner investment-grade ratings. Once a relatively novel CDO's senior tranche is structured so as to receive an investment-grade rating, other CDOs tend to mimic that structure.[51] If that structure has some risk that is not fully understood by the rating agencies or some information is not disclosed to or understood by investors or rating agencies, the same weakness or deficiency will likely be repeated by a large number of CDOs. This herding may result in correlated downgrades later. These types of correlations, whereby a small error aggregates up to a substantial problem, can result in what is now known as a "black swan." According to Nassim Taleb, the author of *The Black Swan*, finance is an area that's dominated by black swans – rare events that have extreme impacts that can be and are usually explained away after the fact. "The tools we have in quantitative finance do not work in what I call the 'Black Swan' domain…people underestimate the impact of infrequent occurrences. Just as it was assumed that all swans were white until the first black species was spotted in Australia during the 17th century, historical analysis is an inadequate way to judge risk."

Related to the market not fully anticipating the probability or effect of correlated market events, is the market not appearing to appreciating certain types of funding risk for banks. Most commercial and investment banks rely on short-term secured borrowing to fund certain assets and then use those assets as collateral. As the value of the assets, which included mortgage-backed securities and derivatives positions, began to fall, banks faced margin calls and the need to raise cash to meet financial obligations and regulatory requirements. Historically they would

[51] Peter Tufano, "Financial innovation and first mover advantages," *Journal of Financial Economics,* 1989, 25, pp. 213-240.

have sold assets or raised debt or equity. In the severely stressed market of 2008, however, numerous financial institutions were selling assets, resulting in plummeting prices. Lower prices then set off a subsequent round of writedowns and a further need to raise cash and delever. Gorton (2008) and Allen and Carletti (2008) argue that FASB 157 exacerbated the problem, because firms had to value assets for accounting purposes at market prices that were lower than what the cash flow and risk characteristics would otherwise suggest were appropriate.[52] The problem was also made worse by heightened counter-party risk. Market participants did not know which banks were financially weak, and so refused to lend generally. Even banks with collateral were denied loans, as lenders feared they would not be able to monetize collateral if a borrower failed. With the value of the assets impaired, few buyers in the market, and the capital markets effectively shut down, firms had few options to raise cash and some began to experience financial distress.

Perhaps the starkest examples are Bear Stearns and Goldman Sachs. During the week of March 10, 2008, rumors about liquidity problems at Bear Stearns began spreading in the market. Lenders and counterparties, fearing that the firm might not be able to meet financial obligations, began denying not only "unsecured financing, but short-term secured financing as well, even when the firm's collateral consisted of agency securities with a market value in excess of the funds to be borrowed. Counterparties would not provide securities lending services and clearing services. Prime brokerage clients moved their cash balances elsewhere."[53] The result was a liquidity crisis for the firm, even though it met and exceeded all holding company regulatory net capital and liquidity standards. To put the run on Bear Stearns's liquidity in perspective, the firm

[52] See Gary Gorton, "The panic of 2007," Working paper, 2008 and Franklin Allen and Elena Carletti, "The role of liquidity in financial crises," Working paper, 2008.

[53] Source: Turmoil in U.S. Credit Markets: Examining the Recent Actions of Federal Financial Regulators Before United States (U.S.) Senate Committee on Banking, Housing and Urban Affairs, 110th Cong. (April 3, 2008) (statement of Christopher Cox, Chairman, Commission).

exceeded the Fed's net capital threshold for being "well capitalized," and had over $18 billion in liquidity on Monday, March 10, 2008.[54] On Tuesday, March 11, the holding company liquidity pool declined from $18.1 billion to $11.5 billion. On Wednesday, March 12, Bear Stearns' liquidity pool actually increased by $900 million to a total of $12.4 billion. On Thursday, March 13, however, Bear Stearns' liquidity pool fell sharply, and continued to fall on Friday,"[55] until the firm had no choice but either to be acquired by JP Morgan at a fire-sale price or fail altogether. Until Friday, March 14th, Bear Stearns' short-term credit ratings were all investment grade.[56]

Even more surprising was the funding run on Goldman Sachs, which had minimal asset writedowns and issues with bad MBS. Rather than be acquired to mitigate liquidity issues, it was forced to convert to a commercial bank. A few days before Goldman Sachs applied to be a bank holding company regulated by the Federal Reserve, it reported positive earnings for the quarter, $102 billion in liquidity, and had a stock price around $133/share.[57] Even it, however, could not withstand funding pressures. Ultimately it sought access to a commercial bank's insured deposits and the Fed's expansive discount window for commercial banks as an alternative to secured borrowing as a basis for its funding model.

We now know that a funding strategy – one embraced by an entire industry for many years – can work well when few institutions are financially distressed, but can break down in a

[54] Source: Source: Chairman Cox Letter to Basel Committee in Support of New Guidance on Liquidity Management. March 14, 2008. http://www.sec.gov/news/press/2008/2008-48.htm.
[55] Source: Answers to Frequently Asked Investor Questions Regarding The Bear Steams Companies, Inc. Commission. 18 March 2008. <http:llwww.sec.govlnews/press/2008/2008-46.htm>.
[56] Mark Pittman and Caroline Salas, "Bear Stearns has credit ratings slashed after bailout, " Bloomberg.com, March 14, 2008.
[57] The Goldman Sachs Group, Inc., Third Quarter Results, Form 8-K, September 16, 2008.

liquidity crunch.[58] We also now know that a lack of confidence in a bank's credit worthiness can cause a run on its secured funding such that it can fail, even though its net capital exceeds Federal Reserve Board (Fed) standards for being "well capitalized"[59] and liquidity exceeds SEC requirements. The Fed considers a bank with at least ten percent net capital, as defined by the internationally recognized Basel Standards, to be "well capitalized."[60] The SEC imposed liquidity requirements on investment banks such that they should be able to survive at least a year relying exclusively on secured funding (as opposed to secured and unsecured funding). Even given adherence to these standards, a number of investment and commercial banks experienced financial distress during this period, with investment banks faring generally worse than commercial banks. Unlike commercial banks, which fund themselves at least in part with "sticky" federally insured deposits, investment banks rely heavily on unsecured and secured funding that until recently was not guaranteed by the Fed, and that we now know can disappear within hours.

[58] Kashyap, Rajan, and Stein (2008) argue that the cycle could be broken if firms were able to buy capital insurance. See Anil K. Kashyap, Raghuram G. Rajan, and Jeremy C. Stein. "Rethinking capital regulation," Working paper, 2008.

[59] "Capital is the difference between a firm's assets and liabilities." Source: Answers to Frequently Asked Investor Questions Regarding The Bear Steams Companies, Inc. March 8, 2008, <http:/lwww.sec.gov/newslpress/200812008-46.htm>. "It is important to realize capital is not synonymous with liquidity. A firm can be highly capitalized, that is, can have more assets than liabilities, but can have liquidity problems if the assets cannot quickly be sold for cash or alternative sources of liquidity, including credit, obtained to meet other demands. While the ability of a securities firm to withstand market, credit, and other types of stress events is linked to the amount of capital the firm possesses, the firm also needs sufficient liquid assets, such as cash and U.S. Treasury securities, to meet its financial obligations as they arise. Accordingly, large securities firms must maintain a minimum level of liquidity in the holding company. This liquidity is intended to address pressing needs for funds across the firm. This liquidity consists of cash and highly liquid securities for the parent company to use without restriction." Source: Answers to Frequently Asked Investor Questions Regarding The Bear Steams Companies, Inc. Commission. March 18, 2008, <http:llwww.sec.govlnews/press/2008/2008-46.htm>.

[60] "The Basel Committee on Banking Supervision (Base1 Committee) seeks to improve the quality of banking supervision worldwide, in part by developing broad supervisory standards. The Basel Committee consists of central bank and regulatory officials from 13 member countries: Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, United Kingdom, and United States. The Basel Committee's supervisory standards are also often adopted by nonmember countries." Source: GAO. Bank Regulators Need to Improve Transparency and Overcome Impediments to Finalizing the Proposed Basel II Framework. Report No. 07-253, February 15, 2007.

The question then is whether the market could have reasonably anticipated that investment banks could face such dramatic liquidity crises. Critics have asserted that gross leverage, assets divided by stockholders' equity, was high over the period.[61] Measuring leverage for financial services firms, however, is more complex than for industrial firms, and gross leverage is rarely used. Instead leverage is nearly always measured using globally accepted Basel standards. Under the Basel II Standard, the capital ratio of regulatory capital to risk-weighted assets is the reciprocal of a leverage ratio. But, unlike gross leverage measures, the Basel Standard incorporates 1) the impact of off-balance sheet positions, especially OTC derivatives and 2) differences in the riskiness of assets (it weights high risk positions more than low risk positions). The largest investment banks were "required to maintain an overall Basel capital ratio of not less than the Federal Reserve's ten percent "well-capitalized" standard for bank holding companies,"[62] and maintain tentative net capital of at least $1 billion and net capital of at least $500 million.[63] Firms also had to meet a holding company liquidity standard that was designed to allow them to survive a period of more than one year without access to unsecured funding under the assumption that secured funding for liquid assets would be available.[64] The liquidity requirements, like those of other international and domestic regulators contemplating similar issues, did not anticipate a complete unwillingness of lenders to provide financing collateralized by high-quality assets (such as Treasuries or agency securities) or the failure of committed

[61] See, for example, Kara Scannell, "SEC faulted for missing red flags at Bear Stearns," *Wall Street Journal*, September 27-28, 2008, p. A3.

[62] Source: U.S. Securities and Exchange Commission, Office of Inspector General, Office of Audits, *SEC's Oversight of Bear Stearns and Related Entities: The Consolidated Supervised Entity Program*, September 25, 2008, Report No. 446-A, p. 8.

[63] SEC Holding Company Supervision with Respect to Capital Standards and Liquidity Planning. Commission. March 7, 2007. <http://www.sec.gov/divisions/marketreg/hcliquidity.htm>. Tentative capital is net capital before deductions for market and credit risk. U.S. Securities and Exchange Commission, Office of Inspector General, Office of Audits, *SEC's Oversight of Bear Stearns and Related Entities: The Consolidated Supervised Entity Program*, September 25, 2008, Report No. 446-A, p. 11.

[64] U.S. Securities and Exchange Commission, Office of Inspector General, Office of Audits, *SEC's Oversight of Bear Stearns and Related Entities: The Consolidated Supervised Entity Program*, September 25, 2008, Report No. 446-A, p. 4.

secured lending facilities.[65] According to a May 2008 IOSCO report, "The inability to obtain secured or unsecured debt financing, difficulty in obtaining funds from a subsidiary, incapability to sell assets or redeem financial instruments and outflows of cash or capital harm a firm's liquidity. These situations become difficult for firms to control as ABSs, CDOs or other structured products often do not have a liquid market. The situation is exacerbated when many firms are in the market at the same time."[66] Before the collapse of Bear Stearns, Lehman, and other investment banks, it would have been difficult if not impossible for market participants to anticipate the inadequacy of the international standards for holding company capital adequacy and liquidity that were relied upon by both commercial and investment banks. Similarly, it would have been difficult if not impossible to understand the flaw in the fundamental assumption of most investment banks' and many commercial banks' funding models; that is, secured lending that needed to be refinanced frequently would be available when markets were stressed.[67]

IV. The Legal Issues Raised by the Credit Crisis Losses

Needless to say, there are a number of different parties adversely affected by the losses resulting from the decline in the value of financial instruments, particularly instruments tied to the value of mortgages, that are bringing, or are likely to bring, legal claims seeking to recover some of these losses. The discussion will begin by discussing some of the possible claims by CDO and MBS purchasers. After this discussion, some of the issues facing the plaintiffs bringing the various class actions documented in Table 1 will be discussed, most importantly the Rule

[65] Source: Turmoil in U.S. Credit Markets: Examining the Recent Actions of Federal Financial Regulators Before United States (U.S.) Senate Committee on Banking, Housing and Urban Affairs, 110th Cong. (April 3, 2008) (statement of Christopher Cox, Chairman, Commission).

[66] Technical Committee of the International Organization of Securities Commissions, *Report of the Task Force on the SubPrime Crisis: Final Report*, May 2008, p. 14.

[67] See Markus K. Brunnermeier, "Deciphering the 2007-08 liquidity and credit crunch," *Journal of Economic Perspectives* (in press), 2008.

10b-5 class actions brought against the banks and mortgage originators. The discussion of the class action litigation will focus on three basic securities law principles that plaintiffs will have to successfully navigate. The three principles we identify are: first, there can be no "fraud be hindsight"; second, there can be no actionable disclosure deficiency with respect to information the market knew (the "truth on the market" defense); and, third, the requirement that plaintiffs establish "loss causation" for their claimed damages. As the discussion will make clear, the application of these principles will necessarily be informed by the evolving nature of the securitization market in the years immediately prior to the credit crisis which was discussed in Sections II and III.

Obviously, it is impossible to cover the entire spectrum of the various types of claims that will be brought by different parties resulting from the current financial crisis. Perhaps most notably, we will not specifically discuss various legal issues raised by exposures due to credit default swap positions, the state law derivative actions that have been filed against firms nor claims arising out of losses suffered by mutual fund investors and purchasers of action-rate securities. This is not to say that some of these legal claims will not also raise some of the same issues that we will discuss, such the requirement that plaintiffs establish "loss causation."

A. Claims by CDO purchasers

It is important in understanding the fallout from the credit crisis, and the legal claims that are generated by this crisis, the fact that many of the losses suffered by investors, and particularly the commercial and investment banks, are due to CDO exposures. More specifically, the CDO exposures of the commercial and investment banks often took the form of either retention of the highest rated tranche of a CDO often with credit default swap protection (the so-called "super seniors") or the purchase of commercial paper, often with a maturity of only 270 days or less,

issued by asset-backed commercial paper conduits, which themselves often held super-senior securities. The banks' purchases of asset-back commercial paper were typically triggered by either a contractual obligation to do so (so-called "liquidity guarantees") or concern for maintaining the banks' reputation in the commercial paper market.

For instance, consider the source of the losses for UBS and Merrill Lynch, two firms with among the highest writedowns. UBS announced on February 14, 2008 approximately $18.7 billion in losses for its full-year 2007 results. Approximately 50 percent of these losses were due to UBS's super-senior positions with another 16 percent of UBS's 2007 losses due to UBS's CDO warehouse positions acquired through its CDO origination and underwriting business.[68] On October 24, 2007 Merrill Lynch announced a $7.9 billion writedown with some $5.6 billion in super-senior CDO losses.[69] On January 17, 2008 Merrill Lynch announced further writedowns of $11.5 for its CDO positions and in July of 2008, it sold some $30.6 billion gross notional amount of U.S. super senior CDOs (which had been carried at a valuation till that point of $11.1 billion) to Lone Star for $6.7 billion. Super-senior CDO exposures wrecked havoc at other banks as well.[70]

From both a litigation perspective as well as from a policy standpoint, it is critically important to bear in mind that CDO securities are sold to investors in Rule 144A offerings. As a result, CDO purchasers are not retail investors, but are rather very large institutional investors. The nature of this market is a function of the fact that for an offering to be exempt under Rule 144A, purchasers (and, indeed, the offerees) must be "qualified institutional buyers" (QIBs). QIBs include investors such as pension plans, hedge funds, and investment banks. Hedge funds, in particular, are reported to have been major purchasers of CDOs, including the riskier CDO

[68] UBS Shareholder Report on UBS's Write-Downs, 2008.
[69] Merrill Lynch Oct. 24, 2007 8-K
[70] See, e.g., Morgan Stanley, January 29, 2008 10-K (attributing most of its $9.4 billion loss to super-senior CDOs).

tranches that constituted in effect leveraged positions in mortgages, whereas commercial and investment banks often purchased the super-senior CDO securities or retained CDO warehouse positions as part of their origination and underwriting businesses. Indeed, not only were CDO securities unregistered and a serious source of losses, the most serious errors in the accuracy of credit agencies' ratings were with respect to CDO securities rather than the RMBS. In other words, the CDO market is a substantial source of losses and a substantial source of credit rating inaccuracy.

