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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. We discuss the financial difficulties faced by investment and commercial 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-action lawsuits 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 principles 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 new homes or refinanced existing ones, 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 beginning in 2007, as many as two million homeowners have faced or are facing interest-rate resets that will increase mortgage payments by as much as 30 percent. Many homeowners have negative equity. Some have already defaulted, whereas others will default in the future. These defaults and foreclosures have driven down the value of many RMBS and CDOs. Losses on these securities and their derivative effects are being felt by banks, investors, loan originators, credit appraisers, underwriters, bond rating agencies, bond insurers, and others. Having written down and continuing to write down assets, banks are now facing liquidity, solvency, and funding issues. Counter-party risk is high and lending markets, including the markets for leveraged loans, auction-rate securities, commercial mortgages, student loans, and others, have seized up. In this paper we explore some of the causes and consequences of the 2007-2008 credit crisis, and its impact 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 will generate substantial, perhaps even unprecedented levels of litigation. The facts so far are 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 has been heightened by recent revelations that the FBI is investigating several major banks' accounting practices and pricing of securities in addition to civil investigations already underway by the U.S. Securities and Exchange Commission (SEC) and state Attorney Generals. These government investigations are important not only in their own right, but also because they can potentially reveal information that may further fuel private class-action litigation.

The litigation wave includes the filing of Rule 10b-5 class-action lawsuits 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 many of the major financial institutions. Tellingly, State Street Corporation, which is facing multiple ERISA lawsuits concerning the operation of some of its funds, set aside a reserve of \$618 million in the fourth quarter of 2007 to cover legal exposure.

Table 1 provides a summary of the securities class-action lawsuits filed between February 8, 2007 and November 15, 2008 against investment banks, mortgage originators, bond insurers and credit-rating agencies arising from losses resulting from the credit crisis. Using information from Bloomberg,¹ 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 Rule 10b-5. In total, Table 1

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.

covers 251 securities class-action lawsuits (with a number of the complaints being partially duplicative) against 95 companies. Much of this litigation is directly related to the extensive asset writedowns taken by banks. Table 2 summarizes the credit-crisis related asset writedowns taken through August 20, 2008 by the largest underwriters of MBS in 2007.

Table 1 surely underestimates, however, and most likely substantially underestimates, the extent and impact of likely litigation. We anticipate three significant 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*) government 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 values were tied to pools of mortgages and that suffered substantial losses as a result. The second category of litigation includes litigation brought by 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 offerings; and disputes between different CDO tranche holders as to the distribution of assets of liquidating CDOs. The third category includes a variety of civil and criminal investigations by state and federal entities, including pending investigations of “due-diligence firms,” which are responsible for verifying the underwriting quality of securitized assets.

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

Of course at this point in the credit crisis, the losses suffered by a wide range of actors extend well beyond the value of securities tied to mortgages, including declines in the value 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, is poor mortgage performance.

The remainder of this paper is organized as follows. Section I describes the process by which mortgage loans are originated and securitized and discusses the role of various participants in the mortgage securitization market. Section II discusses the causes and consequences of the current credit crisis with a focus on mortgage 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 the number of MBS bookrunners.

We review the legal issues facing market participants in Section IV. We focus on the causes of actions available to MBS and CDO purchasers and three securities-law principles that we believe will play an important role in the class-action litigation filed against the banks, mortgage originators, and others. 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 was facilitated by aggressive lending standards that allowed people from a broad economic spectrum to own homes and by the use of mortgage securitization that increased mortgage capital and distributed the risk of loans 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 homeowner loans.

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

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

portfolios. Most are sold to the secondary market, where they are pooled and become the underlying assets for RMBS.

Individuals with strong credit histories qualify for traditional mortgages, whereas those with weak 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 rose over time. In 2001, 8.6 percent (\$190 billion) of the more than \$2.2 trillion mortgages originated were rated subprime. This percentage rose to 20.0 percent by 2005, when over \$600 billion subprime mortgages were originated.

Most of the later-vintage subprime mortgage loans were 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 interest rate is reset every six months for the next 28 years based on an interest-rate benchmark, such as the London Interbank 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 originated by mortgage banks and brokers, rather than by commercial banks or other depository institutions. Mortgage banks originate subprime residential mortgage loans and then sell them to banks, whereas mortgage brokers originate subprime residential mortgage loans on behalf of 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 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's roughly \$500 billion of loans, whereas in 2005 the top 25 originators market share rose to approximately 85 percent 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 MBS. 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 usually no recourse to originators (putting aside repurchase agreements, discussed later). The issuer is "bankruptcy remote," meaning that if an originator goes bankrupt, the assets of the SPV cannot be distributed to the originator's creditors.

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 the degree of credit risk. If homeowners default or 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,

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.

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 the underlying collateral, as well as the cash-flow protection provided by the subordinated tranches. In recent years, senior MBS have represented over 85 percent of the value of a typical pool, whereas mezzanine pieces account for around ten percent and are used primarily in CDOs.⁵ The most junior class (often called the equity class) has the highest credit risk and accounts for about five percent of the value in the pool. In some cases, the equity class receives no coupon, but instead gets the residual cash flows (if any) after all the other classes are paid. There may also be a special class of securities that absorbs early mortgage repayments, which are an important source of credit risk. Because early repayments are passed on to this class, the other tranches' investors receive more predictable cash flows. Often sponsors or MBS originators retain the equity.

Because SPV structures, as described above, pool assets and issue MBS, they arguably fit under the broad definition of "investment company," as defined in the Investment Company Act of 1940. As such, they would be subject to the extensive requirements of the Act.⁶ These requirements are widely viewed (including by SEC staff), however, as being inconsistent with the normal operations of SPVs, and hence, virtually all SPVs are 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 if a SPV issues fixed-income securities that, at the time of sale, are rated in one of the four highest categories of investment quality from a "nationally recognized statistical rating organization" (typically S&P, Moody's or Fitch). Pursuit of this exemption is one reason why it is important for a SPV's securities to be structured such that they receive the necessary investment-grade ratings.

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

⁶ See Section 3(a)(1)(A) and 3(a)(1)(C) of the Investment Company Act of 1940.

The SPV has a trustee whose primary role is to hold loan documents and distribute payments 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 Using data from Securities Data Corporation, we find MBS volume transferred from agency to non-agency sponsors between 2001 and 2007. Panels A and B of Figure 3 indicate that agency-sponsored MBS, both in terms of number of deals and principal amount, peaked in 2003, and virtually all was registered and publicly traded. In contrast, private-label (i.e. non-agency) sponsored MBS was at its highest level in 2005, and private-label 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 MBS 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 were either commercial or investment 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.

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.

The riskier tranches of MBS may be packaged into CDOs.⁸ Like MBS, CDOs have a sponsoring organization, such as a commercial or investment bank. A CDO's sponsor establishes a SPV that issues securities, typically multiple tranches differentiated by maturity and credit risk, to raise money to invest in financial assets. Most of the debt that finances 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 problems if the CDO or conduit holding CDO tranches has trouble refinancing or rolling over the commercial paper. Consequently, CDOs and conduits typically contract with standby liquidity providers to guarantee liquidity for a fee. CDO sponsors often retain senior tranches for investment purposes. Like the market for RMBS, the market for CDOs has grown dramatically over the past 10 years, as has the ABCP market.⁹ The growth slowed significantly in 2007, however, when housing prices fell, loan delinquencies rose, foreclosures increased, and the performance of recent-vintage RMBS declined.¹⁰

Many CDOs, although not all, are actively managed, which entails the on-going purchase and sale of 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

⁸ 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.

⁹ Douglas J. Lucas, Laurie S. Goodman, and Frank J. Fabozzi, *Collateralized Debt Obligations*, John Wiley & Sons, Hoboken, NJ, 2006.

¹⁰ 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.

manager.” These limitations are often a function of the conditions under which the CDO must operate to maintain favorable credit ratings for its various tranches from rating agencies. Even if a collateral manager does not have the authority to trade CDO assets on an on-going basis, many CDOs raise funds before the purchase of assets (the so-called “ramp-up” period). With respect to a CDO’s uninvested funds, the collateral manager has the obligation to invest these funds consistent with the CDO’s asset strategy. In some ways, actively managed CDOs resemble hedge funds, including the fact that the purchasers of CDO interests are financially sophisticated investors rather than retail buyers.

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 tends to preclude them from being publicly tradable on registered exchanges or markets. Investors must therefore rely on dealers to execute trades.

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 the 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 in Section IV will emphasize, is at the heart of much of the mortgage litigation.

Collateral appraisers in 2007 included Clayton Holdings, First American, LandAmerica Financial Group, and Stewart Information Services Corporation.

D. Sources of credit enhancement

MBS and CDOs are typically credit enhanced, meaning that their credit risk is managed so as to be lower than 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 their 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-collateralizing pool assets; and structuring transactions to include subordinated classes of securities that absorb cash-flow shortfalls. CDOs are structured so that the cash flows from 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 the 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 assets' values and cash flows are adequate. If there is a shortfall, a CDO must either sell the assets and distribute the proceeds or the equityholders 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 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 an important source of credit enhancement. Bond insurance is a commitment by an insurance company to make contractual payments if an issuer of a bond cannot meet its financial obligations. Historically, bond insurers insured primarily municipal bonds. These firms, however, began entering the structured finance market in the 1990s. By 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.¹¹ 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. Table 3 summarizes the insurance written on 2006 and 2007 MBS issuances, broken down by bond insurer.

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.¹² In at least some instances, credit-rating agencies review due-diligence firms' reports or summaries of reports when evaluating credit risk.

¹¹ "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.

¹² *Id.*

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,¹³ purchasing unrated RMBS and CDO securities runs the legal risk that these instruments may be deemed imprudent. ERISA exempts CDOs, however, if 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. If a 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.” The legal result is that a bank deemed to be an ERISA fiduciary 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. Another ERISA exemption commonly 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 1933.¹⁴

The advent of investment-grade MBS and CDOs dramatically changed the investment opportunities for pension funds. Before the introduction of MBS and CDOs, pension funds were

¹³ 29 U.S.C. 1104(a)(1)(B).

¹⁴ See Tamar Frankel, *Securitization* (2nd Edition), 2006, p.184 for a discussion of these regulations.

largely precluded from investing either directly or indirectly in real estate. Investment-grade MBS and CDOs have allowed them to include 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). The securitization of mortgage loans 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 MBS investors. 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 required for loan origination. If the loan originator is the servicer, it has highly attuned financial incentives to ensure that loans are repaid to the SPV and cash flows are 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 servicing agreements in MBS registration statements.