The fact that CDO interests are issued pursuant to Rule 144A means that CDO purchasers will be unable to bring a Section 11 claim under the Securities Act of 1933 against the issuers or underwriters of CDOs as there is simply no registration statement. Nor can CDO purchasers bring Section 12(a)(2) actions under the Securities Act of 1933 for misleading disclosures in communications made during CDO sales processes. Communications made in private offerings (such as a Rule 144A offering), under the Supreme Court's decision in *Gustafson v. Alloyd Co.*, 513 U.S. 561 (1995), are not "by means of a prospectus or oral communication," which is a necessary prerequisite to having a Section 12(a)(2) cause of action.

A second implication of the fact that the CDO market is a Rule 144A market, besides the unavailability of the most attractive causes-of-action under the Securities Act of 1933, is for policy going forward. A number of commentators, including the report issued by the Counterparty Risk Management Policy Group headed by Mr. Corrigan, have called for heightened requirements in terms of investor sophistication before an investor can purchase a "financially risky complex product."[71] The need for such a requirement is called into question by the fact that CDO purchasers have long satisfied the most demanding investor sophistication requirements known to securities regulation.

[71] *Containing Systematic Risk: The Road to Reform*, The Report of the CRMPGIII, August 6, 2008.

Much of the litigation in the CDO space will involve contractual claims. It is unclear at this point how fruitful a source of contractual claims the CDO "subscription agreement," pursuant to which purchasers agree to buy CDO interests, will be as these agreements often had relatively little in the way of explicit representations or warranties. A more important source of such claims will likely be the CDO indenture agreement (most of which are governed by either New York or British contract law), which governs the collection and distribution of the CDO's funds among the various CDO tranches. The CDO trustee is the party that is responsible under the indenture agreement for ensuring compliance with the terms of the indenture agreement. Table 5 documents the identity of CDO trustees for 2006-2007.[72] It is quite possible that holders of the more junior or mezzanine tranches, perhaps hedge funds that wish to limit their losses, will argue that some of the proceeds of the CDO under the terms of the indenture agreement belong to them; an interpretation that obviously will be resisted by the holders of the more senior CDO tranches. Indeed such "tranche warfare" litigation is already well underway. For instance, Deutsche Bank, as trustee of a CDO indenture agreement, has sought judicial resolution of a dispute between various CDO tranche holders over how CDO proceeds should be distributed.[73] These disputes will arise when, according to the terms of the CDO indenture agreement, there is a "default" that potentially triggers an obligation on the part of the trustee to distribute whatever assets are held by the CDO to the CDO tranche holders. Table 6 documents the CDOs that are currently on the path to liquidation, while Table 7 documents the CDO sponsors by number of CDO defaults.[74] These contractual disputes are likely to prove quite complex given that the provisions governing the distribution of CDO funds can be quite intricate due to the waterfall

[72] The table is based on data presented in *Asset-backed Weekly Update*, January 18, 2008. We are grateful to *Asset-backed Weekly* for provided us with a free subscription to their publication.
[73] See, e.g., Complaint filed in *Deutsche Bank Trust Company v. Lacrosse Financial Products LLC*, Supreme Court the State of New York County of New York (December 3, 2007).
[74] The table is based on data presented in *Asset-backed Weekly Update*, January 18, 2008.

structures that are typically in place and the fact that more than one document often purports to contain provisions relevant to such an inquiry. One possible source of elucidation of the parties' intended meaning of various waterfall provisions governing distribution of the CDO's proceeds are the computer simulations, generated under various scenarios or assumptions, of the return various holders of the CDO tranches would hypothetically enjoy. Such computer simulations are typically provided to QIBs during the marketing of CDOs.

There is yet another potential source of litigation from CDO purchasers and that is against the collateral manager of the CDO. Litigation of this type has already occurred in the United Kingdom. One case, for instance, involved HSL Nordbank, which had invested in investment-grade tranches of a CDO called Corvus for which Barclays Capital was the collateral manager (Barclays also sponsored and marketed Corvus). HSL Nordbank claimed that its investment, as a result of the original assets of Corvus being sold and replaced with poorly performing assets, was thereby rendered largely worthless. HSL Nordbank brought a number of claims against Barclays, including claims that Barclays had not adequately disclosed the risks of purchasing the CDO interests, breached its duty of care in the management of Corvus as collateral manager, and, finally, that Barclays had inflated the value of the CDO's assets in reports to Corvus' investors. The HSL Nordbank lawsuit settled.

What form is the type of claims brought by HSL Nordbank likely to take in the United States? With respect to claims concerning actions by the CDO collateral manager, such as a claim that the collateral manager improperly substituted existing CDO assets with poorly performing assets, one possible approach would be to argue that the collateral manager is an ERISA fiduciary with respect to any CDO pension plan purchasers. It is already apparent from the litigation filed so far, that plaintiffs will aggressively deploy the concept of ERISA fiduciary.

Assuming the collateral manager of a CDO is deemed to be an ERISA fiduciary with respect to the CDO investments of pension plans funds, the collateral manager will arguably owe a duty of care and loyalty to the pension funds in the course of exercising its discretion in making investment decisions. Claims of a breach of a fiduciary duty would likely include improper substitution of existing CDO assets with sub-par performing assets (as was alleged in the HSL Nordbank case). Potential ERISA duty of loyalty claims, which ERISA fiduciaries are also subject to, could be brought based on transactions between the CDO and an affiliate of the sponsor of the CDO assuming that the sponsor of the CDO and the collateral manager are one in the same. Some types of transactions with the CDO are potentially quite lucrative for sponsoring institutions, such as being the counter-party to certain types of derivative transactions entered into by CDO.

Not surprisingly, whether the collateral manager is in fact an ERISA fiduciary will turn on whether an exemption from ERISA is applicable. ERISA exempts CDOs when the CDO tranches are deemed "debt" for purposes of ERISA (in conjunction with several other requirements being satisfied). One basis for arguing for the debt status of a CDO tranche, and hence an ERISA exemption, is that the tranche is investment grade. One question that this type of argument will raise is the effect of the recent credit ratings' downgrades of a large number of CDO tranches to below-investment-grade status. Also, another commonly used exemption from ERISA used by CDOs, is to argue that no more than 25 percent of the CDO's equity has been purchased by ERISA plans (in conjunction with certain specified benefit plans). Interestingly, the issue of ERISA coverage usually does not come up in the context of MBS purchases as

Department of Labor regulations exempt from ERISA SPVs whose MBS are registered under the Securities Act of 1933.[75]

Another interesting source of potential litigation in the context of CDO purchases are claims that the pricing of the CDO assets or interests therein was inflated relative to the assets' or interests' "true" value. Even if the CDO purchase agreement does not contain representations or warranties, there might well be a contractual obligation to provide pricing information on an on-going basis that would give rise to a contractual claim. A related legal basis for bringing a pricing claim is a long line of cases that have held that, absent adequate disclosure, when the price charged an investor bears no reasonable relation to the "prevailing price" this operates as a fraud under Rule 10b-5 on purchasers.[76] These pricing types of claims are likely to be challenging to prove as result, in part, of the lack of comprehensive data on CDO structures and performance that could help inform the analysis of the appropriateness of the valuation in any particular set of circumstances. For instance, whereas Bloomberg has comprehensive coverage of the MBS market (as well as the ABS market in general), there is very little in the way of Bloomberg information on CDOs. The lack of comprehensive data on CDOs is also reflected in the coverage of other standard sources of financial data.

Besides the availability of data, there are two additional issues that could loom large in the context of a valuation claim. First, as the earlier discussion on CDOs emphasized, many CDOs are structured to cater to the needs and preferences of a certain targeted group of investors with the result being that there is substantial heterogeneity across CDOs. This lack of comparability makes comparisons of pricing across CDOs quite challenging, even assuming data

[75] See Tamar Frankel, *Securitization* (2nd Edition), 2006, p.184 for a discussion of these regulations.
[76] See Allen Ferrell, *The Law and Finance of Broker-Dealer Markups*" (FINRA commissioned study) discussing this line of cases.

is available. Second, if the CDO purchasers received adequate disclosure, then it would be more difficult to claim that there was fraudulent conduct in the valuation of the CDO.

B. Claims by MBS purchasers

Although the most dramatic losses occurred for purchasers of CDOs, there were nevertheless losses suffered by MBS purchasers. Interestingly, there was not as dramatic a reversal in the credit ratings for MBS issuances as that which occurred with respect to CDO ratings. Be that as it may, litigation brought by major purchasers of MBS is already underway.[77]

One possible basis for a claim, given that the vast bulk of all MBS are registered, is a false or misleading statement in the registration statement giving rise to Section 11 liability. The issuer of the security, the SPV, underwriters, and auditors will all be subject to potential Section 11 liability (with the latter two groups having due-diligence defenses). With respect to other communications made during the registered offering process, misleading statements can give rise to Section 12(a)(2) liability. And, of course, such misstatements would be subject to Rule 10b-5 liability, but such a cause of action would have to survive the difficult hurdle of demonstrating scienter. Finally, there are a number of possible state causes of action, including breach of contract, fraud, and negligent misrepresentation that might be brought by MBS purchasers.

What are the likely candidates for misleading disclosures in the registration statement or offering communications for registered MBS? At least four candidates present themselves, all relating in some way to the underwriting quality of the underlying mortgages themselves, that could potentially be pursued by MBS purchasers: *i*) outright fraud with respect to the documentation surrounding the mortgage origination rendering statements made in the offering process false; *ii*) lack of adequate disclosure of underwriting standards for the underlying mortgages; *iii*) the extent to which exceptions were made to whatever the underwriting standards

[77] See, e.g., *Luminent Mortgage Capital Inc. v. Merrill Lynch* (Eastern District Court of Pennsylvania).

were; and *iv*) the pricing of the various MBS tranches. The presence of these disclosure issues in the registration statement, including fraud in the mortgage origination, will prove problematic for an SPV as there is no Section 11 due-diligence defense for issuers. Presumably, however, purchasers are more interested in suing whichever bank is responsible for establishing, marketing, and underwriting the SPV and its MBS in question.

One interesting issue that will arise in the context of this litigation is in what circumstances will these misstatements be deemed "material," a requirement for bringing actions under Section 11, Section 12(a)(2), Rule 10b-5, and most related state law claims. For instance, to what extent should the determination of the materiality of a misrepresentation turn on the hedging strategy of the MBS purchaser? Consider, for example, a MBS purchaser who buys the most junior tranches of a MBS as well as the MBS tranche that is only entitled to any prepayment penalties collected as a result of homeowners paying off their mortgages early. One possible rationale for such a strategy is that the prepayment tranche can serve as a hedge for the junior MBS tranches: As prepayments and hence prepayment penalties increase, the value of a prepayment tranche should rise, while the value of the junior MBS tranche should fall as there will be a reduction in interest payments left over after the more senior tranches are paid. The converse is also true: a reduction in prepayments should increase the value of the junior MBS tranches but at the expense of the prepayment tranche. In such a context, is a misrepresentation about the likely incidence of prepayments material? Does the fact that the risk of prepayment fluctuations is at least partially hedged make it less likely that such a misrepresentation should be deemed material? An analogous issue will arise in the context of a claim that there was mispricing due to a false statement that prepayments were likely to be substantial, as an inflated

price for the prepayment tranche would arguably imply an offsetting underpricing of the junior tranche.

With respect to all four disclosure issues, the role of the so-called due-diligence firms looms as a potentially critical litigation issue in the actions being brought against various actors in the structured finance arena. The information provided to these parties by the due-diligence firms on the quality of the underlying mortgages could be the subject of extensive litigation for a number of reasons. First, the provision (and even the availability) of information to the banks acting as the underwriter for the MBS will arguably affect the availability of a Section 11 due-diligence defense with respect to material misstatements in the MBS registration statement. Plaintiffs in this regard are likely to point to the *In re Worldcom, Inc. Securities Litigation*, 346 F.Supp. 2d 628 (S.D.N.Y. 2004) decision, where the court concluded that defendants had not established a due-diligence defense due to "red flags" that should have put the Section 11 defendants on notice that Worldcom's accounting was inaccurate.[78] Second, the provision of information on the underwriting quality of the mortgages will also arguably speak to the available of a "reasonable care" defense (the defendants did not know and in the exercise of reasonable care could not have know) with respect to any Section 12(a)(2) suits brought by MBS purchasers. Third, such information might be used in actions proceeding under state law, such as breach of contract and negligent misrepresentation claims.

In short, it is quite likely that plaintiffs, in attempting to establish liability for various disclosure deficiencies, will attempt to rely upon information that is uncovered by the on-going investigations of the New York and Connecticut Attorney Generals, as well as the SEC in terms of what due-diligence firms knew about mortgage underwriting quality and the extent to which

[78] The key issue here will be what constitutes a "red flag" necessitating further investigation before a due-diligence defense will be viable. The discussion in *Worldcom* is quite sparse on this critical issue.

that information was shared with the investment and commercial banks. It has also been reported that the FBI is likewise investigating issues relating to the quality of the underwriting standards. As of the writing of this essay, it is still unclear what revelations, if any, these investigations will produce.

C. Claims against the Investment Banks: Three Basic U.S. Securities Law Principles

Although the litigation by purchasers of CDOs and MBS is noteworthy, by far the most important litigation likely to arise out of the credit crisis is the class action litigation against publicly-traded companies, in particular the Rule 10b-5 class action litigation that has been filed against the commercial and investment banks and the mortgage originators as well as the associated follow-on ERISA litigation. Again, these suits, including their filing dates and class periods, are summarized in Table 1. Of course, the litigation net at this point has been cast well beyond financial firms with Rule 10b-5 class action, Section 11, and ERISA complaints being filed against non-financial firms as well.

Plaintiffs will undoubtedly argue that the information that was given to the commercial and investment banks in their capacity as sponsor of SPVs issuing MBS and as underwriter of those MBS establishes scienter, one of the main hurdles in bringing a Rule 10b-5 action; that is, it will be claimed the banks knew that the MBS securities and the CDO interests that they held on their own books were worth significantly less, and this material information was not adequately disclosed in their 10-Ks and other disclosure documents. On a similar note, the same line of attack will be employed to argue that the "contingent losses" faced by the banks as a result of potentially having to bring SPV (or SIV) assets onto their own books or purchasing ABCP were both large and understood by the banks. In the context of the ERISA litigation filed against the banks and mortgage originators, the claims will be that the banks and mortgage

originators, when acting in the role as a fiduciary with respect to ERISA-covered plans, breached their fiduciary duties by purchasing (or making available) imprudent investments on behalf of ERISA plans.

As we see the litigation unfolding, however, there are substantial challenges facing the plaintiffs bringing these Rule 10b-5 actions. Given that the burden of proof is on the plaintiffs to establish the elements of their cause of action and damages, we will naturally focus on areas where this burden could potentially be the most difficult to satisfy. For purposes of providing an overview, we have identified three basic principles of securities laws that plaintiffs will have to successfully navigate. Of course, such an abbreviated discussion is obviously not intended to cover the full range of issues that will be raised in this litigation.

1. No Fraud by Hindsight

The basic distinction between reasonable *ex ante* expectations and *ex post* losses, a distinction fundamental to finance theory and long reflected in the U.S. securities laws, will go to the core of many of the alleged actionable disclosure deficiencies with respect to banks' and mortgage originators' disclosures to their security holders. This distinction will also likely prove to be quite important in the litigation being brought by MBS and CDO purchasers. Whether a failure of certain market participants to provide detailed disclosures concerning the implications of an event from which the actors themselves suffered huge losses – the first national fall in housing prices since World War II in conjunction with a dramatic and increasingly global credit crisis – is actionable will likely prove an important stumbling block, in our judgment, for a number of the actions being brought. More specifically, many of the Rule 10b-5, Section 11 and

ERISA class actions suits' class periods begin in 2006 or even earlier, as Table 1 documents, raising the issue of the extent to which the credit crisis was foreseeable in 2006 or earlier.[79]

Judge Friendly pithily captured the distinction between *ex ante* expectations and *ex post* losses in *Denny v. Barber*, 576 F.2d 465 (2d Cir. 1978) when he explained that there can be "no fraud by hindsight." Judge Friendly made this observation in the course of rejecting a claim that Chase Manhattan Bank had engaged in fraud as evidenced, according to the plaintiffs, by the inadequate disclosure of the bank's participation in making risky loans that eventually resulted in the bank suffering significant losses. More recently, the Second Circuit's decision in *Olkey v. Hyperion 1999 Term Trust*, 98 F.3d 2 (2d Cir. 1996) considered a claim by investors in a closed-end fund that held MBS that the fund should face liability based on Section 11 and 12(a)(2) of the Securities Act of 1933 and Rule 10b-5. The investors claimed, among other things, that there was a misrepresentation in the prospectuses marketing the fund, because the prospectuses failed to disclose the risky nature of the underlying MBS portfolio and, furthermore, that there was a failure to disclose the size of the potential losses if there was an adverse move in interest rates. Needless to say, the investors in the closed-end fund suffered substantial losses when there was a sudden change in interest rates. In rejecting these claims, the Second Circuit noted that the plaintiffs' "claim that another set of investment choices should have been made, based upon a different conception of what interest rates would do. . . . This is only to say in *hindsight* that the managers of [other] funds turned out to be more skillful in their predictions" (emphasis added). In other words, the presence of disclosure failures (and the materiality thereof) must be assessed in light of what was knowable at the time of the disclosure without the benefit of 20/20

[79] The complaints filed to date typically assert that the losses were foreseeable, but with little in the way of substantiation, at least at this point in time. See, e.g., *Coulter v. Morgan Stanley* Class Action Complaint, 07-CV-11624 ("Despite the fact that Morgan Stanley was able to anticipate the losses from its exposure to subprime mortgage investments as far back as 2006, it failed to take any action to protect the Plans' participants from these foreseeable losses." Paragraph 103).

hindsight, even if *ex post* substantial losses have occurred. The Second Circuit yet again just recently emphasized the importance of what was knowable at the time of the alleged disclosure deficiency in *Teamsters Local 445 Freight Division Pension Fund v. Dynex Capital*, 2008 U.S. App. LEXIS 13449 (2d Cir., June 26, 2008). The Second Circuit stressed that to establish a disclosure deficiency as a result of bonds securitized by homes losing value, the plaintiffs must, among other things, be able to point to contemporaneous materials indicating that such undisclosed losses were occurring.

The case law of other circuits is in line with the Second Circuit's *ex ante* approach towards considering the adequacy of disclosures. For instance, the Sixth Circuit has explained that there is a duty to disclose the potential hazards of a product and future potential regulatory action only if such eventualities are "substantially certain" at the time the purported duty arises. *Ford Motor Company Securities Litigation*, 381 F.3d 563 (6th Cir. 2004). The Eight Circuit, on a similar note, has conditioned a duty to disclose the impact of a future possibility on that possibility capable of being "reasonably estimated." *In re K-Tel Int'l, Inc. Securities Litigation*, 300 F.3d 881, 893 (8th Cir. 2002).

A number of pieces of evidence will speak to what was foreseeable at different points in time, some of which have already been raised, such as the profound changes in the RMBS and CDO market in recent years discussed in Sections II and III. One way to consider this issue is to look at banks' reported value at risk (VaR) estimates, a widely used measure by banks to measure the risk inherent in at least some their financial positions, immediately prior to the credit crisis. Did these estimates predict, even in a rough way, the size of the subsequent writedowns or which firms were most exposed if credit markets substantially tightened? Based on the VaR figures disclosed in banks' 10-Ks from 2006 and summarized in Table 8, the answer appears to

be a resounding "no." Table 8 indicates Goldman Sachs had the second highest reported VaR for 2006; a figure that is itself an underestimation given that Goldman Sachs reports a VaR estimate solely for its trading portfolio as opposed to firm-wide VaR (a figure that UBS, the bank with the highest reported VaR, does reports). Towards the other end of the spectrum, the third lowest reported VaR estimate was that of Merrill Lynch, whose VaR was less than half of that of Goldman Sachs. Of course, Merrill Lynch has had among the highest writedowns, whereas Goldman Sachs has so far fared comparatively far better. The correlation between banks' reported VaR for 2006, the year immediately prior to the credit crisis, and their subsequent writedowns, summarized in Table 2, was a meager 0.3.

Besides the predictability of the credit crisis losses at different points in time, there is also a more micro issue that also speaks to what was reasonably knowable before the credit crisis began. The ability to model different scenarios for a given pool of mortgages, or, in the case of CDOs, mortgaged-backed securities and other assets, depends heavily on having historical information as to the actual performance for *that* pool of mortgages or mortgage-backed securities. As a result, the level of knowledge concerning possible scenarios will likely increase over time relative to what was known (or knowable) at the time that the SPV or CDO was created and interests therein sold to investors. A commonly held view among CDO structurers is that one needs two years of historical data to gain meaningful additional insight into performance behavior in possible future performance scenarios. This observation is potentially important as most of the CDOs that have suffered substantial losses were created in the two years immediately prior to the full-blown credit crisis that began in earnest in August of 2007 or were exposed to mortgages and other assets that were originated in this two year lead-up period.

In short, plaintiffs will have to provide a basis to establish that there were false or misleading material disclosures, or a violation to disclose material information, beyond merely observing that there was extensive economic loses.

2. Truth on the Market Defense

Another important issue that will be germane to many of the securities claims being filed is not only what did the issuer (or other parties being sued) reasonable know *ex ante,* but what did the market know and when did it know. With respect to macroeconomic issues, such as the current or future state of the economy, interest rates or the national housing market, it is quite implausible to believe that the SPVs or the banks sponsoring and underwriting the MBS or sponsoring the CDOs had any special knowledge concerning these matters that was not already know by the market. Indeed, even for information such as the national default rate on subprime mortgages, which directly, immediately, and sometimes substantially affected the value of certain types of tranches of MBS and CDOs, it is likewise unclear the basis on which one could establish that the various participants in the structured finance markets had private knowledge, unknown by the market at large, about such a general macroeconomic issue.

In a situation where the market is as informed as a defendant as to a particular issue, then the "truth on the market" doctrine in securities law will provide an opportunity for defendants to argue that any misrepresentation or violation of a duty to disclose information, even assuming there was one, was not material and, hence, not actionable, whether the cause of action is Section 11, Section 12(a)(2) or Rule 10b-5. As the Second Circuit succinctly summarized this doctrine, "a misrepresentation is immaterial if the information is already known to the market because the misrepresentation cannot then defraud the market." *Ganino v. Citizen Utilities Co.*, 228 F.3d 154, 167 (2000).

Consider, by way of example of these issues, a claim that a bank knew (because a due-diligence firm informed the bank that the underwriting quality of some mortgages was questionable) that the true value of a pool of mortgages held in an SPV or on its own books was lower than that publicly presented in the offering materials or the bank's disclosures to the market. If this impaired underwriting quality for the type of mortgage in question, say for 2006 refinancing no-documentation mortgages originated by mortgage brokers, is true on a market-wide basis (and not just for the mortgage pool in question), then it becomes debatable whether the information held by the bank is any different from what was already known by the market based on existing market-wide information on underwriting quality. In other words, the question will be the extent to which the information allegedly held by the bank would have changed market expectations if the market had learned the information directly from the bank. As always, the burden of establishing that such a change in market expectations would have occurred, and hence the disclosed information is arguably "material," is placed on the plaintiff.

Moreover, even assuming that the information privately provided to the bank concerning the underwriting quality of the mortgages (and not disclosed) held by the SPV, or retained on its own books directly or through a CDO exposure, was inferior to the typical underwriting quality on a market-wide basis for the universe of mortgages (holding constant the other attributes of the mortgage pool that were publicly disclosed) it is still nevertheless legally relevant what the market knew and when did it know it. The private information that the bank would have in this situation is the non-disclosure of the difference between the underwriting quality of the particular pool of mortgages in question and what was already know by the market about underwriting quality of mortgages in the market as a whole. In this connection, it is worth noting that the

larger the pool of mortgages (or MBS), all else being equal, the more likely it is that the pool will reflect the average underwriting quality of mortgages in the market as a whole.

With respect to claims that there was inadequate disclosure of potential exposure to off-balance sheet losses, the "truth on the market" doctrine will once again be potentially relevant. Even assuming an obligation to disclose such information, the question will remain whether such non-disclosure was material or, rather, whether the market was already aware of potential off-balance sheet exposures. Putting aside whatever disclosures were in fact made in a firm's SEC disclosures (10-K, 10-Q, 8-K), three considerations potentially speak to the market's knowledge (or lack thereof) of various off-balance sheet exposures.

First, the purchasers of CDO tranches and ABCP issued against conduits holding CDO securities were large institutional investors that were well aware of the details of certain off-balance sheet arrangements, including sources of credit enhancement and the terms of liquidity guarantees by banks.[80] In fact, these arrangements were typically described in commercial paper prospectuses used to market paper, as many potential ABCP purchasers would simply refuse to consider buying commercial paper without a liquidity guarantee. Potential investors' knowledge could constitute an important mechanism by which information relating to off-balance sheet exposures would have reached market participants more generally that could then trade on that information in the course of buying and selling the banks' stock (thereby ensuring that the banks' stock price reflected this information). How one might establish or disprove this hypothesis econometrically will be an important issue in litigation. It is worth pointing out in this connection that plaintiffs, in bringing the 10b-5 class actions summarized in Table 1, claim that the market was semi-strong efficient; i.e., that the bank's security price (or the security price of any other

[80] Gary Gorton and Nicholas S. Souleles, "Special purpose vehicles and securitization," in *The Risks of Financial Institutions*,"edited by Rene Stulz and Mark Carey, University of Chicago Press, 2006.

defendant, such as a mortgage originator) reflected all readily available information. Plaintiffs need to do so to establish reliance on a class-wide basis under the *Basic* doctrine, but it does raise the specter of a successful "truth on the market" argument as to the non-materiality of the off-balance sheet exposures if that information was readily available.

Second, there are at least two additional important sources of mandated disclosures besides a firm's periodic reports under the Exchange Act and the commercial paper prospectuses: the MBS registration statements and commercial banks' quarterly Form Y-9C disclosures. MBS registration statements that provide detailed information on the pool of mortgages underlying the security, including information on the underwriting quality, are readily accessible for all publicly traded MBS. Table 9 summarizes some of the information disclosed in the registration statements of two representative Banc of America MBS deals; one from 2001 and another from 2006. A comparison of these two registration statements reveals two things that are true more generally for the universe of MBS registration statements. First, the quality of the MBS disclosures appears to increase over time; that is, more information was disclosed in 2006 than in 2001. This difference is simply a function of the SEC, after a number of years of study and consultation, promulgating Regulation AB in 2004, which mandated additional disclosures for asset-backed securities, such as MBS. Second, a comparison of the two registration statements' information suggests the quality of underwriting declined over time, but that the deal characteristics were clearly disclosed. For instance, the range of the months to the first interest-rate adjustment for the pool of mortgages substantially declined from 2001 to 2006, and the original loan to value range was higher for the 2006 pool.

Besides the MBS registration statements, commercial banks, such as JP Morgan, Citigroup, and Bank of America, have to file quarterly Form Y-9C, among other forms, with the

Federal Reserve. Form Y-9C is the required Consolidated Financial Statement for Bank Holding Companies with consolidated assets of $500 million or more. Of particular relevance is Schedule HC-S, which provides detailed information on the securitization activities of the bank – information that typically is more specific than that available from SEC reports. For instance, Schedule HC-S provides information on asset-backed commercial paper conduits, including "unused commitments to provide liquidity to conduit structures" broken down by conduits sponsored by the bank and conduits sponsored by unrelated institutions. As an example, JP Morgan disclosed for the second quarter of 2007 that ended June 30, 2007 that it had $2.68 billion in sponsored unused asset-backed commercial paper conduit liquidity guarantees outstanding and another $99 million for unsponsored conduits. In terms of balance sheet assets, banks also disclose mortgage-backed securities holdings, including collateral mortgage obligations, under Schedule HC-B.

Third, the academic literature generally concludes that off-balance exposures, including transfers of financial assets in securitizations, are "priced" by the market. This literature is surveyed in Schipper and Yohn (2007).[81] For example, Niu and Richardson (2004) document that off-balance sheet debt relating to securitizations has the same risk relevance to the firm's stock (the stock's CAPM beta) as on-balance sheet debt. In other words, the market prices the implicit put option that off-balance sheet debt issued in the course of securitizations confers; i.e., investors' ability to force a firm, either as a result of contract or reputational concerns, to purchase the off-balance sheet debt.[82] Consistent with these findings, Landsman, Peasnell, and Shakespeare (2006) report that analysts treat securitizations as secured borrowing in much the

[81] Katherine Schipper and Teri Lombardi Yohn, "Standard-Setting Issues and Academic Research Related to the Accounting for Financial Asset Transfers," *Accounting Horizons*, 2007, 21 (4), pp. 59-80.
[82] Flora Niu and Gordon D. Richardson, "Earnings quality, off-balance sheet risk, and the financial-components approach to accounting for transfers of financial assets," 2004. Available at SSRN: http://ssrn.com/abstract=628261.

same way that analysts view securitized assets and liabilities as belonging to a sponsoring bank.[83] Lim, Mann, and Mihov (2005) document that the market impounds off-balance sheet financing of operating leases into the yields of debt, despite limited disclosures by firms of such arrangements.[84] Of course, whether the market knew certain information (and whether that information was priced) will ultimately turn on the specific factual circumstances at question in the litigation.

3. Loss Causation

In securities class action litigation, the issue of "loss causation" is increasingly important in the wake of the Supreme Court's 2005 decision in *Dura Pharmaceuticals v. Broudo,* 544 U.S. 336. Loss causation is the requirement that plaintiffs prove in a Rule 10b-5 action that the losses for which they seek recover was "caused" by the misconduct that ran afoul of Rule 10b-5. Perhaps the most notable "loss causation" decision is the Fifth Circuit's opinion in *Oscar Private Equity Investments v. Allegiance Telecom, Inc.*, 2007 U.S. App. LEXIS 11525 (May 16, 2007) last year that loss causation must be established before class-wide reliance can be presumed under a fraud-on-them-market theory *at the class certification stage*. In a Section 11 suit, loss causation is also an important issue, albeit with the burden of proof being on the defendant.

"Loss causation" is likely to be a critical litigation issue simply by virtue of the fact that markets have declined dramatically overall, with an even more serious fall in the financial sector, not only in the United States, but also around the world. Perhaps the most dramatic demonstration of the fact that there was a market-wide break is the called "TED spread," which is the difference between the three-month LIBOR rate (in dollars) and the three-month Treasury-

[83] Wayne R. Landsman, Ken V. Peasnell, and Catherine Shakespeare, "Are asset securitizations sales or loans?" University of Michigan Ross School of Business Research Paper, August 2006. Available at SSRN: http://ssrn.com/abstract=924560.