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 homes. In some instances, homeowners, knowing that they could not service loans from their income, still bought homes, anticipating that they could quickly flip them 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 shown 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 in 2001 to more than 50 percent in 2006, and borrowers' total debt payments rose relative to income. 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 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 subprime mortgagors' incomes, net worths, and credit histories. According to an analysis by Fitch 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

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

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 vintages), including 16,000 non-performing loans that had evidence of fraudulent misrepresentation in the original applications. BasePoint’s research found that as much as 70 percent of early payment default loans contained fraudulent misrepresentations on applications.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 Washington Mutual, a loan originator, to inflate appraisal values.²⁰

The gatekeepers to detect loan-origination frauds and lax underwriting standards are the due-diligence firms that review and verify loan information and loan-origination 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 risks of 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

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)

to disclose information to credit-rating agencies and investors about high-risk loans, known as “exceptions,” that failed to meet credit standards. Deutsche Bank, for instance, underwrote \$1.5 billion of New Century mortgages in 2006 that included a number of exception loans. According to the *New York Times*, these loans suffered unusually high 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 in 2005.²² Even for those loans reviewed, due-diligence firms encountered obvious challenges, given that many loans lacked standard documentation or, indeed, any documentation. In assessing these practices, one must bear in mind that RMBS originators almost certainly purchased exception loans at discounts to face value and, in turn, sold them at discounted prices to SPVs. Whether the discounted prices reasonably reflected the *ex ante* probability of losses from defaults and foreclosures 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 harder 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 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

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.*

their payments or defaulted. 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 increased sharply and expects these rates to continue to rise.²⁵

Whereas many of the problem subprime loans are ARMs, there are non-ARM subprime borrowers who also are at high risk of default. Using data on both ARM and non-ARM 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 that 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 estimates 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

By late 2006, banks had reduced their purchases of subprime mortgages for SPVs, and some banks and larger mortgage lenders tried to enforce repurchase agreements from previous

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.

deals, requiring loan originators to buy back troubled mortgages originated in 2005 and 2006.²⁸ Because loan originators tended to be thinly capitalized, many 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. 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 RMBS and CDOs. 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 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

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.

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.

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 MBS, 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 firms on assets that were not just subprime related. Banks wrote down alt-A and prime MBS, ABCP, syndicated loans, consumer loans, and many other types of securities.

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 SPV or it is a remnant of an already completed securitization; *ii*) debt that is part of a SPV that is consolidated onto the banks’ balance 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 for these assets was glutted and highly illiquid. The result was firms faced steep discounts on asset prices, and in many instances, market prices were not

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.

readily available. The problem was further compounded, because many institutional investors were trying to sell downgraded assets as well. ERISA restrictions, other legal requirements, and their own stated investing criteria preclude institutions from holding non-investment grade securities. Hedge funds and mutual funds had to sell assets to meet investor redemptions. This selling in turn caused bond values to fall even further, resulting in additional writedowns by investors and 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 resulted in runs on the funding of some of them. 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 acquired Bear Stearns. In September, Bank of America bought Merrill Lynch. Market pressures the same month forced Morgan Stanley and Goldman Sachs to become commercial bank holding companies, and on September 15, 2008, Lehman Brothers announced it would file for bankruptcy protection. Commercial and other 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 to

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.

provide financial support, and bought preferred shares in a number of banks.³⁶ What began as a problem in the United States spread overseas. Governments around the world are issuing credit guarantees and buying equity in financial institutions.

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’ financial well being. As bond insurers’ credit ratings fall, so too will the ratings of insured securities. If securities’ ratings fall far enough, pension funds and other investors that are required to hold highly rated securities may need to sell them, creating an even larger glut in the market and further downwards price pressure. This cycle could mean yet 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 this paper.³⁸ In part the answer will likely involve the experience or lack thereof of market participants with this particular 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 mortgage pools previously

³⁶As 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.

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>.

securitized. It appears borrowers may have been qualified to borrow money based on low teaser rates in the early years of loans, rather than the higher rates in later years. 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, than mortgage pools in the past. Between 2001 and 2006, the number of subprime mortgages increased and the percentage of the total subprime MBS comprised by ARMs 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 mortgage securitizations 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 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

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.

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.

The issues raised by these changes may have been masked to market participants. Low interest rates in the economy, low teaser rates on ARMs that did not reset to higher levels until years later, and high housing prices through mid-2006 staved off loan delinquencies and foreclosures (Demyanyk and Van Hemert (2008)).⁴² 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 before the loan defaulting masked the true risk of these products and the presence of misrepresentation and fraud.” So although loan quality 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, later vintages (2005-2006) of MBS and CDOs with subprime collateral were rated based on subprime loan defaults and losses from an earlier period (2001-2003).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. Interest rates rose, and teaser rates began resetting to higher levels. Noticeably higher delinquency rates appeared for loans originated in 2006 and 2007, revealing borrowers’ financial weaknesses.

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.*

⁴⁵ Charles W. Calomiris, “The subprime turmoil: What’s old, what’s new, and what’s next,” Working paper, August 20, 2008.

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 arose as a way to better share the risk and distribution challenges 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 uniquely fulfill this demand. In 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.⁴⁶ In addition, the credit risk of the underlying assets is relatively opaque to market participants, who are removed several times from the actual loan underwriting and verification process. By purchasing securities that distribute and redistribute risk 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

⁴⁶ Joseph R. Mason and Joshua Rosner, "How resilient are mortgage backed securities to collateralized debt obligation market disruptions?" Working Paper, February 15, 2007.

transaction structure.⁴⁷ Although it is tempting to point a finger at MBS originators as being culprits, 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 \$500 billion if they had understood and appreciated 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 seek bankruptcy protection. 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.⁴⁸ In turn, market participants appear to have not 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. Firms also suffered because asset sales were highly correlated, resulting in excess supply and low 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.⁴⁹ If that structure has some risk that is not fully appreciated by the rating agencies or some information is not disclosed to or understood by investors or

⁴⁷ 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>.

⁴⁸ 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.

⁴⁹ Peter Tufano, "Financial innovation and first mover advantages," *Journal of Financial Economics*, 1989, 25, pp. 213-240.

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 appearing not to appreciate certain types of funding risk for banks. Most banks rely on short-term secured borrowing to finance certain assets and then they use those assets as collateral. As the value of the assets, which in this instance included MBS and derivatives positions, began to fall, banks faced margin calls and needed to raise cash to meet financial obligations and regulatory requirements. Historically they would have sold assets or raised debt or equity. In the severely stressed market of 2008, however, numerous financial institutions were selling assets, resulting in a market glut and plummeting prices. These lower prices set off rounds 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.⁵⁰ The problem was also made

⁵⁰ 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.

worse by heightened counter-party risk. Market participants did not know which banks were financially weak, and so refused to lend more generally. Even banks with collateral were denied loans, as lenders feared they would not be able to monetize collateral if borrowers failed. With the value of 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.”⁵¹ The firm began to experience a liquidity shortfall, even though it met and exceeded regulatory net capital, capital, and liquidity standards. To put the run on Bear Stearns’s funding in perspective, the firm had over \$18 billion in liquidity on Monday, March 10, 2008.⁵² By Tuesday, March 11, the holding company’s liquidity pool declined 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,⁵³ until the firm had no choice but to either be acquired by JP Morgan at a fire-sale price or fail altogether. The holding company’s capital ratio was 13.5 percent on February 29, 2008, which far exceeded

⁵¹ 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, SEC).

⁵² Source: Source: Chairman Cox Letter to Basel Committee in Support of New Guidance on Liquidity Management, SEC. March 20, 2008. <http://www.sec.gov/news/press/2008/2008-48.htm>.

⁵³ Source: Answers to Frequently Asked Investor Questions Regarding The Bear Stearns Companies, Inc. SEC, March 18, 2008, <http://www.sec.gov/news/press/2008/2008-46.htm>.

the Federal Reserve Board's (Federal Reserve) threshold of ten percent for being "well capitalized."⁵⁴ Its ratio never fell below ten percent during the week of March 10th. Until Friday, March 14th, Bear Stearns' short-term credit ratings were investment grade.⁵⁵

Even more surprising was the funding run on Goldman Sachs, which had minimal asset writedowns and issues with bad MBS and CDOs. Rather than be acquired to mitigate funding issues, it was forced to convert to a commercial bank holding company. A few days before Goldman Sachs applied to be a commercial bank regulated by the Federal Reserve, it reported positive earnings for the quarter, \$102 billion in liquidity, and its stock price was around \$133/share.⁵⁶ Even it, however, could not withstand funding pressures. Ultimately it sought access to a commercial bank's insured deposits and the Federal Reserve's expansive discount window as an alternative to secured borrowing as a basis for its funding model.

In the wake of the credit crisis, 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 when markets are stressed overall.⁵⁷ 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 capital exceeds the Federal Reserve's standard for being "well capitalized,"⁵⁸ and liquidity exceeds SEC recommendations. Even given adherence to regulatory

⁵⁴ Source: Source: Chairman Cox Letter to Basel Committee in Support of New Guidance on Liquidity Management, SEC. March 20, 2008. <http://www.sec.gov/news/press/2008/2008-48.htm>.

⁵⁵ Mark Pittman and Caroline Salas, "Bear Stearns has credit ratings slashed after bailout," Bloomberg.com, March 14, 2008.

⁵⁶ The Goldman Sachs Group, Inc., Third Quarter Results, Form 8-K, September 16, 2008.

⁵⁷ 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.

⁵⁸ "Capital is the difference between a firm's assets and liabilities." "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. Whereas 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

standards, a number of investment and commercial banks experienced financial distress during this period, with investment banks generally faring worse than commercial banks. Unlike commercial banks, which fund themselves at least in part with “sticky” federally insured deposits and which have access to Fed funds, investment banks relied heavily on unsecured and secured funding that until recently was not guaranteed by the Federal Reserve, and that we now know can disappear within hours.

The question then is whether the market could have reasonably anticipated that investment banks could face such dramatic funding crises. Critics have asserted that gross leverage, assets divided by stockholders’ equity, was high over the period.⁵⁹ 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.⁶⁰ 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

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 Stearns Companies, Inc. SEC, March 18, 2008, <http://www.sec.gov/news/press/2008/2008-46.htm>.