[84] See Steve Lim, Steven Mann, and Vassil Mihov, "Market evaluation of off-balance sheet financing: You can run but you can't hide," Working Paper, 2003.

bill rate. This spread is often interpreted as the risk premium banks demand for lending to other banks, as the LIBOR rate is the rate for unsecured inter-bank lending in the London wholesale money market and the U.S. Treasury-bill rate is viewed as a proxy for the risk-free rate of return. As shown in Figure 7, the most dramatic market break in the TED spread occurred on August 9, 2007,[85] although some commentators interpret signs of distress in July of 2007 when several Bear Stearns hedge funds ran into trouble. The spread has been elevated ever since. It is worth emphasizing that a heightened spread indicates the market perceives there to be significant counterparty risk even though the counter-parties in the LIBOR wholesale money market are among the largest, most well-established banks.[86] Other types of spreads, such as the difference between the rates of thirty-year agency debt and thirty-year Treasury-bonds, exhibited an even sharper break in July than the TED spread in July (Brunnermeier 2008).[87] It bears emphasis that the type of spread that is most relevant to valuation will depend on the type of instrument in question. For instance, in terms of the valuation of super-seniors, which were the source of a substantial percentage of the losses by the banks, they were not downgraded by the rating agencies until late October of 2007.[88]

There is an important and ongoing academic debate as to what has driven the increases in spreads during this time. For instance, some financial economists have argued that the jump in the TED spread is explained by banks' perceiving an increase in the risk of default

[85] On August 9, 2007 the European Central Bank and the Federal Reserve injected money into the banking system given concerns over credit-market conditions. On that same day, BNP Paribas reported that it was suspending the calculation of net asset value as well as subscriptions/redemptions for three of its funds, the Wall Street Journal reported that the North American Equity Opportunities hedge fund, backed by Goldman Sachs, was in trouble; IKB Deutsche Industrie Bank AG reported substantial subprime losses and Toll Brothers announced a 21 percent reduction in preliminary revenue for the third quarter and refused to provide future guidance.

[86] The contributing banks for the LIBOR rate (USD) in 2007 were: Bank of America, Bank of Tokyo– Mitsubishi UFJ, Barclays Bank plc, Citibank NA, Credit Suisse, Deutsche Bank AG, HBOS, HSBC, JP Morgan Chase, Lloyds TSB Bank plc, Rabobank, Royal Bank of Canada, The Norinchukin Bank, The Royal Bank of Scotland Group, UBS AG, and West LB AG.

[87] Markus K. Brunnermeier, "Deciphering the 2007-08 liquidity and credit crunch," *Journal of Economic Perspectives* (in press), 2008.

[88] Moody's Investors Services. Oct. 23, 2007

("counterparty risk"). Others, however, believe the spread has widened because banks have been unwilling to lend because they need to conserve cash (which they defined as "liquidity risk") (Taylor and Williams 2008). Irrespective of the answer, the important legal point is that these spreads represent market-wide factors. This conclusion is important as losses arising from the decline in the market value of MBS and CDOs that resulted from market-wide increases in counterparty and liquidity risk will have a difficult time being traceable to individual-firm Rule 10b-5 actionable misconduct.

Even if there was a failure of a legal duty by an institution to disclose the full details of all its potential exposures, including under extreme market conditions, there is still the fact that the relevance of such disclosures will likely be a function of the market conditions that exist at the time there was a failure to disclose. This argument is directly related to the doctrine of "loss causation," if one interprets "loss causation" as existing only when a "corrective disclosure" reveals to the market actionable misconduct which thereby dissipates the "inflation" present in the stock. In turn, "inflation" in Rule 10b-5 litigation typically refers to the extent to which the stock price traded above the price it would have had but for the actionable misconduct. If such a disclosure, say in the beginning of 2006, of a firm's full potential exposures would not have changed the firm's stock price, then "loss causation" will fail to exist as there would simply be no "inflation" present in the stock price that could have been dissipated by a corrective disclosure. Interestingly, these market concerns, at least as evidenced by the TED spread (and other standard spreads economists have pointed to, such as the spread between the thirty-year agency and treasury-bond rates, tell a similar story) were essentially absent in 2006. In short, the relevance of various types of disclosures can well be a function of market conditions.

Moreover, even in conditions where the market very much wants to know where various exposures are located; i.e., in a situation where there is significant counter-party risk, the difficulty for plaintiffs will be that such information is likely to be well outside the knowledge of any single institution. By way of example, consider one of the most subprime-exposed investments, the lower tranches of MBS issued against subprime mortgages. These lower tranches were often repackaged by CDOs and, indeed, CDO interests were sometimes in turn repackaged yet again through another CDO structure with a variety of investors, often including hedge funds, purchasing the repackaged interests. Moreover SPVs issuing MBS and CDOs would attempt to spread credit risk by entering into transactions such as credit defaults with third parties. As a result of this, it is simply impossible for any single entity to know who the ultimate holders exposed to subprime losses ultimately are, especially after possible reselling by holders of these instruments and third-party derivative transactions by the CDOs and SPVs. Indeed, it was precisely the most exposed interests, the lower tranches, that saw the most repackaging, and whose risk was least transparent. Not surprisingly, a common observation is that Rule 144A CDO global notes, the typical form that CDO tranches are issued, are difficult to track. Indeed, the collateral managers of CDOs were reported to have sometimes been specifically prohibited from knowing the identity of some CDO purchasers as a result of various confidentiality agreements.

D. ERISA litigation

There have already been a number of ERISA lawsuits complaints already filed arising out of the subprime crisis as is evident from Table 1. ERISA suits have been filed, among others, against Citigroup, MBIA, Merrill Lynch, Morgan Stanley, and State Street. The potential sums involved in these ERISA lawsuits should not be underestimated. For instance, in one of the

ERISA complaints filed against Fremont General Corporation, the complaint states that the ERISA "breaches have caused the [ERISA] plans to lose over 164 million dollars of retirement savings."[89] The Citigroup ERISA complaint alleges that the losses from the ERISA violations were "over $1 billion".[90] In many ERISA complaints, not surprisingly given the early stage of the litigation, the allegations concerning damages are quite vague. For instance, one of the ERISA complaints filed against State Street merely states that State Street's alleged ERISA violations caused "hundreds of millions of dollars of losses."[91]

The ERISA litigation represents an important component of the subprime litigation as ERISA provides plaintiffs with two important advantages. First, plaintiffs need not establish scienter as is the case under Rule 10b-5. Rather, liability is based on a breach by a defendant of a fiduciary duty. Second, at least pre-*Dura Pharmaceuticals*, the measure of damages resulting from a breach of a fiduciary obligation has tended to be quite generous, at least as reflected by the terms on which ERISA suits are settled. Given the importance of these two advantages, a few comments will be made on both.

1. The fiduciary breach

Virtually all the ERISA complaints filed against the investment banks and mortgage originators to date claim that the company executives and administrators who oversaw the retirement plans, and who were therefore allegedly ERISA fiduciaries, knew, or should have known, that the company was facing substantial losses and, hence, should have disclosed this information to plan participants or should have refused to purchase these securities in the first place.

[89] *Johannesson v. Fremont General Corporation* Complaint, p.4.
[90] *Rappold v. Citigroup* Complaint.
[91] See *Unisystems, Inc. v. State Street Bank and Trust Company* Complaint.

Several interesting issues arise with respect to such a claim, besides the obvious issue once again of whether the credit crisis was foreseeable. One issue looming in the background is the extent to which courts will be willing to transform ERISA into a third general securities disclosure statute complementing (or substituting) for the detailed disclosure regimes established in the Securities Act of 1933 and the Exchange Act of 1934. This issue arises as a result of the fact that many of the ERISA complaints allege that the company executives and administrators had a duty to disclose to the plan participants adverse information they purportedly had about the potential losses facing the firm. At the end of the day, however, if an ERISA fiduciary does in fact have a duty to disclose information to plan participants, such a duty will extend to all investors, plan participants or not. It is simply not tenable or consistent with other aspects of U.S. securities regulation to have such a duty extend only to a subset of investors.

A second interesting issue with respect to a duty to disclose basis for ERISA liability is how to think about what the situation of the plan participants would have been but for the purported ERISA violation. Presumably an announcement by ERISA fiduciaries that a firm was facing substantial losses would have resulted in a drop in the value of the stock held by the plan participants. If such a disclosure would not have resulted in a stock market reaction, it is difficult to see how there could be a duty to disclose the information in the first place as it would not be material. But this logic has an interesting implication for damages resulting from such an ERISA violation. The failure to disclose the adverse information by the ERISA fiduciaries did not cause the losses suffered by the plan participants with respect to the securities they held at the time the breach of the duty to disclose, but rather merely delayed it (as the information did eventually come out).

2. Loss Causation in ERISA litigation

Plaintiffs bringing ERISA actions have long argued, relying on the Second Circuit's 1985 opinion in *Bierwirth v. Donovan*, 754 F.2d 1049, that damages should be calculated based on the best performing fund available in the plan. In times of market declines, such a fund might well be a money market fund. This approach can effectively render the ERISA fiduciary an insurer against general declines in the stock market.

The ERISA statute itself merely states that the ERISA fiduciary shall "make good to such plan any losses to the plan resulting from each such breach . . ." 29 U.S.C. 1109 (2000). The Supreme Court's decision in 2005 in *Dura Pharmaceuticals* explained that losses due to market and industry-wide developments will not result in damages if such damages are not caused by actionable misconduct (in *Dura Pharmaceuticals* the misconduct was actionable under Rule 10b-5) by the defendant. Applying the same reasoning to ERISA damages, one could argue that market and industry wide declines are not the "result[ ]" of a breach of fiduciary duty. Such an argument, given the important implications it has for the extent of the damages available under ERISA, will be hotly contested. The issues involved in resolving such a debate are quite involved, including consideration of the proper interpretation of the *Bierwirth* opinion, the continued validity of *Bierwirth* in light of *Dura Pharmaceuticals*, and the notion of "causation" in the common law of trust that has been used by courts in the course of interpreting the ERISA statute.

E. The rating agencies

Much of the blame for the losses has been placed by many commentators at the feet of the rating agencies, principally Moody's, Standard & Poor's, and Fitch. This litigation raises some interesting issues.

Both Moody's and the parent company of Standard & Poor's, McGraw-Hill, are facing Rule 10b-5 class actions. The crux of plaintiffs' claims in this litigation is that the rating agencies "assigned excessively high ratings to bonds backed by risky subprime mortgages."[92] The challenge facing plaintiffs here are two-fold: *i*) specifying the precise meaning of "excessively high"; and *ii*) why "excessively high" ratings, so defined, "inflated" the stock price of the rating agencies to the detriment of their security holders. As to the first issue, to the extent to which the rating criteria were publicly available, it will be difficult to maintain that ratings that were generated as a result of those criteria were too "high," whatever one thinks of the criteria themselves. A rating arguably has no meaning without reference to the criteria that generated it, which was publicly known and could be independently assessed by third parties. The source of the fraud is therefore difficult to locate. As to the second issue, even stipulating that the ratings were "high" by reference to some metric, other than the stated criteria themselves, it will still be necessary to show that such "high" ratings inflated the rating agency's stock price. Even if one were to assume, for purposes of discussion, that unduly "high" ratings were generated to ensure repeat business for the rating agency from issuers of MBS and CDOs (and putting aside the fact that there were very few choices that issuers had for ratings in any event), the mere fact that business practices might be questionable does not establish that the stock price didn't reflect the true value of the business so conducted.

There have been suggestions by some that the rating agencies should be deemed "underwriters" of the MBS and CDO tranches they rated for purposes of the Securities Act of 1933, and hence are subject to Section 11 liability. Such a conclusion seems unlikely for two reasons. First, and perhaps most fundamentally, much of the losses as well as much of the controversy over the quality of the ratings has arisen with respect to CDOs. These, however, are

[92] See, e.g., *Teamsters Local 282 Pension Trust Fund v. Moody's Corporation* Complaint, 07 CV 8375.

privately placed rather than registered, and hence by definition it is legally impossible for an entity to be deemed a Section 11 underwriter. Second, the fee structure for rating agencies is such that the rating agency gets paid for providing a rating and not for the success of the offering. Nor have the rating agencies purchased rated tranches with a view to resale. As a result, the rating agencies are not "underwriters," at least as that term has long been understood in the context of the Securities Act of 1933.

V. Conclusions

Two of the strengths of the U.S. capital market are its ability to innovate and spread risk widely amongst investors. The recent past has highlighted, however, that successful innovation and risk spreading are predicated on sophisticated market participants being able to rely on information conveyed across the chain of participants that originate, appraise, and service collateral, and underwrite, manage, insure, rate, and sell securities. Where information cannot be or is not conveyed, or where a market participant acts in such a way as to undermine the integrity of the chain, the chain can be compromised.

Over the next few years, litigation among market participants will serve to identify those links in the mortgage chain that may have been weak. Alternatively, this litigation will serve to highlight where the market may have underestimated certain risks or failed to anticipate particular circumstances, rather than the actions of any particular market participant. This is a distinction that the current litigants will undoubtedly have to struggle with.

Figure 1: Mortgage Origination and Mortgage-Backed Securitization

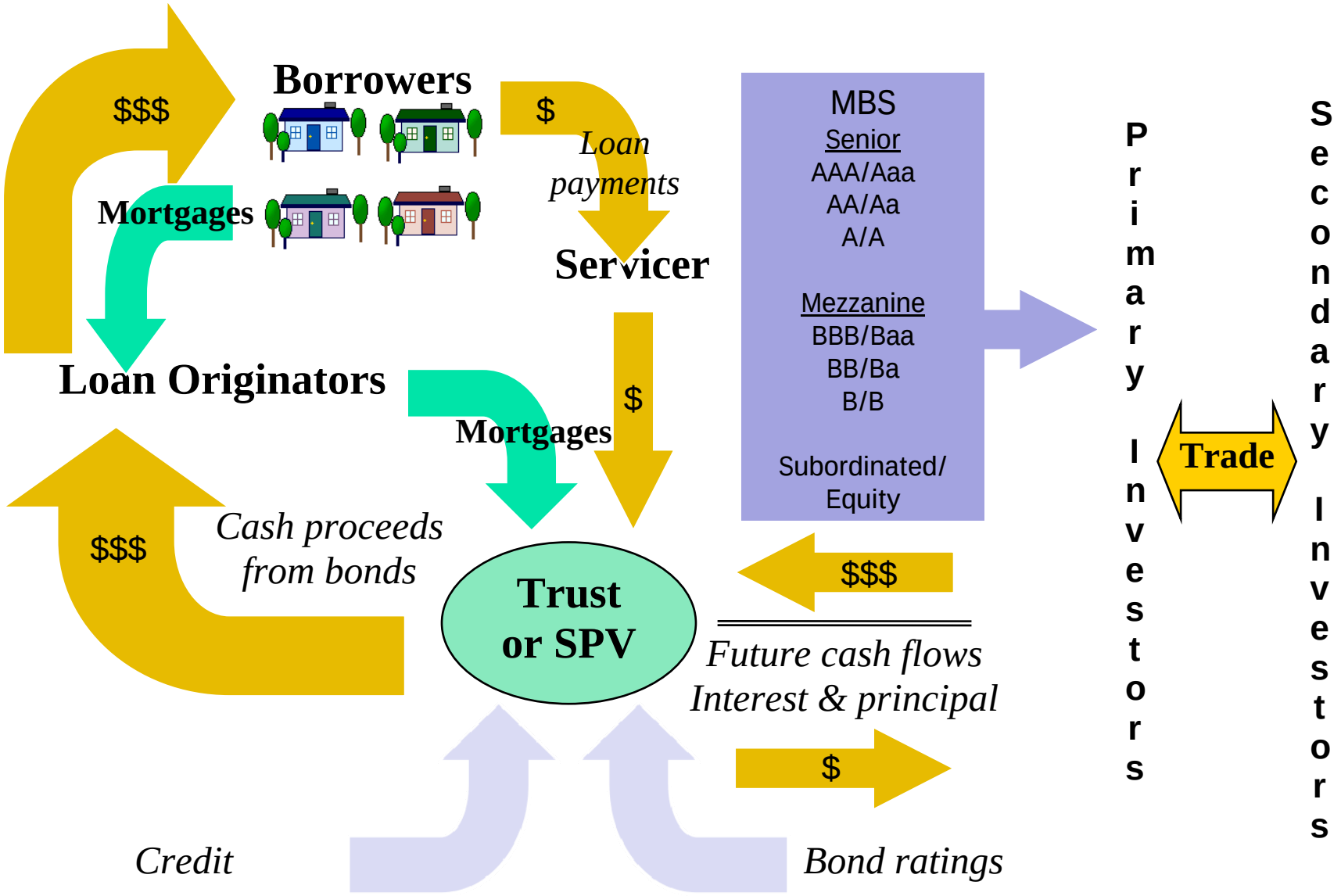
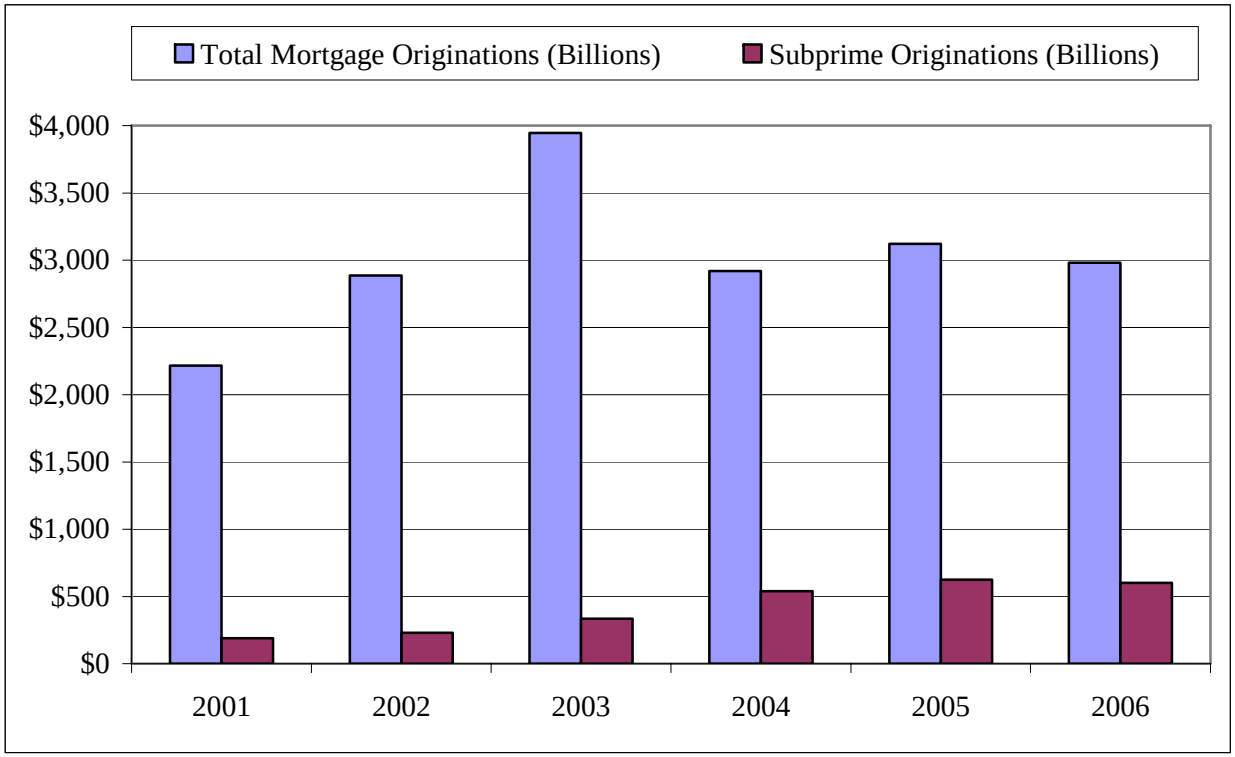