⁵⁹ See, for example, Kara Scannell, “SEC faulted for missing red flags at Bear Stearns,” *Wall Street Journal*, September 27-28, 2008, p. A3.

⁶⁰ “The Basel Committee on Banking Supervision (Basel 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.

companies,”⁶¹ and maintain tentative net capital of at least \$1 billion and net capital of at least \$500 million.⁶² Firms also had to meet a holding company liquidity standard that was designed to allow them to survive at least one year without access to unsecured funding under the assumption that secured funding for liquid assets would be available.⁶³ 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 secured lending facilities.⁶⁴ 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.”⁶⁵ Before the collapse of Bear Stearns and Lehman and the financial difficulties faced by the other investment-bank holding companies, 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

⁶¹ 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.

⁶² SEC Holding Company Supervision with Respect to Capital Standards and Liquidity Planning. SEC, March 7, 2007, <http://www.sec.gov/divisions/marketreg/hliquidity.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.

⁶³ 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.

⁶⁴ 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).

⁶⁵ Technical Committee of the International Organization of Securities Commissions, *Report of the Task Force on the SubPrime Crisis: Final Report*, May 2008, p. 14.

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 needs to be refinanced frequently will be available, even when markets are stressed.⁶⁶

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 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. We then examine some of the issues facing plaintiffs bringing the various class-action lawsuits, documented in Table 1. The discussion will focus on three basic securities-law principles that plaintiffs will have to successfully navigate. The three principles are: *i*) there can be no "fraud by hindsight"; *ii*) there can be no actionable disclosure deficiency with respect to information the market knew (the "truth on the market" defense); and *iii*) plaintiffs must 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 before the credit crisis that 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

⁶⁶ See Markus K. Brunnermeier, "Deciphering the 2007-08 liquidity and credit crunch," *Journal of Economic Perspectives* (in press), 2008.

default swaps, the state-law derivative actions that have been filed against firms or claims arising out of losses suffered by mutual-fund investors and purchasers of auction-rate securities. The exclusion of these claims is not to say that some of these legal claims will not also raise some of the issues that we discuss, such as the requirement that plaintiffs establish “loss causation.”

A. Claims by CDO purchasers

To understand the fallout from the credit crisis and the legal claims generated by it, it is important to recognize 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 arose from either retaining the highest rated CDO tranches, often with credit default swap protection (the so-called “super-senior securities”) or purchasing the commercial paper issued by ABCP conduits that held super-senior securities. The banks’ purchases of ABCP were typically triggered by either contractual obligations as standby liquidity providers or concern for maintaining their reputations in the commercial paper market.

For instance, consider the source of the losses for UBS and Merrill Lynch, two firms with among the highest asset 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, and another 16 percent arose from UBS’s CDO warehouse positions acquired through its CDO origination and underwriting business.⁶⁷ On October 24, 2007, Merrill Lynch disclosed \$7.9 billion in writedowns that included \$5.6 billion in super-senior CDO losses.⁶⁸ On January 17, 2008, the firm announced further writedowns of \$11.5 for its CDO positions, and in July of 2008, it sold \$30.6 billion gross notional amount of U.S. super-

⁶⁷ UBS Shareholder Report on UBS’s Write-Downs, 2008.

⁶⁸ Merrill Lynch Oct. 24, 2007 8-K

senior CDOs for \$6.7 billion. These securities were valued at \$11.1 billion before the sale. Super-senior CDO exposures wrecked havoc at other banks as well.⁶⁹

From both a litigation perspective as well as from a regulatory policy standpoint, it is critically important to bear in mind that CDO securities were sold almost exclusively in Rule 144A offerings. As a result, CDO purchasers were not retail investors, but rather very large financially sophisticated investors. For an offering to be exempt under Rule 144A, purchasers (and, indeed, the offerees) must be “qualified institutional buyers” (QIBs), which include pension plans, hedge funds, and banks. Hedge funds, in particular, are reported to have been major purchasers of CDOs, including the riskier CDO tranches that constituted in effect leveraged positions in mortgages. Commercial and investment banks tended to purchase super-senior CDO securities or retained CDO warehouse positions as part of their origination and underwriting businesses. The credit-rating agencies underestimated the risk of many of these securities. Relative to MBS, the errors were large. The result has been credit-rating downgrades and substantial losses for investors.

The fact that CDO interests are issued pursuant to Rule 144A means that CDO purchasers will not be able to bring Section 11 claims under the Securities Act of 1933 against the issuers or sponsors of CDOs as there simply is 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 Rule 144A offerings), 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.

⁶⁹ See, e.g., Morgan Stanley, January 29, 2008 10-K (attributing most of its \$9.4 billion loss to super-senior CDOs).

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 regulatory policy going forward. A number of commentators, including a report issued by the Counterparty Risk Management Policy Group, have called for higher standards for investor sophistication before investors are qualified to purchase a “financially risky complex product.”⁷⁰ The need for such a revision to the requirement is called into question by the fact that CDO purchasers have long satisfied the most demanding investor sophistication requirements known to securities regulation.

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 contractual 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 CDO funds among various CDO tranches. A CDO trustee is the party responsible under these indenture agreements for ensuring compliance with the terms of the indenture agreement. Table 5 documents the identity of CDO trustees for 2006-first half of 2008.⁷¹ It is quite possible that the holders of the more junior or mezzanine tranches, perhaps hedge funds that wish to limit their losses, will argue that under the terms of the indenture agreement, some of the CDO proceeds 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

⁷⁰ *Containing Systematic Risk: The Road to Reform*, The Report of the CRMPGIII, August 6, 2008.

⁷¹ The table is based on data presented in *Asset-backed Weekly Update*, November 15, 2008. We are grateful to *Asset-backed Weekly* for providing us with a free subscription to their publication.

dispute between various CDO tranche holders over how CDO proceeds should be distributed.⁷² These disputes will arise when, according to the terms of a 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 were on the path to liquidation as of May 30, 2008, while Table 7 documents CDO sponsors by number of CDO defaults as of January 18, 2008.⁷³ These contractual disputes are likely to be complex, given that the provisions governing the distribution of CDO funds can be quite intricate due to the waterfall structures that typically are in place and the fact that more than one document often purports to contain provisions relevant to such inquiries. One possible source of elucidation of the parties’ intended meaning of the various waterfall provisions governing the distribution of CDO proceeds is the computer simulations, generated under various scenarios or assumptions, of the returns that holders of various 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 claims against CDO collateral managers. This type of litigation 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

⁷² 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).

⁷³ The tables are based on data presented in *Asset-backed Weekly Update*, January 18, 2008 and from *UBS CDO Research*, May 30, 2008.

interests, breached its duty of care in the management of Corvus as collateral manager, and finally, that Barclays inflated the value of the CDO's assets in reports to Corvus' investors. The HSL Nordbank lawsuit settled.

What form are the types of claims brought by HSL Nordbank likely to take in the United States? With respect to claims concerning actions by CDO collateral managers, such as claims that collateral managers improperly substituted existing CDO assets with poorly performing ones, one possible approach would be to argue that a collateral manager is an ERISA fiduciary with respect to CDO pension-plan purchasers. From the litigation filed so far, it appears plaintiffs will aggressively deploy the concept of ERISA fiduciary. Assuming a collateral manager of a CDO is deemed to be an ERISA fiduciary with respect to the CDO investments of pension-plan 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, to which ERISA fiduciaries are also subject, could be brought based on transactions between CDOs and affiliates of CDO sponsors, assuming the CDO sponsors and collateral managers are one in the same. Transactions with CDOs, such as being the counter-party to certain types of derivative transactions entered into by the CDOs, are potentially quite lucrative for sponsoring institutions.

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 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 rated investment grade. One question that this type of argument will raise is the effect of recent credit-rating downgrades of a large number of CDO tranches to below-investment-grade status. Another exemption from ERISA commonly used by CDOs is to argue that no more than 25 percent of a 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 SPVs whose MBS are registered under the Securities Act of 1933 from ERISA.⁷⁴

Another interesting source of potential litigation in the context of CDO purchases are claims that the pricing of CDO assets or interests therein was inflated relative to the assets' or interests' "true" value. Even if a 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 could give rise to a contractual claim. A related legal basis for bringing a pricing claim is a long line of cases that have held, 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.⁷⁵ These pricing claims are likely to be challenging to prove, in part, because comprehensive data on comparable CDO structures and performance that could help inform an analysis of the appropriateness of a valuation in any particular set of circumstances is lacking. For instance, whereas Bloomberg has comprehensive coverage of the MBS market (as well as the ABS market in general), it offers very little transaction or pricing information on CDOs. The lack of comprehensive data on CDOs is also reflected in the coverage of other standard sources of financial data.

⁷⁴ See Tamar Frankel, *Securitization* (2nd Edition), 2006, p.184 for a discussion of these regulations.

⁷⁵ See Allen Ferrell, *The Law and Finance of Broker-Dealer Markups*" (FINRA commissioned study) discussing this line of cases.

Besides CDO information being difficult to obtain, there are two additional issues that could loom large in the context of valuation claims. First, as the earlier discussion on CDOs emphasized, many CDOs are structured to cater to the needs and preferences of targeted investors with the result being that there is substantial heterogeneity across CDOs. This customization makes pricing comparisons across CDOs quite challenging, even assuming data is available. Second, if CDO purchasers received adequate disclosure, then it would be difficult to claim that there was fraudulent conduct in the valuation of a CDO.

B. Claims by MBS purchasers

Although the most dramatic losses occurred for purchasers of CDOs, there were nevertheless credit-rating downgrades of MBS and significant losses suffered by investors. As such, litigation brought by major purchasers of MBS is already underway.⁷⁶ One possible basis for a claim, given that the vast bulk of 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 sponsor, underwriters, and auditors will all be subject to potential Section 11 liability (with the latter 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, although 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? MBS purchasers could pursue potentially any of the four following candidates, each of which relates in some way to the underwriting quality of

⁷⁶ See, e.g., *Luminent Mortgage Capital Inc. v. Merrill Lynch* (Eastern District Court of Pennsylvania).

the underlying mortgages themselves: *i*) outright fraud with respect to the documentation surrounding the mortgage origination, rendering statements made in the offering process false; *ii*) inadequate disclosure of underwriting standards for the underlying mortgages; *iii*) misrepresentations as to the extent to which exceptions were made to underwriting standards; and *iv*) the pricing of the various MBS tranches. The presence of these disclosure issues in registration statements, including fraud in mortgage origination, will prove problematic for SPVs as there is no Section 11 due-diligence defense for issuers. Presumably, however, purchasers are more interested in suing the bank 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 the circumstances in which misstatements will 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 a 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 prepayment penalties collected as a result of homeowners paying off mortgages early. One possible rationale for such a strategy is that the prepayment tranche serves as a hedge for the junior MBS tranches. As prepayments and hence prepayment penalties increase, the value of the prepayment tranche should rise, whereas the value of the junior MBS tranche should fall as there will be fewer interest payments 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 is at least partially hedged make it less likely that such a

misrepresentation will 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 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 about the quality of the underlying mortgages that due-diligence firms provided to these parties could be the subject of extensive litigation for a number of reasons. First, the provision or even availability of information to banks acting as underwriters for MBS will arguably affect the availability of Section 11 due-diligence defenses with respect to material misstatements in MBS registration statements. 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.⁷⁷ Second, the provision of information on the underwriting quality of the mortgages will arguably speak to the availability of a “reasonable care” defense (the defendants did not know and in the exercise of reasonable care could not have known) with respect to Section 12(a)(2) lawsuits 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 try to use information that is uncovered by on-going federal and

⁷⁷ 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.

state investigations. For example, the New York and Connecticut Attorney Generals, as well as the SEC, are investigating what due-diligence firms knew about mortgage underwriting quality and the extent to which that information was shared with the banks sponsoring SPVs and underwriting MBS. It has been reported the FBI is likewise investigating issues relating to the quality of loan 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 mortgage originators as well as the associated follow-on ERISA litigation is substantial. Again, these lawsuits, including their filing dates and class periods, are summarized in Table 1. Of course, the litigation extends 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 the information provided by the banks sponsoring MBS SPVs and underwriting MBS or sponsoring CDOs establishes scienter, one of the main hurdles in bringing Rule 10b-5 actions. Plaintiffs will claim banks knew the MBS and CDO interests held on their own books were worth significantly less than reported, and that this information was both material and not adequately disclosed in 10-Ks and other disclosure documents. Similarly, plaintiffs will argue the “contingent losses” faced by banks as a result of bringing SPV (or SIV) assets onto their books or purchasing ABCP were both large and understood by the banks. The ERISA litigation filed against the banks and mortgage originators claims they, when

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

We believe, however, plaintiffs that bring these Rule 10b-5 class-action lawsuits will face substantial challenges. Given that the burden of proof is on the plaintiffs to establish the elements of their cause of action and damages, we will focus on areas where this burden is potentially the most difficult to satisfy. For purposes of providing an overview, we identify three basic principles of the securities laws that plaintiffs will have to successfully navigate. Of course, such an abbreviated discussion cannot and is not intended to fully cover the range of issues that are likely to be raised in this litigation.

1. No Fraud by Hindsight

The basic distinction between reasonable *ex ante* expectations and *ex post* losses is fundamental to finance theory and is long reflected in the U.S. securities laws. This distinction 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. It will also likely prove to be quite important in the litigation brought by MBS and CDO purchasers. Whether a failure of certain market participants to provide detailed disclosures concerning the implications of an event – the first national fall in housing prices since World War II in conjunction with a dramatic and increasingly global credit crisis – from which the actors themselves suffered huge losses 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-action lawsuits' class periods begin in 2006 or even earlier, as shown in Table 1. This timing raises the important question of whether the credit crisis was foreseeable in 2006 or before.⁷⁸

⁷⁸ 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-

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 Sections 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 fund prospectuses, because the prospectuses failed to disclose the risky nature of the underlying MBS portfolio. They also claimed there was a failure to disclose the potential size of losses if there was an adverse movement in interest rates. Needless to say, the investors in the closed-end fund suffered substantial losses when interest rates changed. 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 hindsight, even if substantial losses occur *ex post*. The Second Circuit recently emphasized yet again 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

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).

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 disclosure adequacy. 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 Eighth 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 markets 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 metric by banks to measure the risk inherent in at least some of their financial positions, immediately before the credit crisis. Did these estimates predict, even in a rough way, the size of subsequent asset writedowns or which firms were most exposed if credit markets 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 a firm-wide VaR (a figure that UBS, the bank with the highest reported VaR, does report). 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 asset writedowns, whereas Goldman Sachs has fared comparatively better so far. The correlation between banks' reported VaRs for 2006, the year immediately before the credit crisis, and their asset writedowns as of August 20, 2008 (summarized in Table 2) is a meager 0.2. The average ratio of asset writedowns as of August 20, 2008 to VaRs reported for 2006 is 291.

Besides the predictability of credit-crisis losses at different points in time, a more micro issue also speaks to what was reasonably knowable before the credit crisis began. The ability to model different scenarios for asset-backed securities depends heavily on having information as to the historical performance of the underlying collateral. As a result, the level of knowledge concerning possible scenarios increases over time relative to what was known or knowable at the time that a SPV was created and interests therein sold to investors. A commonly held view among asset-backed structurers is that one needs at least two years of historical information about asset performance, preferably through different economic conditions, to accurately predict future performance in different scenarios. In the case of MBS and CDOs that own MBS, the relevant information is the historical information for *that* type of mortgage pool or MBS. This observation is potentially important as most of the MBS and CDOs that suffered substantial losses were created in the two years immediately before the credit crisis began, or were exposed to mortgages and other assets originated in the same two-year 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 were extensive economic losses.

2. Truth on the Market Defense

Another important issue that will be germane to many of the securities claims being filed is what the market knew and when it knew it. 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 bank sponsors of SPVs and CDOs and underwriters of MBS had any special knowledge concerning these matters that was not also known by the market at large. Indeed, it is unclear the basis on which one could establish participants in the structured finance market had private knowledge of information such as the national default rate on subprime mortgages, which directly, immediately, and sometimes substantially affected the values of certain MBS and CDO tranches.

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, a claim that a bank knew (because a due-diligence firm informed the bank that the underwriting quality of some mortgages was questionable) the true value of a pool of mortgages held in a SPV or on its own books was lower than that publicly reported in the offering materials or the bank’s disclosures to the market. If this impaired underwriting quality for the specific type of mortgage in question (e.g., 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 than that known by the market based on existing market-wide information on underwriting quality. In other words, the issue will be the extent to which the information allegedly held by the bank would have changed market expectations had the market 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.

Even assuming a bank had private information that the underwriting quality of the mortgages held by a SPV or retained on its own books directly or through a CDO exposure was inferior to the typical underwriting quality of 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 it knew it. The relevant private information known by the bank would be the difference between the information known by the bank about the underwriting quality of the particular pool of mortgages in question and information known by the market at large. In this connection, it is worth noting that large and diversified pools of mortgages or MBS, all else being equal, may tend to be representative of mortgages economy wide. As such, the average underwriting quality of the pool is likely to be similar to the quality of mortgages at large.

The “truth on the market” doctrine will also be potentially relevant to claims that there was inadequate disclosure of financial exposures to off-balance sheet losses. Even assuming an obligation to disclose such information, the question will remain whether non-disclosures were material or rather, whether the market was already aware of potential off-balance sheet exposures. Putting aside whether a firm adequately disclosed such information in its SEC filings

(10-K, 10-Q, 8-K), three considerations potentially speak to the market's knowledge or lack thereof of off-balance sheet exposures.

First, the purchasers of CDO tranches and ABCP issued by conduits holding CDO securities were large institutional investors that were likely aware of the details of certain off-balance sheet arrangements, including sources of credit enhancement and the terms of liquidity guarantees by banks.⁷⁹ In fact, these arrangements typically are described in offering circulars and term sheets, as many potential purchasers simply refuse to buy such securities without liquidity guarantees. Potential investors' knowledge could constitute an important mechanism by which information relating to off-balance sheet exposures would have reached the market and been impounded in security prices. How one might establish or disprove this hypothesis econometrically will be an important issue in litigation. It is worth pointing out that plaintiffs, in bringing the Rule 10b-5 class-action lawsuits summarized in Table 1, claim that the market is semi-strong efficient; i.e., the security prices of defendants reflected all readily available information. This argument is required to establish reliance on a class-wide basis under the *Basic* doctrine, but it raises the specter of a successful "truth on the market" argument as to the non-materiality of off-balance sheet exposures if information about them was readily available.

Second, there are at least two additional important sources of disclosures besides firms' periodic reports under the Exchange Act and offering circulars: MBS registration statements and commercial banks' quarterly Form Y-9C disclosures. Registration statements, which provide detailed information on the underlying collateral (including information on the underwriting quality on the pool of mortgages for MBS), are readily accessible for all publicly traded MBS. Table 9 summarizes some of the information disclosed in the registration statements of two

⁷⁹ 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.

representative Banc of America MBS deals; one from 2001 and another from 2006. These summaries reveal three things that appear to be true more generally for most MBS registration statements during this period. First, the quality of the MBS disclosures appears to increase over time; that is, more information was disclosed in 2006 than 2001. This difference may simply be a function of the SEC, after a number of years of study and consultation, promulgating in 2004 Regulation AB, which mandated certain disclosures for asset-backed securities, including MBS. Second, extensive deal characteristics, including the attributes of mortgage pools, were clearly disclosed in both 2001 and 2006. Third, the quality of mortgages that were securitized appears to have declined over time. Specifically, the average time until interest rates first adjusted declined substantially from 2001 to 2006, interest-rate ceilings rose, loan-to-value ratios increased, and the geographic concentrations of assets fell.

Besides the MBS registration statements, commercial bank holding companies, such as JP Morgan, Citigroup, and Bank of America, have to file Form Y-9C quarterly (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 banks – information that typically is more specific than that available from SEC filings. For instance, Schedule HC-S provides information on ABCP 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 \$2.68 billion in sponsored unused ABCP conduit liquidity guarantees outstanding and another \$99 million for unsponsored conduits for the second quarter of 2007 that ended June 30, 2007. In

terms of balance sheet assets, Schedule HC-B requires banks to disclose MBS holdings, including collateralized mortgage obligations.