Figure 2. Mortgage Originations, 2001-2006



Source: *The Subprime Lending Crisis: The Economic Impact on Wealth, Property Values and Tax Revenues, and How We Got Here*, U.S. Congress Joint Economic Committee, October 27, 2007. Data from Inside Mortgage Finance, *The 2007 Mortgage Market Statistical Annual, Top Subprime Mortgage Market Players & Key Data* (2006).

Figure 3. MBS Issuance Trends, 1996-2007

Figure 3. Panel A. Number of Deals

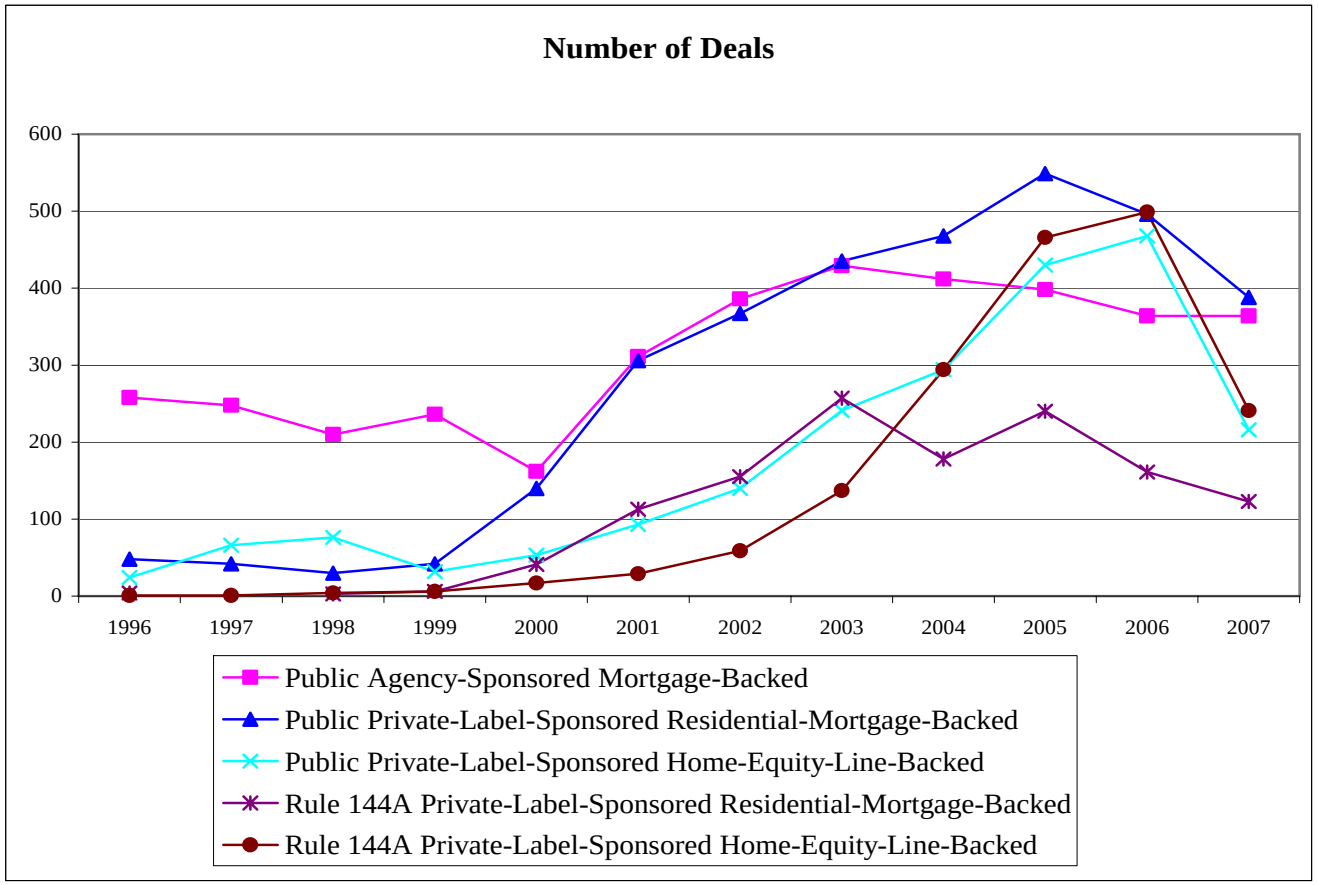
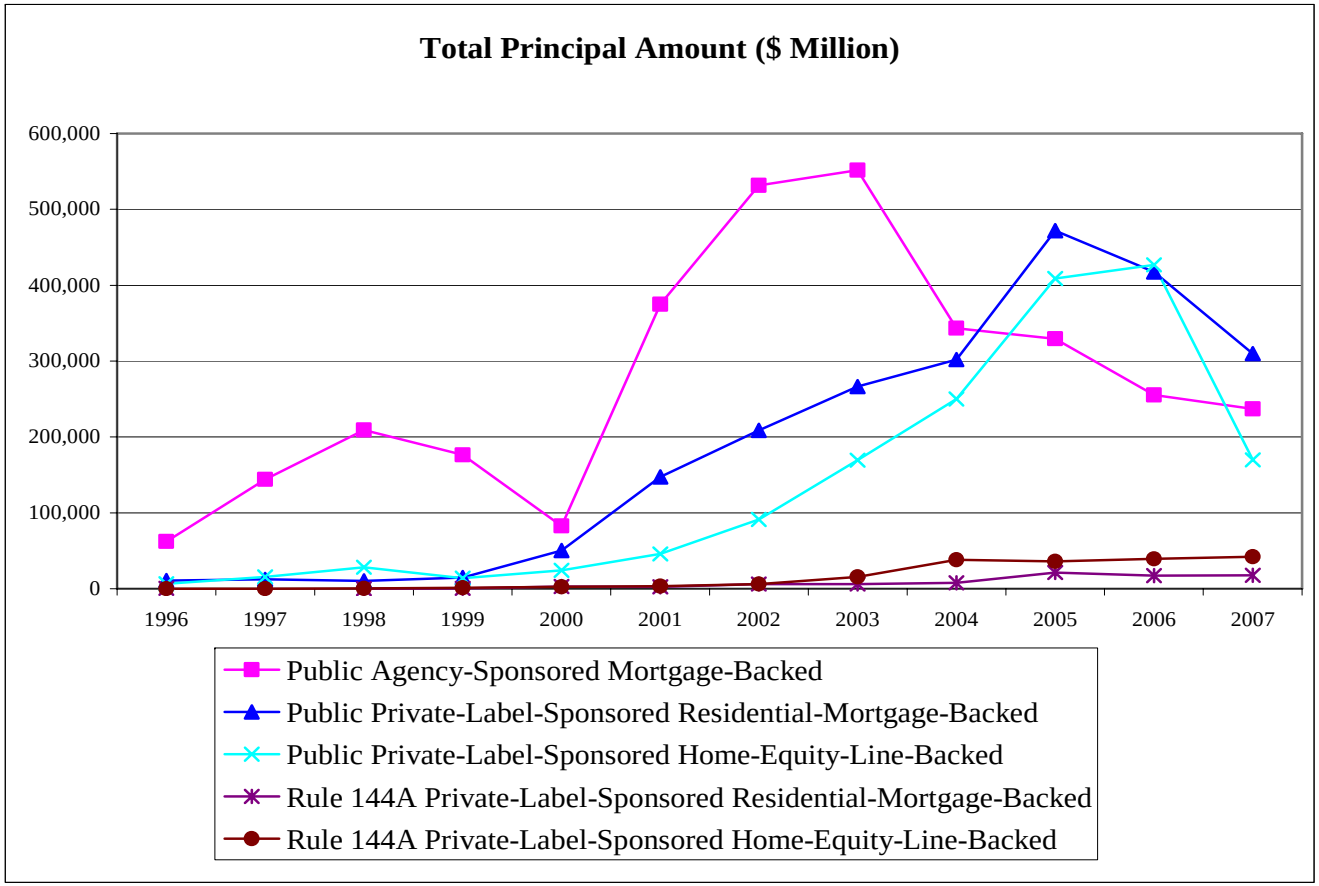
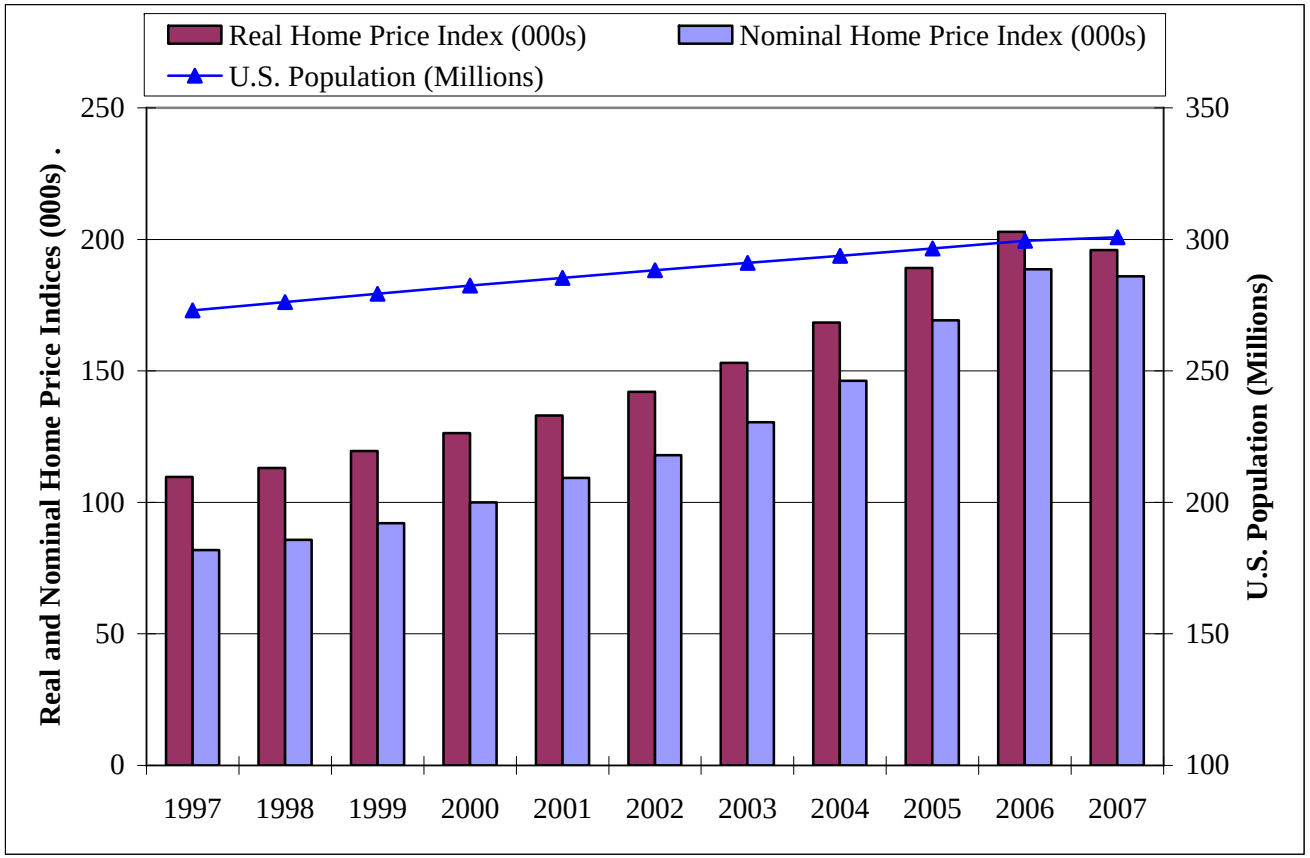


Figure 3. Panel B. Total Principal Amount ($ Million)



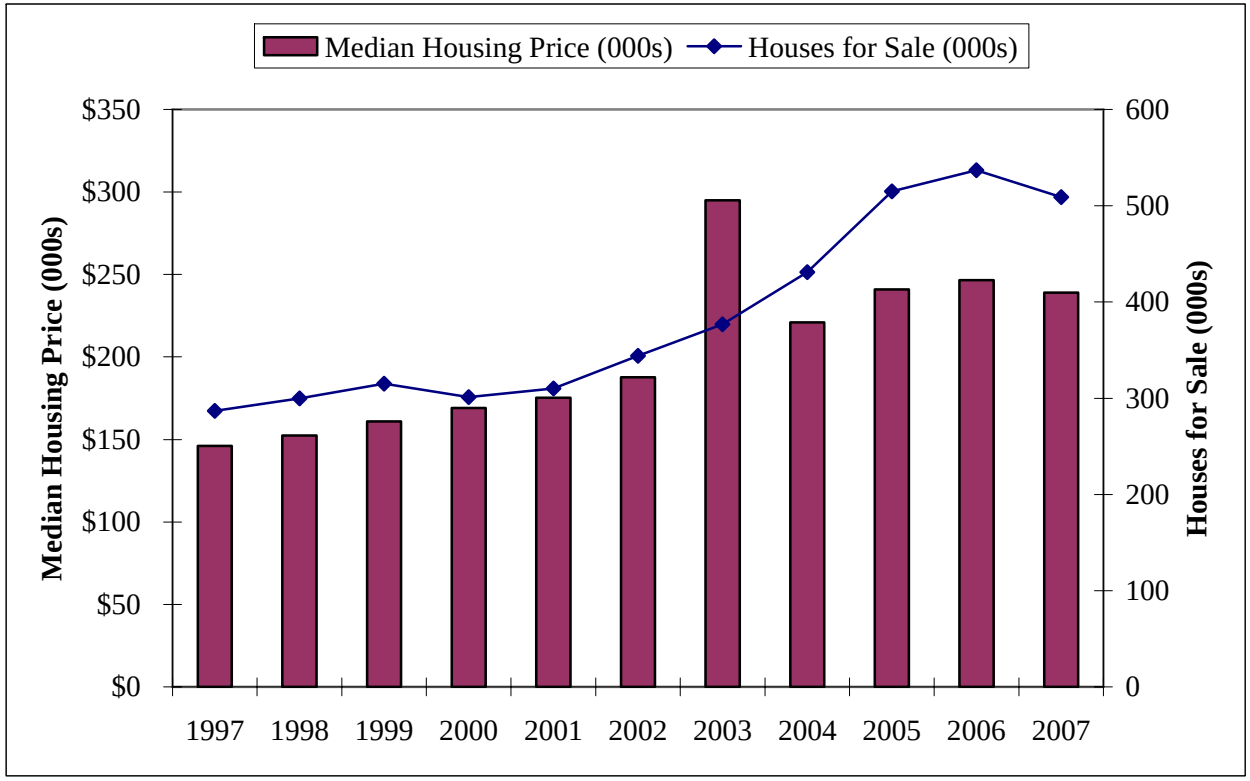
Data Source: SDC Platinum.