Third, the academic literature generally concludes off-balance sheet exposures, including transfers of financial assets in securitizations, are “priced” by the market. This literature is surveyed in Schipper and Yohn (2007).⁸⁰ For example, Niu and Richardson (2004) document that off-balance sheet debt relating to securitization has the same risk relevance to a firm’s stock (the stock’s CAPM beta) as on-balance sheet debt. In other words, the market prices the implicit put option conferred by the off-balance sheet debt issued in the course of securitizations; i.e., investors’ ability to force a firm, either as a result of contract or reputational concerns, to purchase off-balance sheet debt.⁸¹ Consistent with these findings, Landsman, Peasnell, and Shakespeare (2006) report analysts treat securitizations as secured borrowing in much the same way that analysts view securitized assets and liabilities as belonging to sponsoring banks.⁸² Lim, Mann, and Mihov (2005) document the market impounds off-balance sheet financing of operating leases into corporate debt yields, despite limited disclosures by firms of such arrangements.⁸³ Of course, whether the market knew and priced certain information will ultimately turn on the specific factual circumstances at question in the litigation.

3. Loss Causation

In the wake of the Supreme Court’s 2005 decision in *Dura Pharmaceuticals v. Broudo*, 544 U.S. 336, the issue of loss causation is increasingly important in securities class-action

⁸⁰ 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.

⁸¹ 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>.

⁸² 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>.

⁸³ 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.

litigation. Loss causation requires plaintiffs to prove in a Rule 10b-5 action that the losses they seek to recover were “caused” by the misconduct that ran afoul of Rule 10b-5 and not by market-wide declines. 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) that loss causation must be established before class-wide reliance can be presumed under a fraud-on-the-market theory *at the class certification stage*. In a Section 11 suit, loss causation is also an important issue, although the burden of proof is on the defendant.

Loss causation is likely to be a challenging litigation issue for plaintiffs, because market prices, especially of financial-sector securities, declined overall. Perhaps the most dramatic evidence of a market-wide break can be seen in the so-called “TED spread,” which is the difference between the three-month LIBOR (in dollars) and the three-month U.S. Treasury-bill rate. This spread is often interpreted as the risk premium banks demand for lending money to other banks, as LIBOR is the rate for unsecured inter-bank lending in the London wholesale money market and the 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, 2007,⁸⁴ although some commentators perceive signs of distress emerging as early as July of 2007 when several Bear Stearns hedge funds ran into trouble. The spread has been elevated ever since. Other 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 (Brunnermeier 2008).⁸⁵ It bears emphasis that the most relevant spread for valuing securities will depend on the

⁸⁴ 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.

⁸⁵ Markus K. Brunnermeier, “Deciphering the 2007-08 liquidity and credit crunch,” *Journal of Economic*

instruments in question. For instance, super-seniors, which were the source of substantial losses for banks, were not downgraded by rating agencies until late October of 2007.⁸⁶

There is an important and ongoing academic debate as to what caused the increases in spreads over time. Some financial economists interpret the jump in the TED spread as a sign banks' perceived an increase in borrower default risk ("counterparty risk"), even though the counterparties in the LIBOR wholesale money market are among the largest, most well-established banks.⁸⁷ Others, however, believe the spread widened, because cash-constrained banks have been unwilling to lend ("liquidity risk").⁸⁸ Irrespective of the answer, the important legal point is that increases in spreads appear to have resulted from 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 an institution fails in its legal duty to disclose the full details of potential exposures, including under extreme market conditions, the relevance of such disclosures will likely be a function of the market conditions that existed at the time. This argument is directly related to the doctrine of loss causation, if one interprets loss causation as existing only when a "corrective disclosure" reveals actionable misconduct to the market and thereby dissipates "inflation" present in a stock's price. In turn, "inflation" in Rule 10b-5 litigation typically refers to the extent to which a stock traded above the price it would have, but for the actionable misconduct. If such a disclosure, say in the beginning of 2006, of a firm's full potential

Perspectives (in press), 2008.

⁸⁶ Moody's Investors Services. Oct. 23, 2007

⁸⁷ 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.

⁸⁸ John B. Taylor and John C. Williams, A Black Swan in the Money Market, NBER Working Paper No. W13943, April 2008. Available at SSRN: <http://ssrn.com/abstract=1121734>.

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 rate spreads such as the TED spread, were essentially absent in 2006. In short, the relevance of various types of disclosures can well be a function of market conditions.

Some plaintiffs claim banks and other market participants could reasonably have known the extent of trading partners' counter-party risk, and thus avoided losses. The challenge for plaintiffs, however, will be to show a single institution could possibly have known such information. Consider, for example, one of the most subprime-exposed investments, the lower tranches of MBS issued against subprime mortgages. These lower tranches were often repackaged into CDOs. These interests in turn were repackaged yet again into other CDO structures. SPVs issuing the MBS and CDOs hedged the credit risk by entering into transactions, such as credit-default swaps, with third parties. The investors in each of the above interests were varied, and some traded the instruments in the secondary markets. As such, it may have been impossible for any single entity to know who was exposed to subprime losses. 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, some CDO purchasers used confidentiality agreements to prohibit CDO collateral managers from knowing their identities.

D. ERISA litigation

Table 1 indicates credit-crisis related ERISA complaints have already been filed against numerous companies, including 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 important legal advantages over the securities laws. First, plaintiffs do not need to establish scienter, as is the case under Rule 10b-5. Rather, liability is based on a defendant breaching its fiduciary duty. Second, the damages resulting from a breach of a fiduciary duty under ERISA have tended to be quite generous, at least as reflected by the terms on which ERISA lawsuits were settled pre-*Dura Pharmaceuticals*. Given these two important advantages, we comment on each one.

1. The fiduciary breach

Virtually all the ERISA complaints filed to date against the banks and mortgage originators claim that the companies’ executives and administrators who oversaw the retirement plans, and who therefore were allegedly ERISA fiduciaries, knew or should have known that the companies faced substantial losses. They therefore should have disclosed this information to plan participants or should have refused to purchase the 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 will arise with respect to such a claim, besides the obvious issue once again of whether the credit crisis was foreseeable. One issue will be whether the courts will 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. The issue arises, because many of the ERISA complaints allege company executives and administrators had a duty to disclose information about potential losses facing firms to plan participants. At the end of the day, however, if ERISA fiduciaries had a duty to disclose such information to plan participants, such a duty surely would have extended to all investors, plan participants or not. It is simply not tenable or consistent with other aspects of U.S. securities laws to have such a duty extend to only a subset of investors.

A second interesting issue is how to think about what plan participants' situations would have been, but for the purported ERISA violation. Presumably an announcement by an ERISA fiduciary that a firm faced substantial losses would have resulted in a lower stock price. If not, it is difficult to see how the information would have been material. The ERISA fiduciary would not have had a duty to disclose it. But this logic has an interesting implication for damages resulting from such ERISA violations. In such cases, ERISA fiduciaries' failures to disclose adverse information would not have *caused* the losses suffered by 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 eventually came out).

2. Loss Causation in ERISA litigation

Plaintiffs bringing ERISA actions have long relied on the Second Circuit's 1985 opinion in *Bierwirth v. Donovan*, 754 F.2d 1049 to argue 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 mutual fund. This approach can effectively render an 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 market and industry-wide declines are not the “result[]” of a breach of fiduciary duty. Such an argument, given the important implication it might have for the extent of the damages available under ERISA, will be hotly contested. The issues involved in resolving such a debate are quite complex, 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

Many commentators have blamed the rating agencies, principally Moody’s, Standard & Poor’s, and Fitch, for investor losses. This litigation raises some interesting issues. Both Moody’s and McGraw-Hill, the parent company of Standard & Poor’s, are facing Rule 10b-5 class-action lawsuits. 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 challenges 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 prices of the rating

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

agencies to the detriment of their security holders. As to the first issue, if the ratings criteria for MBS and CDOs were publicly available, it will be difficult to maintain that ratings based on the criteria were too “high,” irrespective of how one judges the criteria themselves. A rating arguably has no meaning without reference to the criteria that generated it. Given ratings criteria are generally acknowledged to be broadly known and can be independently assessed by third parties, the source of the fraud is 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 rating agencies’ stock prices. Even if one were to assume, for purposes of discussion, that unduly “high” ratings were generated to ensure repeat business from MBS and CDO issuers (and putting aside the fact that there were very few choices that issuers had for ratings), the mere fact that business practices might be questionable does not establish that a stock price didn’t reflect the true value of the business so conducted.

Some commentators have suggested that rating agencies should be deemed “underwriters” of the MBS and CDO tranches that they rated for purposes of the Securities Act of 1933, and hence 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 the controversy over the quality of the ratings has arisen with respect to CDOs. These securities, however, are issued pursuant to Rule 144A rather than registered. It is therefore legally impossible, by definition, for rating agencies to be deemed Section 11 underwriters. Second, rating agencies are not paid based on the success of offerings, but rather paid for rating services. Along these lines, rating agencies do not purchase rated tranches with a view towards resale. As a result, it is

unlikely that rating agencies will be deemed “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 and losses may be incurred.

Over the next few years, litigation among market participants will serve to identify weak links in this chain. Alternatively, the litigation will serve to highlight where the market may have underappreciated certain risks or failed to anticipate particular circumstances. This is a distinction with which the current litigants will undoubtedly have to struggle.

Figure 1: Mortgage Origination and Mortgage-Backed Securitization

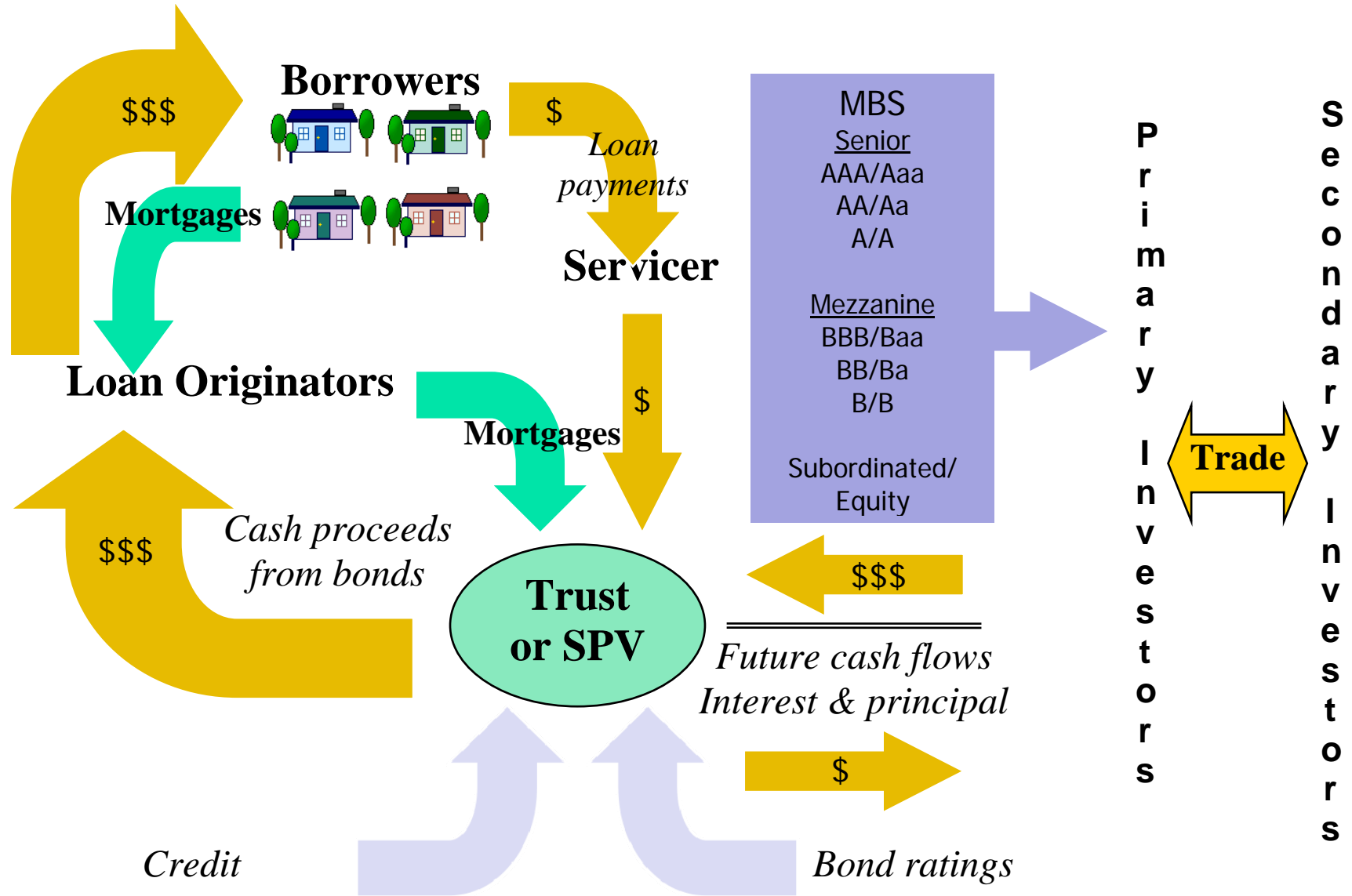
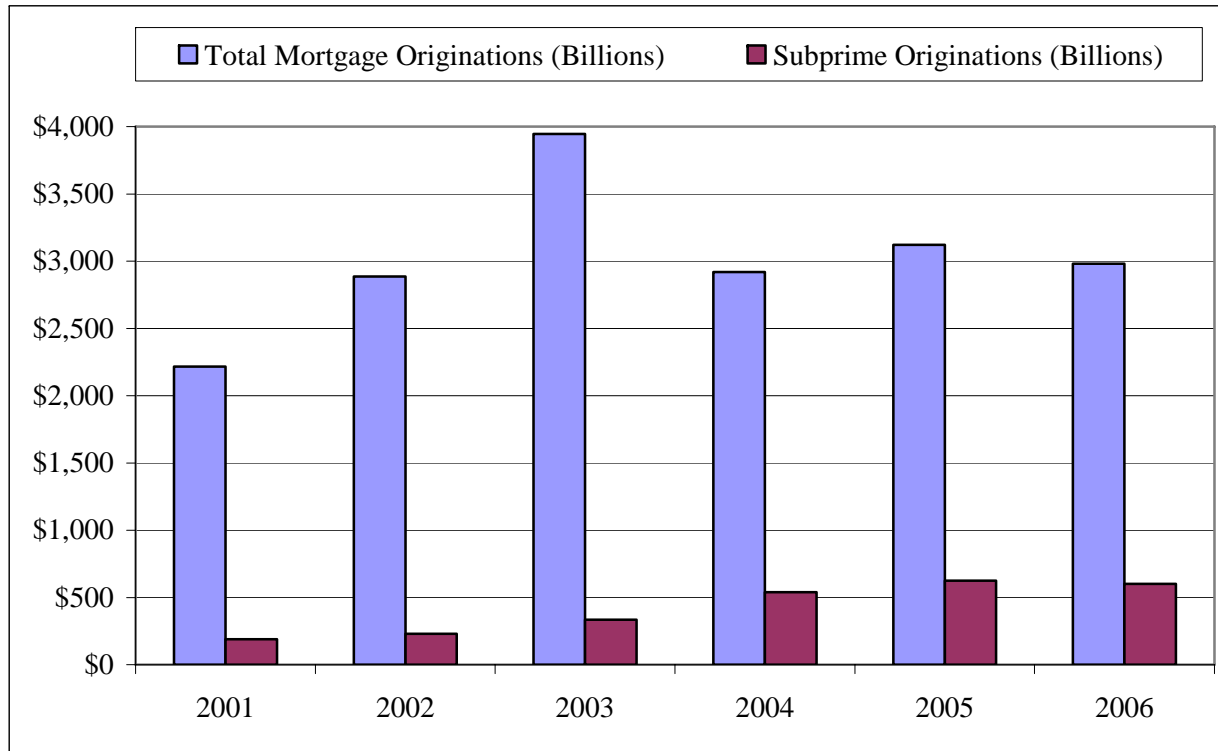