Figure 4. Real and Nominal Housing Prices and Population, 1997-2007



Source: Robert J. Shiller, *Irrational Exuberance*, 2nd. Edition, Princeton University Press, 2005, Broadway Books 2006, as updated by author.

Figure 5. Houses for Sale and Median Housing Prices, 1997-2007



Source: Bureau of the Census, U.S. Department of Commerce.

Figure 6. Changes in MBS, 1996-2007

Figure 6. Panel A. Average Deal Size ($ Million)

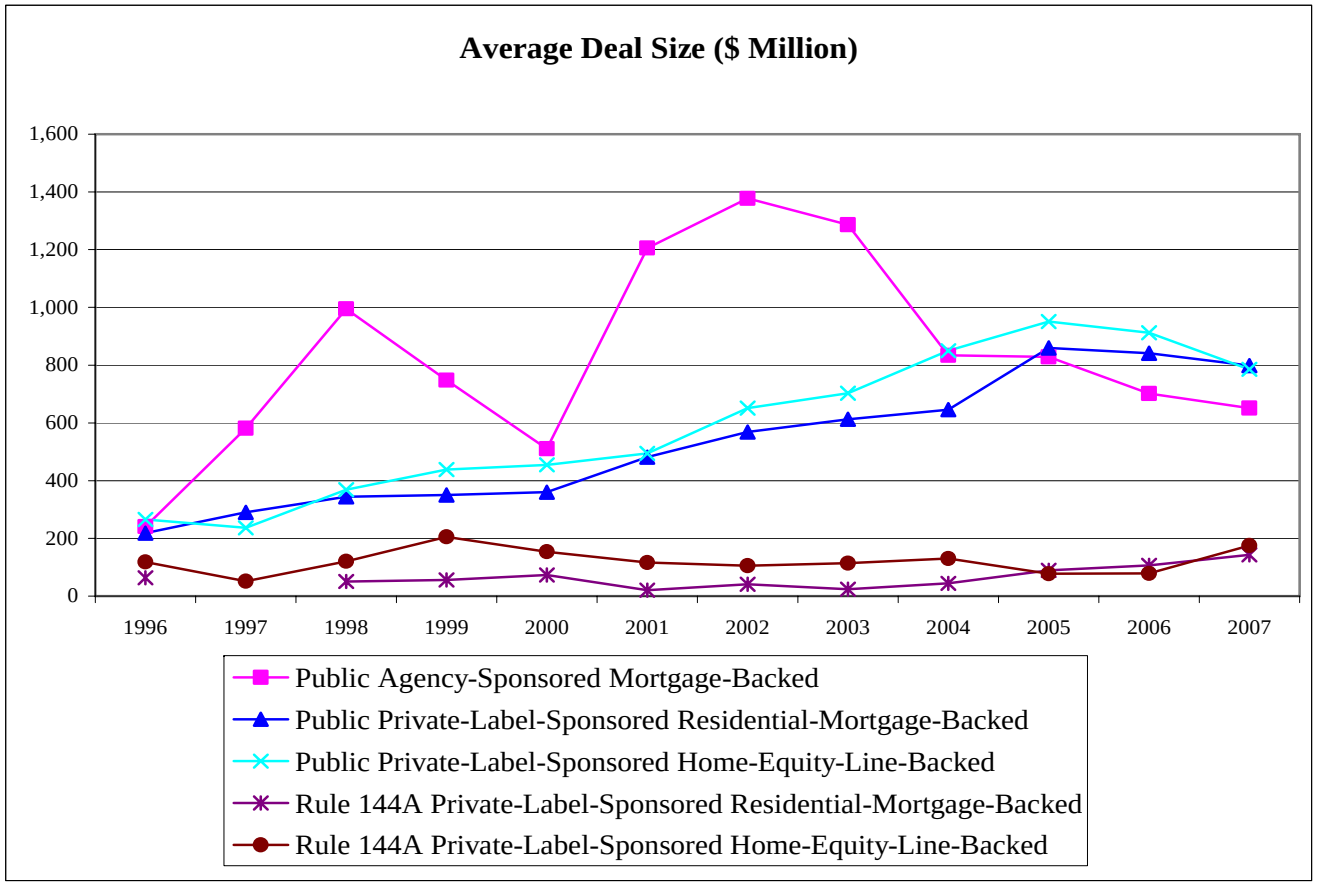


Figure 6. Panel B. Percentage of Deals with Multiple Bookrunners

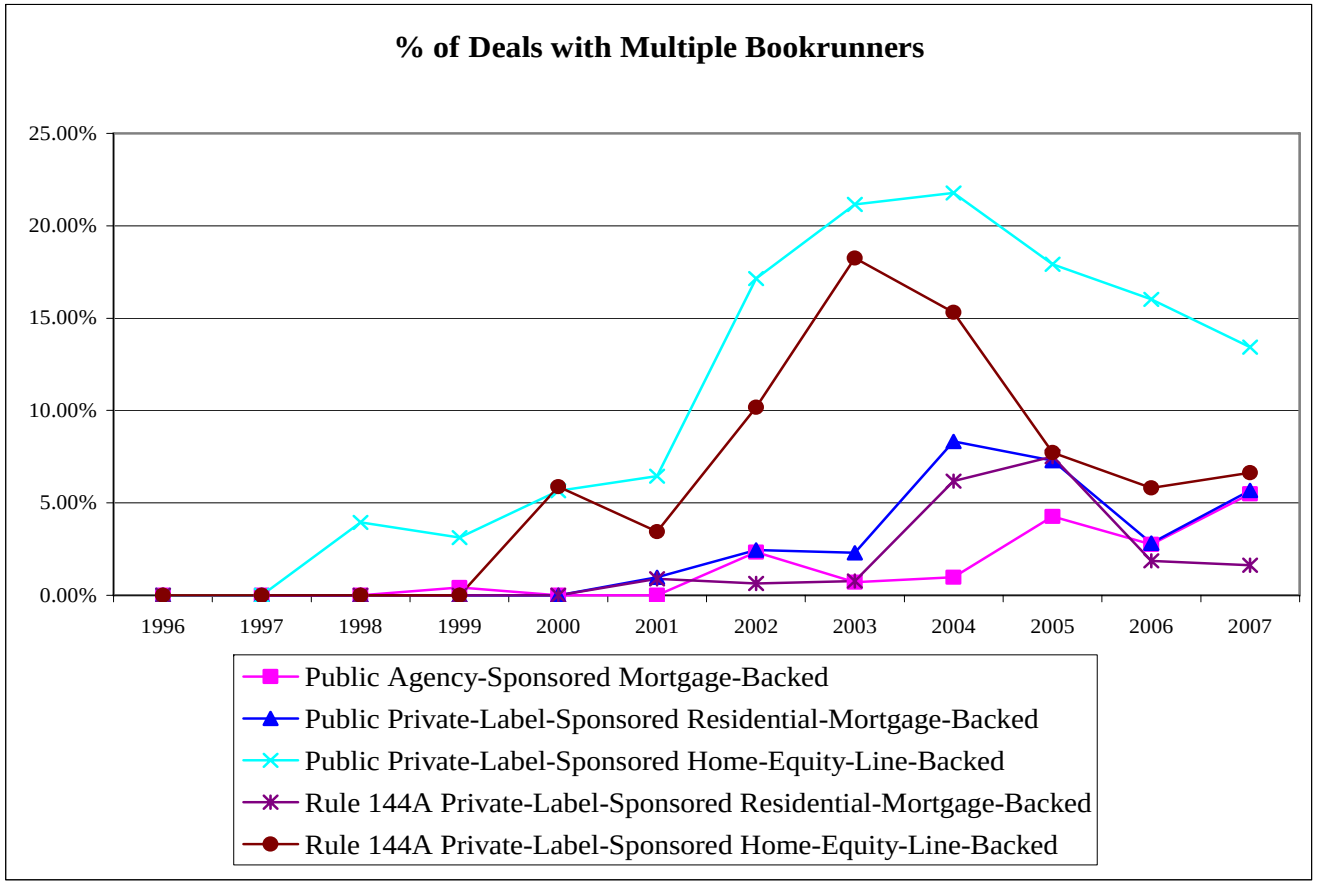


Figure 6. Panel C. Average Number of Bookrunners

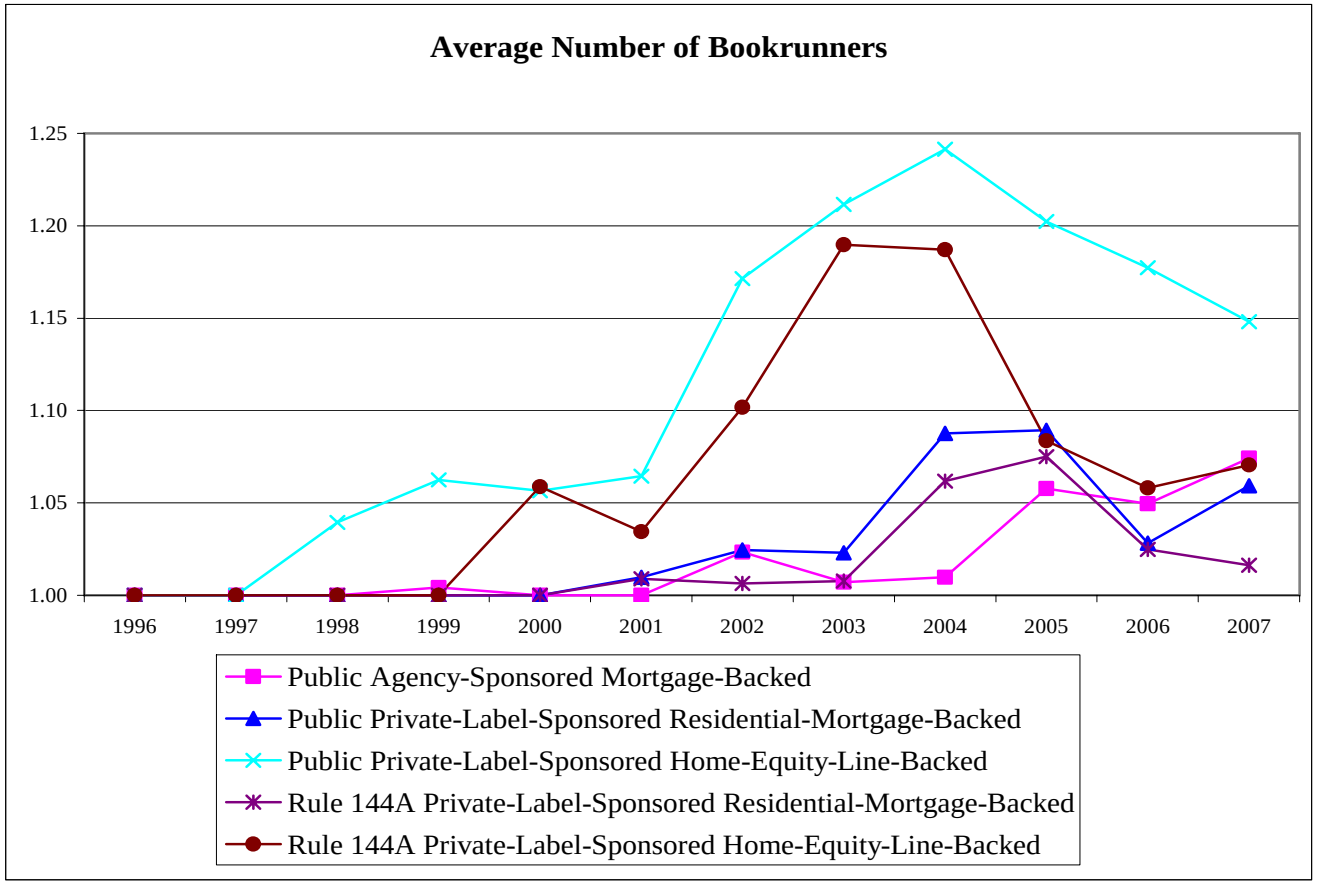


Figure 6. Panel D. Average Number of Tranches

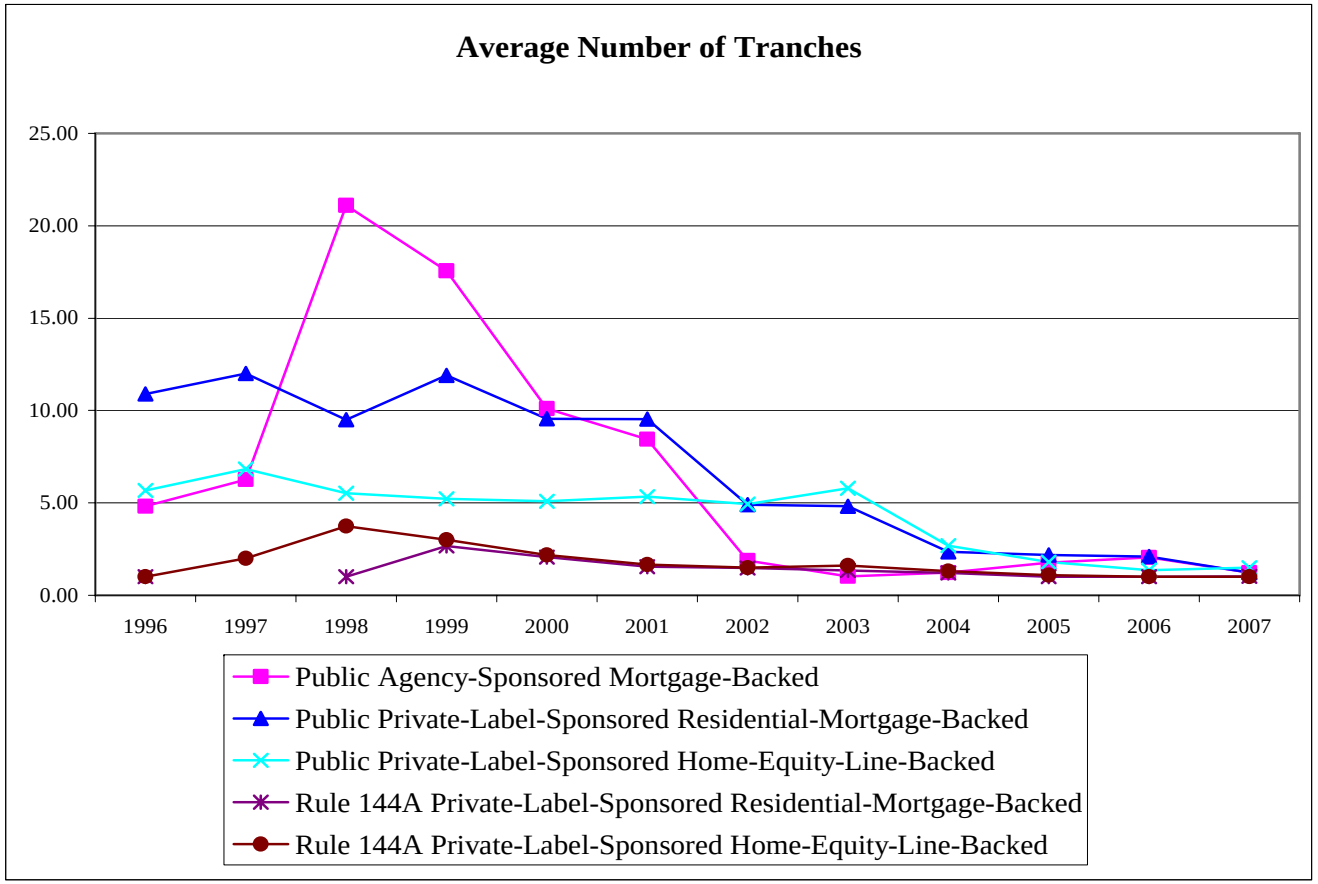
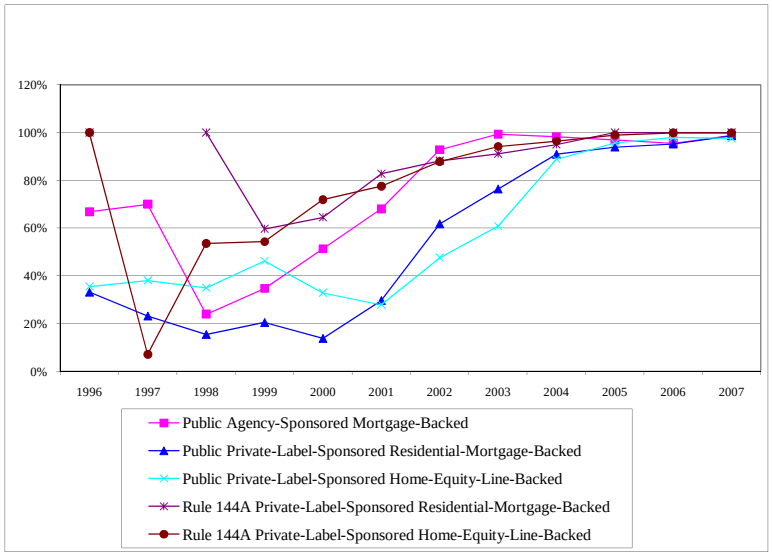


Figure 6. Panel E. Average Percentage of Main Tranche Principal



Data Source: SDC Platinum.

Source: Federal Reserve Bank of Saint Louis and British Bankers' Association.

Table 1. Summary of Securities Class Action Suits as of February 18, 2008

Firm	Date	Case	Cause of Action	Class Period
ACA CAPITAL HOLDINGS	1/11/08	Rose v. ACA Capital Holdings Inc.	10b-5/Section 11 & 12(a)(2)	11/2/06 - 11/20/07
	11/21/07	Blackmoss Investments Inc. v. ACA Capital Holdings, Inc.	Section 11 & 12(a)(2)	
ACCREDITED HOME LENDERS	6/25/07	Consolidated various actions against Accredited Home Lenders	10b-5/section 11 & 12(a)(2)	1/28/04 - 3/12/07
AMBAC FINANCIAL GROUP	2/7/08	Babic v. Ambac Financial Group	N/A	
	1/16/08	Reimer v. Ambac Financial Group	10b-5	10/19/05 - 11/26/07
AMER. HOME MORT. INVES.	7/31/07	Greenberg v. American Home Mortgage Investment	10b-5	7/26/06 - 7/27/07
BANKATLANTIC BANCORP	11/30/07	Ploss v. Bankatlantic Bancorp, Inc.	10b-5	11/9/05 - 10/25/07
	11/13/07	Alarm Specialties, Inc. v. Bankatlantic Bancorp, Inc.	10b-5	11/9/05 - 1/25/07
	10/29/07	Hubbard v. Bankatlantic Bancorp, Inc.	10b-5	11/9/05 - 1/25/07
BEAZER HOMES	4/30/07	Miller v. Beazer Homes	ERISA	12/31/05 - 3/29/07
	3/29/07	Kratz v. Beazer Homes	10b-5	7/27/06 - 3/27/07
CARE INVESTMENT TRUST	9/18/07	Briarwood Investments Inc. et al v. Care Investment Trust Inc.	Section 11	
CENTERLINE HOLDING	2/4/08	Weinrib v. Centerline Holding Company	N/A	
	1/31/08	Frank v. Centerline Holding Company	N/A	
	1/18/08	Goldstein v. Centerline Holding Company	10b-5	3/12/07 - 12/28/02
CITIGROUP	1/7/08	Public Employees' Retirement Association of Colorado vs. Citigroup	10b-5	1/2/04 - 11/21/07
	1/7/08	Fisher v. Citigroup	N/A	
	11/9/07	Hammerschlag v. Citigroup Inc.	10b-5	1/1/04 - 11/5/07
	11/8/07	Saltzman et al v. Citigroup Inc.	10b-5	4/17/06 - 11/2/07
	8/27/07	Marlin v. Citigroup Global Markets Inc.	Section 11 & 12(a)(2)	
	11/16/07	Rappold v. Citigroup	ERISA	1/1/07 - present
COAST FINANCIAL HOLDINGS	3/27/07	Ratcliff v. Coast Financial Holdings	10b-5	10/5/05 - 1/25/07

Firm	Date	Case	Cause of Action	Class Period
COUNTRYWIDE FIN. CORP.	1/16/08	Snyder v. Countrywide Financial Corporation	California State Law	
	12/14/07	Luther v. Countrywide Financial Corporation	N/A	
	11/16/07	Steele v. Countrywide Financial Corporation	N/A	
	11/5/07	Brahn v. Countrywide Financial Corporation	Section 11 & 12(a)(2)	
	11/28/07	Consolidated various actions against Countrywide		
	10/30/07	Argent Classic Convertible Arbitrage Fund v. Countrywide Financial Corp.	10b-5	5/17/07 - 8/9/07
	10/12/07	Saratoga Advantage Trust v. Countrywide Financial Corporation	10b-5	4/24/04 - 8/9/07
	8/14/07	Pappas v. Countrywide Financial Corporation	10b-5	10/24/06 - 8/9/07
	9/19/07	McBride v. Countrywide Financial Corporation	Section 11	
	8/31/07	Norfolk County Retirement System v. Countrywide Financial Corporation	10b-5	4/24/04 - 8/9/07
	8/20/07	Abrams v. Countrywide Financial Corporation	10b-5	1/31/06 - 8/9/07
ETRADE FINANCIAL	11/21/07	Ferenc v. Etrade Financial Corporation	10b-5	4/20/06 - 11/9/07
	11/16/07	Davidson v. Etrade Financial Corporation	10b-5	12/14/06 - 11/9/07
	10/12/07	Boston v. Etrade Financial Corporation	10b-5	12/14/06 - 9/25/07
	10/2/07	Freudenberg v. Etrade Financial Corporation	10b-5	12/14/06 - 9/25/07
FEDERAL HOME LOAN MORT	11/21/07	Reimer v. Federal Home Loan Mortgage Corporation	10b-5	8/1/06 - 11/19/07
FIRST HOME BUILDERS	10/19/07	Sewell v. First Home Builders	10b-5/Section 12(a)(2)	9/1/03 - 12/31/05
FREMONT GENERAL CORP	9/21/07	Mathews v. Fremont General Corporation	10b-5	5/9/06 - 2/27/07
	9/19/07	Miller v. Fremont General Corporation	10b-5	5/9/06 - 2/27/07