Figure 2. Mortgage Originations, 2001-2006



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

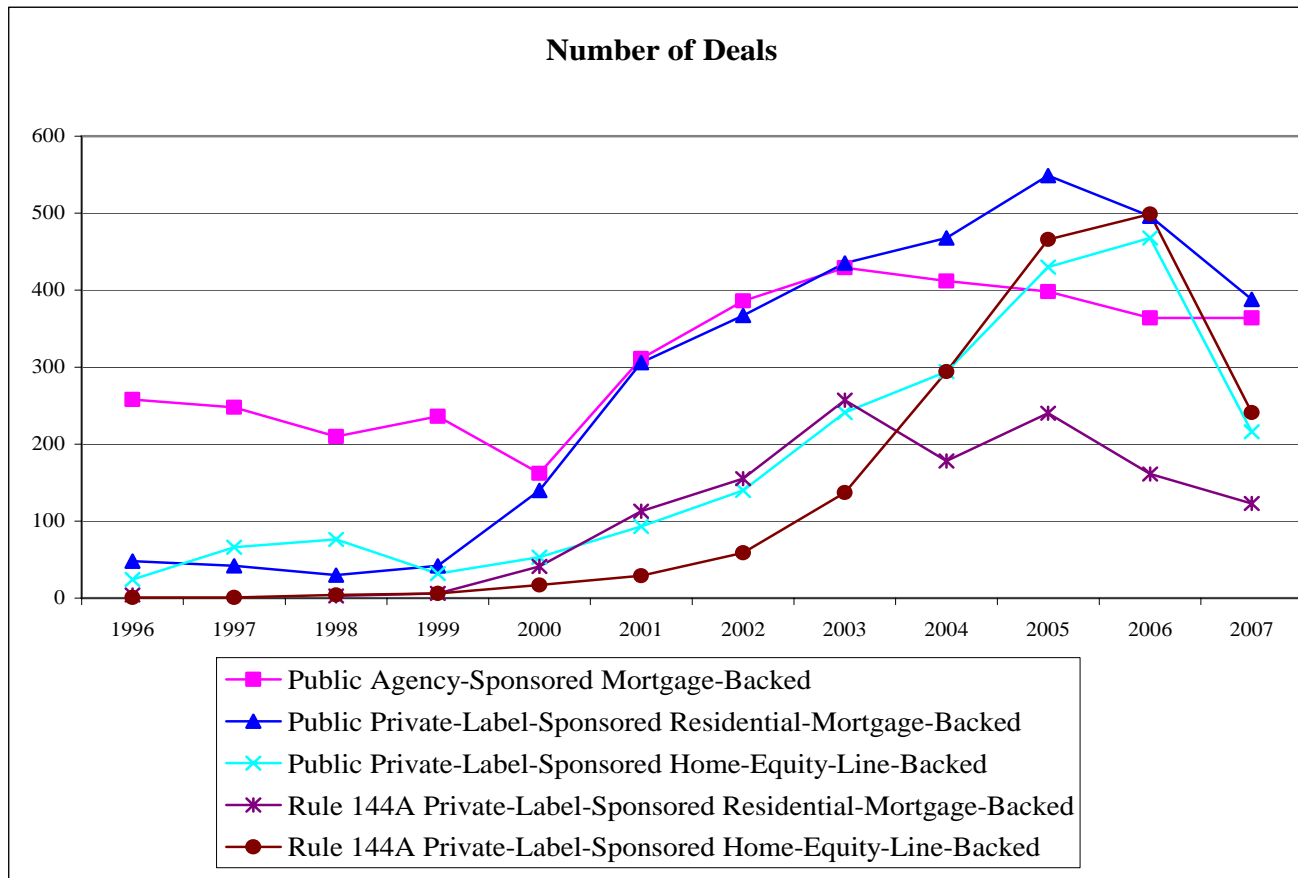
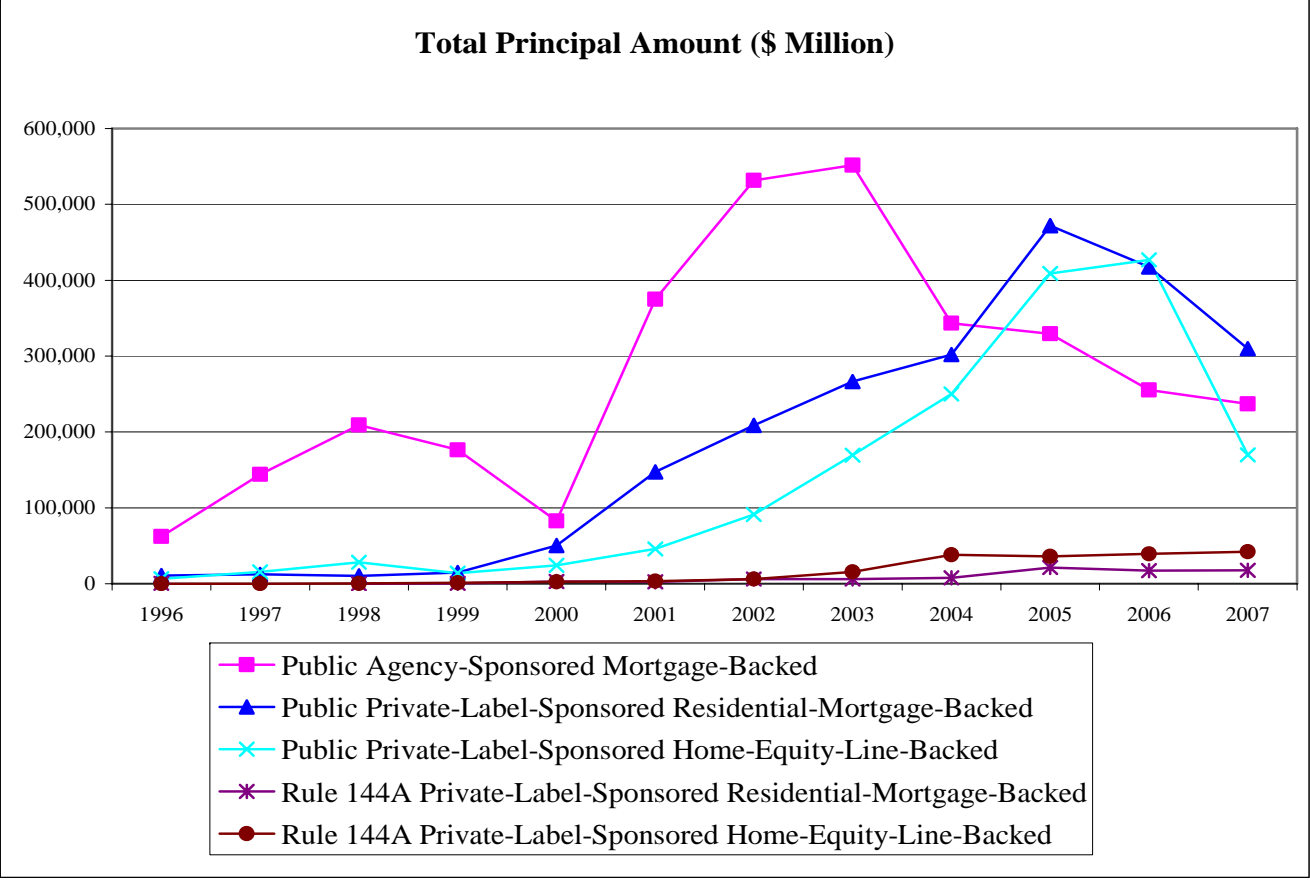
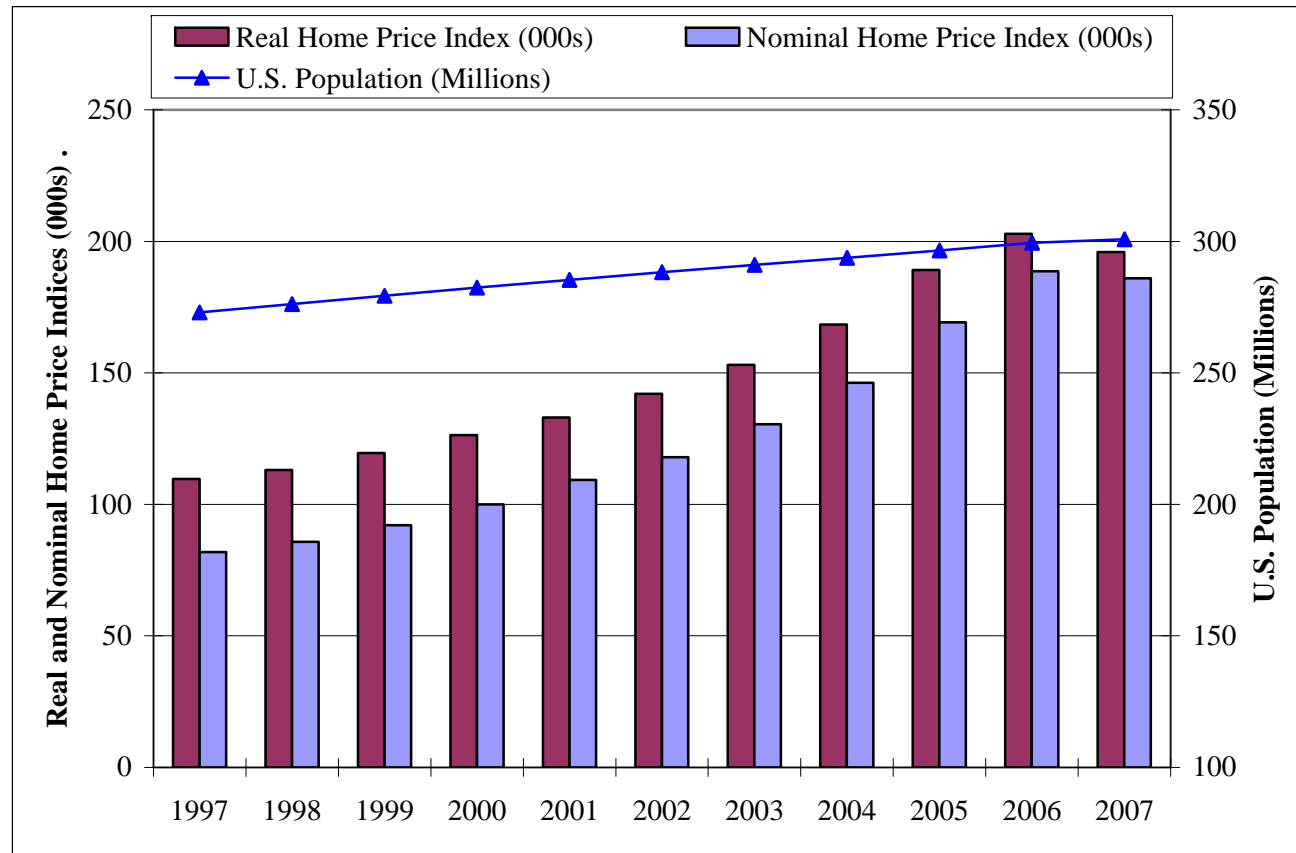


Figure 3. Panel B. Total Principal Amount (\$ Million)



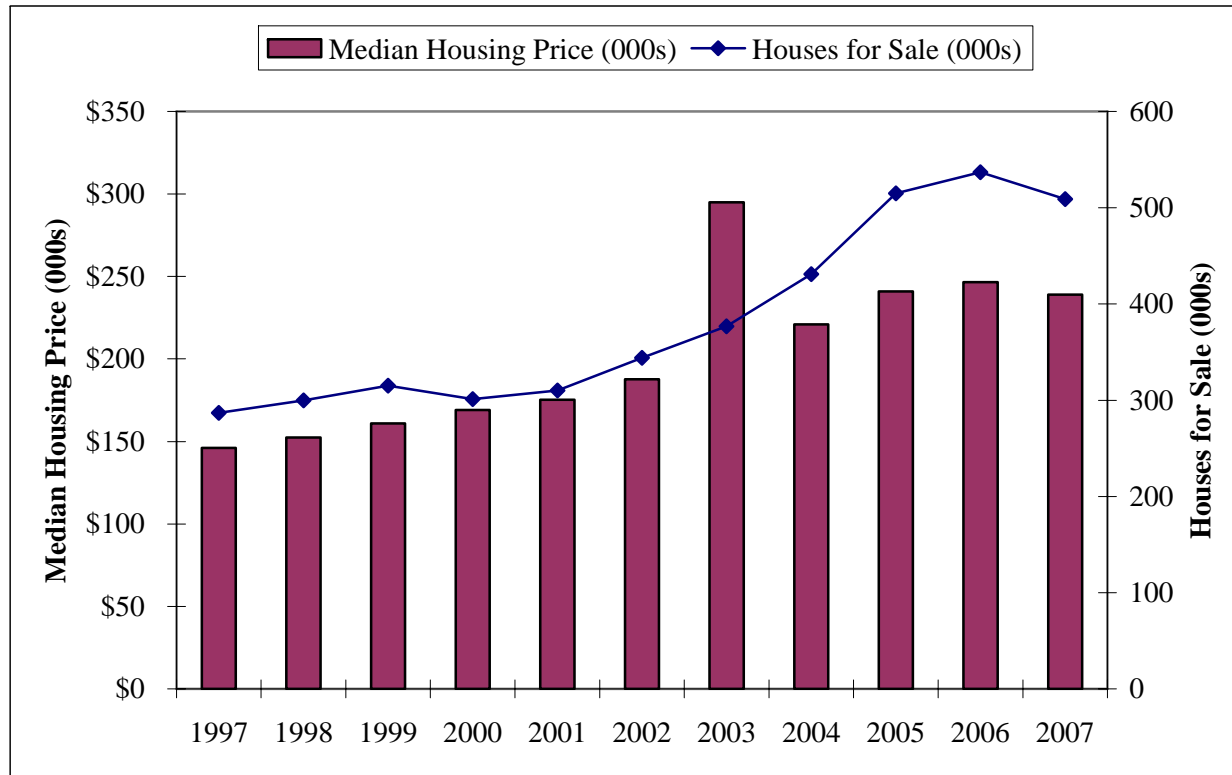
Data Source: SDC Platinum.