	9/4/07	Al-Beitawi v. Fremont General Corporation	10b-5	5/9/06 - 2/27/07
	6/15/07	D'Errico v. Rampino	10b-5	4/28/05 - 2/27/07
	4/24/07	McCoy v. Fremont General Corporation	ERISA	1/1/03 - present
	5/29/07	Sullivan v. Fremont General Corporation	ERISA	1/1/05 - present
	5/25/07	Salas v. Fremont General Corporation	ERISA	12/31/05 - present
	5/15/07	Johannesson v. Fremont General Corporation	ERISA	1/1/05 - present
	5/15/07	Anderson v. Fremont General Corporation	ERISA	5/9/06 - 3/5/07
HOMEBANC CORP	11/30/07	Kadel v. Homebanc Corp	10b-5/Section 11 & 12(a)(2)	3/7/06 - 8/3/07
	1/4/08	Harbour v. Flood	10b-5	9/26/05 - 8/3/07
	12/17/07	Clewley v. Flood	10b-5	9/26/05 - 8/3/07

Firm	Date	Case	Cause of Action	Class Period
HOVNANIAN ENTERPRISES	9/14/07	Mankofsky v. Sorsby	10b-5	12/8/05 - 8/13/07
HUNTINGTON BANC. INC.	1/18/08	Vecchio v. Huntington Bancshares Inc	10b-5	7/20/07 - 11/16/07
	12/19/07	Ellman v. Huntington Bancshares Inc.	10b-5	7/20/07 - 11/16/07
IMPAC MORTGAGE HOLD	10/3/07	Abrams v. Impac Mortgage Holdings Inc	10b-5	5/10/06 - 8/15/07
	8/17/07	Pittleman v. Impac Mortgage Holdings Inc.	10b-5	5/10/06 - 8/15/07
INDYMAC FINANCIAL INC.	3/8/07	Reese v. Indymac	10b-5	5/4/06 - 3/1/07
	9/7/07	Tripp v. Indymac	10b-5	1/26/06 - 1/25/07
LEVITT CORP.	1/25/08	Dance v. Levitt Corporation	10b-5	1/31/07 - 8/14/07
LUMINENT MORTGAGE CAP	9/11/07	Metzger v. Luminent Mortgage	10b-5	10/10/06 - 8/6/07
	10/8/07	Kaplowitz v. Luminent Mortgage	10b-5	3/16/07 - 8/6/07
	8/15/07	PEM Resources v. Luminent Mortgage	10b-5	10/10/06 - 8/6/07
	8/9/07	Rosenbaum v. Luminent Mortgage	10b-5	10/10/06 - 8/6/07
	8/8/07	Leone v. Moore	10b-5	7/24/07 - 8/6/07
MBIA	1/11/08	Schmalz v. MBIA Inc	10b-5	1/30/07 - 1/9/08
MCGRAW-HILL	8/17/07	Reese v. Bahash	10b-5	7/25/06 - 8/15/07
MERRILL LYNCH	12/28/07	Conn v. Merrill Lynch & Co.	Section 11 & 12(a)(2)	
	12/7/07	Garber v. Merrill Lynch & Co.	N/A	
	12/4/07	Kosseff v. Merrill Lynch & Co.	10b-5	11/3/06 - 11/2/07
	11/6/07	Savena v. Merrill Lynch & Co.	10b-5	2/26/07 - 11/2/07
	10/30/07	Life Enrichment Foundation v. Merrill Lynch & Co.	10b-5	2/26/07 - 10/23/07
	11/13/07	Estey v. Merrill Lynch	ERISA	2/26/07 - present
MOODY'S	9/21/07	Teamsters Local v. Moody's	10b-5	10/25/06 - 7/10/07
	7/19/07	Nach v. Huber	10b-5	10/25/06 - 7/10/07
MORGAN KEEGAN & CO	2/5/08	Hartman v. Morgan Keegan	Section 11 & 12(a)(2)	
	12/21/07	Willis v. Morgan Keegan	Section 11 & 12(a)(2)	
	12/6/07	Atkinson v. Morgan Keegan	Section 11 & 12(a)(2)	

Firm	Date	Case	Cause of Action	Class Period
MORGAN STANLEY	12/2/07	Siefkin v. Morgan Stanley	ERISA	8/9/06 - present
	1/18/08	Major v. Morgan Stanley	ERISA	12/1/05 - present
	12/28/07	Coulter v. Morgan Stanley	ERISA	1/1/07 - present
	2/12/08	McClure v. Lynch	10b-5	7/10/07 - 11/7/07
NATIONAL CITY CORP	1/24/08	Casey v. National City Corporation	10b-5	4/30/07 - 1/2/08
NETBANK INC	10/22/07	Vahdat v. Netbank, Inc. et al	10b-5	5/1/06 - 9/17/07
	9/19/07	Adcock v. Netbank, Inc. et al	10b-5	5/1/06 - 9/17/07
NEW CENTURY FINANCIAL	2/8/07	Gold v. New Century Financial	10b-5	5/04/06 - 2/7/07
	2/9/07	Abramcyk Real Estate v. New Century Financial	10b-5	5/04/06 - 2/7/07
	2/16/07	Benefield v. New Century Financial	10b-5	5/04/06 - 2/7/07
	2/12/07	Hammer v. New Century Financial	10b-5	4/7/06 - 2/7/07
	2/12/07	Meyer v. New Century Financial	10b-5	5/04/06 - 2/7/07
	2/12/07	Boyd v. New Century Financial	10b-5	5/04/06 - 2/7/07
	2/20/07	Mannella v. New Century Financial	10b-5	5/4/06 - 2/7/07
	2/22/07	Kumar v. New Century Financial	10b-5	5/4/06 - 2/7/07
	2/23/07	Anton v. New Century Financial	10b-5	4/7/06 - 2/7/07
	3/2/07	Wollman v. New Century Financial	10b-5	4/7/06 - 2/7/07
	3/6/07	Novotne v. New Century Financial	10b-5	4/7/06 - 3/2/07
	3/15/07	Johnson v. New Century Financial	Section 11 & 12(a)(2)	
	3/13/07	Winesburg v. New Century Financial	10b-5	4/7/06 - 3/2/07
	3/28/07	Gessford v. New Century Financial	10b-5	4/7/06 - 3/13/07
	2/9/07	Damore v. New Century Financial	10b-5	4/7/06 - 2/7/07
	2/9/07	Karcich v. New Century Financial	10b-5	4/7/06 - 2/7/07
	2/28/07	Brown v. New Century Financial	10b-5	4/7/06 - 2/7/07
	4/5/07	Kornfeld v. New Century Financial	Section 11 & 12(a)(2)	
	4/10/07	Kaufman Revocable Trust v. New Century Financial	Section 11	
	2/9/07	Wood v. New Century Financial	10b-5	5/4/06 - 2/7/07
NOVASTAR FINANCIAL	10/19/07	Novastar Financial Securities Litigation	10b-5	5/4/06 - 2/20/07
OPTEUM INC	10/9/07	Coy et al v. Opteum	10b-5/section 11 & 12(a)(2)	11/3/05 - 5/10/07
	9/17/07	Kornfeld v. Opteum	10b-5/section 11 & 12(a)(2)	11/3/05 - 5/10/07

Firm	Date	Case	Cause of Action	Class Period
RADIAN GROUP	9/11/07	Maslar v. Radian Group	10b-5	1/23/07-7/31/07
	8/15/07	Cortese v. Radian Group	10b-5	1/23/07 - 7/31/07
RAIT FINANCIAL TRUST	9/14/07	Smith v. RAIT Financial Trust	10b-5	1/10/07 - 7/31/07
	8/28/07	Charlotte H. Collums Living Trust v. RAIT Financial Trust	10b-5	1/10/07 - 7/31/07
	8/27/07	Jaroslawicz v. RAIT Financial Trust	10b-5	1/10/07 -7/31/07
	8/23/07	Borden v. RAIT Financial Trust	10b-5	1/1/07 - 7/31/07
	8/21/07	Reynolds v. RAIT Financial Trust	10b-5	6/8/06 - 7/3/07
	8/16/07	Salkowitz .v RAIT Financial Trust	10b-5/Section 11 & 12(a)(2)	5/13/06 - 7/31/07
	8/1/07	A1 Credit v. RAIT Financial Trust	10b-5/Section 11 & 12(a)(2)	1/10/07 - 7/31/07
SALLIE MAE	1/31/08	Burch v. SLM Corporation ("Sallie Mae")	10b-5	1/18/07-1/3/08
SECURITY CAP ASSUR	1/8/08	Clarke et al v. Security Capital Assurance Ltd.	10b-5 / section 11 & 12(a)(2)	4/23/07 - 12/10/07
	12/18/07	2 West, Inc. v. Security Capital Assurance Ltd.	Section 11	
	12/7/07	Brickman Investments, Inc. et al v. Security Capital Assurance Ltd	Section 11 &12(a)(2)	
STATE STREET	12/7/07	Merrimack Mutual v. State Street	ERISA	1/1/07 - 10/5/07
	12/7/07	Unisystems v. State Street	ERISA	1/1/07 - 10/5/07
	10/24/07	Nashua v. State Street	ERISA	1/1/07 - present
TARRAGON CORPORATION	9/11/07	Judelson v. Tarragon	10b-5	1/5/05 - 8/9/07
THORNBURG MORTGAGE	10/9/07	Snydman v. Thornburg Mortgage	10b-5	10/6/05 - 8/20/07
	9/24/07	Sedlmyer v. Thornburg Mortgage	10b-5	10/6/05 - 8/17/07
	9/20/07	Smith v. Thornburg Mortgage	10b-5	4/19/07 - 8/14/07
	9/7/07	Gonsalves v. Thornburg Mortgage	10b-5	4/19/07 - 8/14/07
	8/21/07	Slater v. Thornburg Mortgage	10b-5	10/6/05 - 8/17/07
TOLL BROTHERS	4/16/07	Lowrey v. Toll Brothers	10b-5	12/9/04 - 11/8/05
UBS AG	1/29/08	Garber vs. UBS AG	10b-5	2/13/06 - 12/11/07
	12/11/07	Wesner v. UBS AG	10b-5	3/13/07 - 12/11/07

Firm	Date	Case	Cause of Action	Class Period
WASHINGTON MUTUAL	12/20/07	Garber v. Washington Mutual	10b-5	4/18/06 - 12/10/07
	11/5/07	Abrams et al v. Washington Mutual	10b-5	10/18/06 - 11/1/07
	11/5/07	Koesterer v. Washington Mutual	10b-5	7/19/06 - 10/31/07
	11/7/07	Nelson v. Washington Mutual	10b-5	4/18/06 - 11/1/07

Source: Complaints obtained from Bloomberg.

Table 2. MBS Underwriters in 2007 and Writedowns Related to Subprime Loans as of 8/27/08

Rank	Book Runner	Number of Offerings	Market Share	Proceeds Amount + Overallotment Sold in US ($mill)	Announced Writedown ($mill)
1	Lehman Brothers	120	10.80%	$100,109	$8,200
2	Bear Stearns & Co., Inc.	128	9.90%	$91,696	$3,200
3	Morgan Stanley	92	8.20%	$75,627	$14,400
4	JP Morgan	95	7.90%	$73,214	$14,300
5	Credit Suisse	109	7.50%	$69,503	$10,400
6	Banc of America Securities LLC	101	6.80%	$62,776	$21,200
7	Deutsche Bank AG	85	6.20%	$57,337	$10,600
8	Royal Bank of Scotland Group	74	5.80%	$53,352	$14,600
9	Merrill Lynch	81	5.20%	$48,407	$51,800
10	Goldman Sachs & Co.	60	5.10%	$47,696	$3,800
11	Citigroup	95	5.00%	$46,754	$55,100
12	UBS	74	4.30%	$39,832	$44,200

Source: Yalman Onaran and Dave Pierson, “Banks’ subprime market-related losses reach $506 billion,” Bloomberg.com, August 27, 2008.

Table 3. Insurers of U.S. Mortgage-Related Issues, 2006–2007

	2006 Issuance ($mil)	Market Share (%)	2007 Issuance ($mil)	Market Share (%)
MBIA	9,250.4	18.9	10,694.7	28.3
Ambac	10,815.0	22.1	7,474.3	19.8
FSA	6,428.4	13.1	7,175.5	19.0
XL Capital	6,146.4	12.6	4,184.0	11.1
FGIC	14,278.7	29.2	3,984.3	10.5
Assured Guaranty	513.0	1.0	3,644.5	9.6
CIFG	1,473.1	3.0	651.9	1.7
Total Insured	48,905.0	100.0	37,809.2	100.0

Source: *Asset-Backed Weekly Update* (January 18, 2008).

Table 4. Underwriting Standards in Subprime Home-Purchase Loans, 2001-2006

	Low/No-Doc Share	Debt Payments/ Income	Loan/Value	ARM Share	Interest-Only Share
2001	28.5%	39.7%	84.0%	73.8%	0.0%
2002	38.6%	40.1%	84.4%	80.0%	2.3%
2003	42.8%	40.5%	86.1%	80.1%	8.6%
2004	45.2%	41.2%	84.9%	89.4%	27.2%
2005	50.7%	41.8%	83.2%	93.3%	37.8%
2006	50.8%	42.4%	83.4%	91.3%	22.8%

Source: Freddie Mac, obtained from the International Monetary Fund.

Table 5. Trustees for CDOs Issued Worldwide, 2006–2007

	2006 Issuance ($mil)	No. of Deals	Market Share (%)	2007 Issuance ($mil)	No. of Deals	Market Share (%)
LaSalle Bank (ABN Amro)	104,469.6	164	21.7	99,474.9	127	24.2
Bank of New York	66,162.5	155	13.8	96,562.5	162	23.5
Wells Fargo	61,997.5	77	12.9	61,613.6	88	15.0
Deutsche Bank	50,486.7	136	10.5	61,313.1	126	14.9
U.S. Bank	28,149.9	65	5.9	16,883.3	41	4.1
Citibank	2,986.1	6	0.6	10,590.7	19	2.6
HSBC Bank	6,367.1	30	1.3	7,328.4	33	1.8
Investors Bank & Trust	7,709.9	15	1.6	5,739.7	9	1.4
BNP Paribas	4,897.6	9	1.0	4,653.3	11	1.1
State Street	0.0	0	0.0	3,330.0	4	0.8
Titulizacion de Activos	0.0	0	0.0	3,108.4	2	0.8
Ernst & Young	1,147.5	2	0.2	2,728.1	1	0.7
Law Debenture Trust	7,525.6	43	1.6	1,809.5	12	0.4
Wilmington Trust	0.0	0	0.0	1,718.4	4	0.4
GestiCaixa	384.2	1	0.1	1,523.1	1	0.4
Europea de Titulizacion	0.0	0	0.0	1,194.8	1	0.3
Deloitte & Touche	642.4	2	0.1	921.8	2	0.2
First Commercial Bank	432.0	1	0.1	309.3	1	0.1
Capita IRG Trustees	316.7	1	0.1	303.5	1	0.1
Mizuho Trust & Banking	758.9	1	0.2	139.9	1	0.0
Bank of Nova Scotia	0.0	0	0.0	125.0	1	0.0
OTHERS	136,142.7	350	28.3	29,448.9	58	7.2
Total	480,576.9	1,058	100.0	410,820.2	705	100.0

Source: *Asset-Backed Weekly Update* (January 18, 2008).

Table 6. CDO Liquidations as of January 18, 2008

	Rated Amount ($mil)	Collateral Manager	Bookrunner
Liquidated			
Adams Square Funding	487.3	Credit Suisse	Credit Suisse
Liquidation notice			
TABS Ltd., 2007-7	2,314.6	Tricadia	UBS
Carina CDO	1,490.7	State Street	Deutsche Bank
TABS Ltd., 2006-5	1,477.0	Tricadia	UBS
Tricadia CDO, 2007-8	501.9	Tricadia	CIBC
Vertical ABS CDO, 2007-1	482.0	Vertical Capital	UBS
Notice of acceleration			
Pinnacle Point Funding, 2	4,583.5	BlackRock	Bank of America
Millstone CDO, 4	2,190.5	Church Tavern Advisors	Calyon
Markov CDO, 1	2,127.0	State Street	Barclays
Pampelonne CDO, 2	1,990.7	Vertical Capital	Barclays
Broderick CDO, 3	1,494.0	SCM Advisors	Merrill Lynch
Highridge ABS CDO, 1	1,492.0	ZS Structured Credit	Merrill Lynch
Jupiter High-Grade CDO, 5	1,490.5	Harding Advisory	Credit Suisse
Orion Ltd., 2006-2	1,485.0	NIBC	Calyon
Cetus ABS CDO, 2006-4	1,470.0	GSC Group	Citigroup
Pampelonne CDO, 1	1,241.5	Vertical Capital	Barclays
Sherwood ABS CDO, 3	985.0	Church Tavern Advisors	UBS
Sagittarius CDO	957.0	Structured Asset Investors	Wachovia
Diogenes CDO, 3	752.0	State Street	Deutsche Bank
GSC ABS CDO, 2006-4U	720.0	GSC Group	UBS
BFC Silverton CDO, 2006-1	720.0	Braddock Financial	Barclays
ACA ABS Ltd., 2006-2	708.0	ACA Securities	Bear Stearns
Ansley Park ABS CDO	603.7	Principal Asset Management	Bank of America, SunTrust
Tricadia CDO, 2006-7	502.7	Tricadia	Bank of America
Mystic Point CDO	490.5	Fortis Bank	Bank of America
Montrose Harbor CDO, 1	479.5	Vanderbilt Capital	Credit Suisse
Octans CDO, 3	280.0	Harding Advisory	Citigroup
MKP CBO Ltd., 6	28.5	MKP Capital	Credit Suisse

	Rated Amount ($mil)	Collateral Manager	Bookrunner
Event of default notice			
Kleros Preferred Funding, 6	2,985.0	Cohen & Co.	UBS
Armitage ABS CDO	2,974.0	Vanderbilt Capital	Citigroup
Kleros Preferred Funding, 4	1,986.9	Cohen & Co.	Merrill Lynch
Webster CDO, 1	1,532.0	Vanderbilt Capital	RBS Greenwich
Stack Ltd., 2007-1	1,500.0	TCW Asset Management	Citigroup
Aardvark ABS CDO, 2007-1	1,500.0	Harbourview Asset Management	Mizuho
McKinley Funding, 3	1,495.0	Vertical Capital	Credit Suisse
ACA ABS Ltd., 2007-1	1,482.0	ACA Securities	RBS Greenwich
Jupiter High-Grade CDO, 7	1,480.0	Harding Advisory	Citigroup
TABS Ltd., 2006-6	1,472.0	Tricadia	RBS Greenwich
Cetus ABS CDO, 2006-3	1,232.5	GSC Group	Calyon
Kleros Preferred Funding, 5	1,191.5	Cohen & Co.	WestLB
Class V Funding, 3	1,024.2	Credit Suisse	Citigroup
Lancer Funding, 2	1,021.0	ACA Securities	UBS
888 Tactical Fund	1,019.2	Harding Advisory	Citigroup
Brooklyn Structured Finance CDO	993.5	Deutsche Asset Management	UBS
Nordic Valley CDO, 2007-1	988.5	250 Capital	Bank of America
Hartshorne CDO, 1	966.1	ZAIS Group	UBS
Delphinus CDO, 2007-1	947.0	Delaware Investment	Mizuho
ACA ABS, 2007-2	748.6	ACA Securities	UBS
GSC ABS CDO, 2007-1R	723.0	GSC Group	RBS Greenwich
Rockbound CDO, 1	488.0	Brigadier Capital	UBS
Cherry Creek CDO, 2	482.5	Surge Capital	UBS
Fort Denison Funding	411.3	Basis Capital	Goldman Sachs
E*Trade ABS CDO, 6	402.0	E*Trade	UBS
Visage CDO PLC, 2	402.0	TCW Asset Management	Credit Suisse
Neptune CDO Ltd., 5	336.5	Chotin Group	Bear Stearns
Neo CDO, 1	288.0	Harding Advisory	Merrill Lynch
Kleros Preferred Funding, 3	198.6	Cohen & Co.	Merrill Lynch

Source: *Asset-Backed Weekly Update* (January 18, 2008) (underlying data from Standard & Poor, information unavailable from Moody's and Fitch).

Table 7. CDO Sponsors by Number of Defaults as of January 18, 2008

Collateral Manager	Defaulted Issuance ($mil)	No. of Deals
Cohen & Co.	6,361.9	4
Tricadia (Mariner Investment)	6,268.2	5
Vertical Capital	5,209.2	4
Vanderbilt (Pioneer Investments)	4,985.5	3
BlackRock	4,583.5	1
Harding Advisory	4,557.7	5
State Street Global	4,369.7	3
GSC Group	4,145.5	4
ACA Securities	3,959.6	4
Church Tavern Advisors	3,175.5	2

Source: *Asset-Backed Weekly Update* (January 18, 2008).

Table 8. Value at Risk, 2004-2007

Firms	2004 ($mil)	2005 ($mil)	2006 ($mil)	2007 ($mil)
Bank of America [a,d]	$44.1	$41.8	$41.3	---
Bear Stearns [b,c]	14.8	21.4	28.8	69.3
Citigroup [a,d]	116.0	93.0	106.0	---
Credit Suisse [a,d]	55.1	66.2	73.0	---
Deutsche Bank [a,d]	89.8	82.7	101.5	---
Goldman Sachs [b,d]	67.0	83.0	119.0	134.0
JP Morgan [a,d]	78.0	108.0	104.0	---
Lehman Brothers [b,d]	29.6	38.4	54.0	124.0
Merrill Lynch [b,d]	34.0	38.0	52.0	---
Morgan Stanley [b,c]	94.0	61.0	89.0	83.0
UBS [a,c]	103.4	124.7	132.8	---
Wachovia [a,d]	21.0	18.0	30.0	---

VaR statistics as reported in the 10K or 20F (in the case of foreign firms) of the respective firms. Note that firms use different assumptions in computing their Value at Risk. Some annual reports are not yet available for 2007.

[a] Represents a 99% confidence interval, one-day holding period.
[b] Represents a 95% confidence interval, one-day holding period.
[c] Aggregate (trading and non-trading portfolio) VaR.
[d] Trading portfolio VaR.

Table 9. Summary of Some Information Disclosed in Two Banc of America MBS Issuances from 2001 and 2006

	Date Issued: 6/27/01		Date Issued: 4/15/06	
	Range or Total	Weighted Average	Range or Total	Weighted Average
Unpaid Principal Balance	$276,063 to $1,000,000	$490,115	$430,400 to $2,864,000	$714,114
Interest Rates	5.250% to 7.625%	6.90%	5.125% to 7.250%	6.22%
Rate Ceiling	10.250% to 12.625%	11.90%	11.125% to 13.250%	12.22%
Months to First Adjustment Date	58 to 60 months	59 months	5 to 36 months	35 months
Remaining Terms to Stated Maturity	119 to 360 months	359 months	359 to 360 months	359 months
Original Term	120 to 360 months	360 months	360 months	--
Loan Age	0 to 2 months	1 month	0 to 1 month	1 month
Original Loan-to-Value Ratio	8.29% to 95.00%	67.94%	40.91% to 95.00%	73.91%
Debt-to-Income Ratio			13.80% to 61.00%	39.27%
Credit Scores			642 to 810	749
Latest Maturity Date	1-Jul-31	--	1-Mar-36	--
% of Interest Only Mortgage Loans			80.31%	--
% of "Alternative" Underwriting Guideline Mortgage Loans			30.47%	--
% of Mortgage Loans Secured by Investor Properties			2.57%	--
% of Leasehold Mortgages			0.00%	--
Geographic Concentration of Mortgaged Properties in Excess of 5.00% of the Aggregate Unpaid Principal Balance				
Maximum Single Zip Code Concentration	1.99%		8.02%	