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)

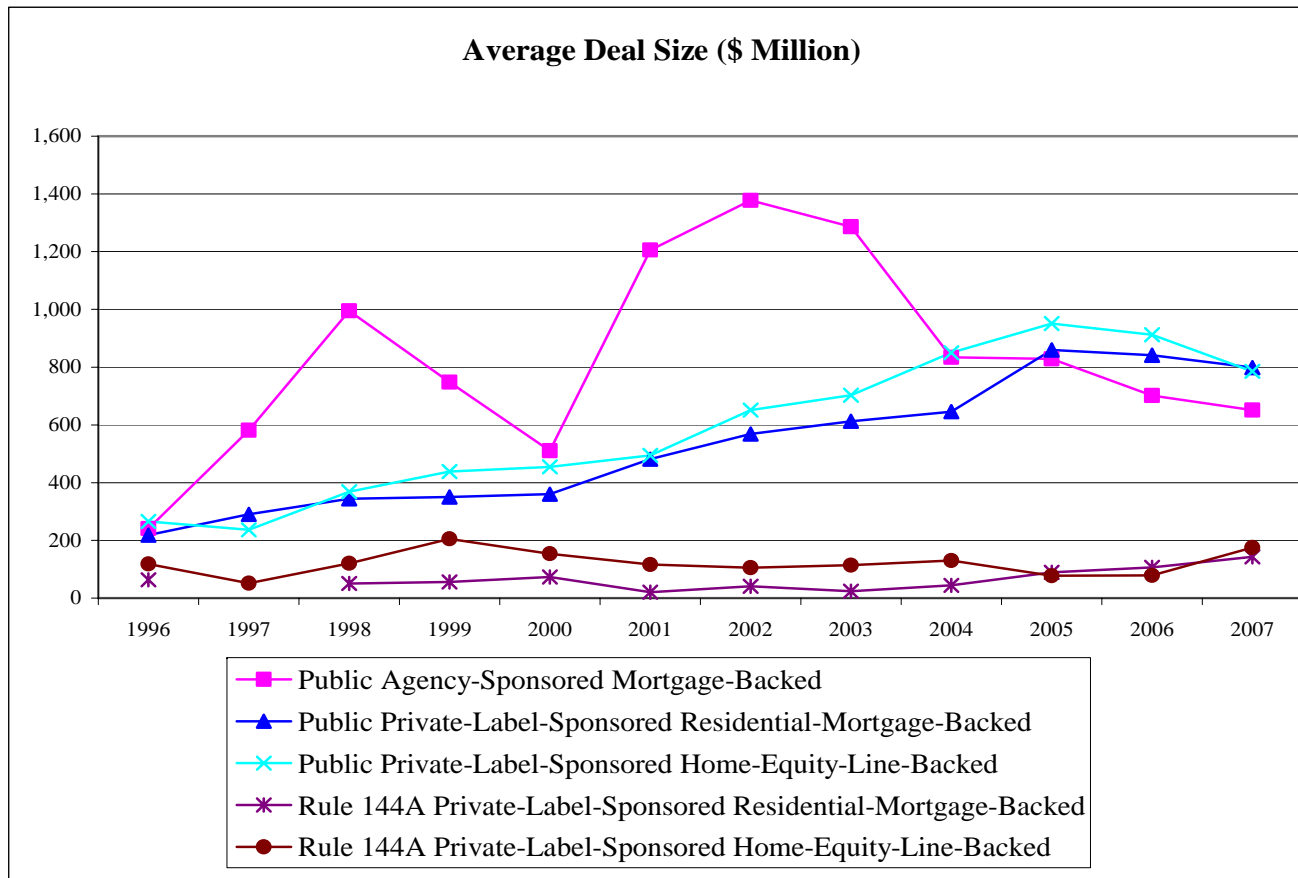


Figure 6. Panel B. Percentage of Deals with Multiple Bookrunners

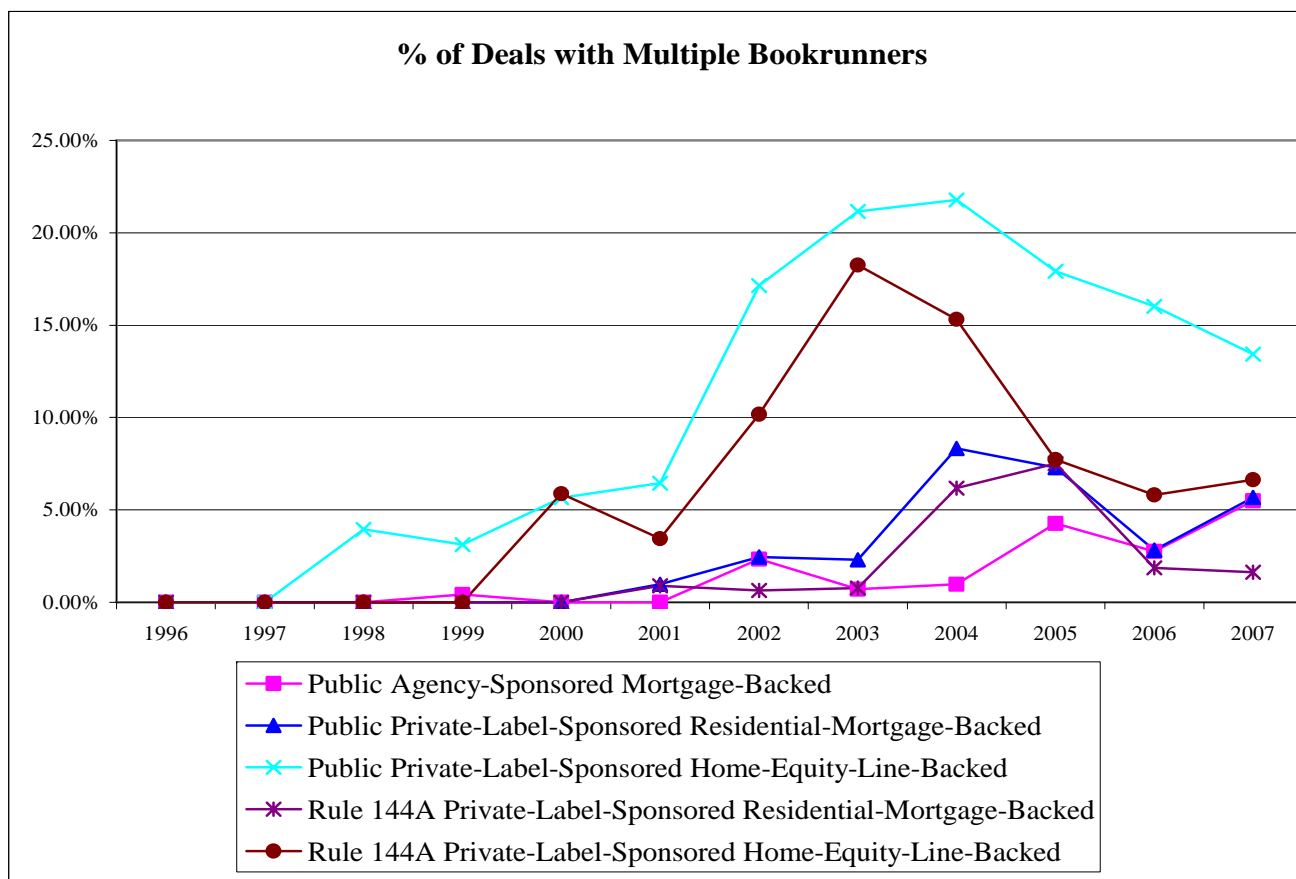


Figure 6. Panel C. Average Number of Bookrunners

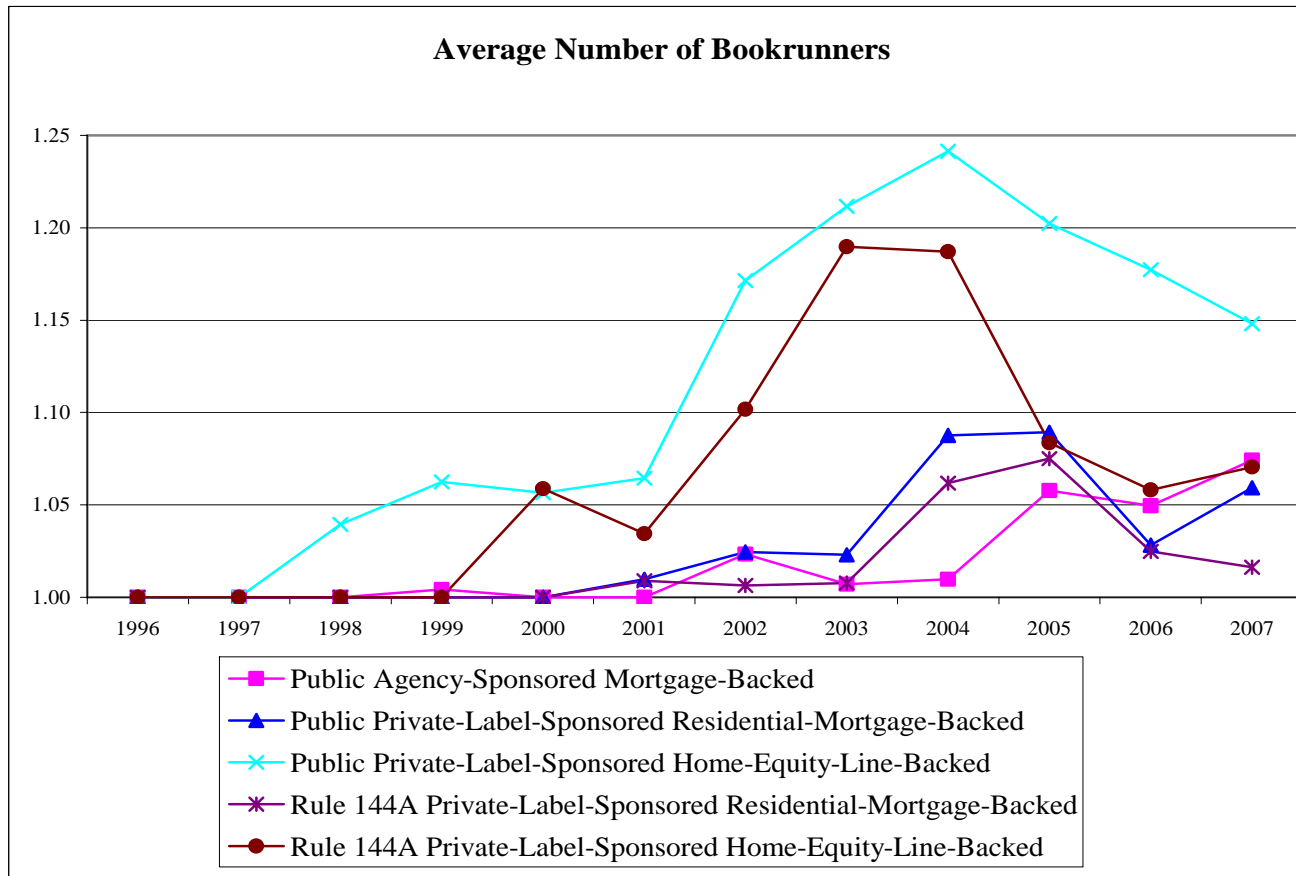


Figure 6. Panel D. Average Number of Tranches

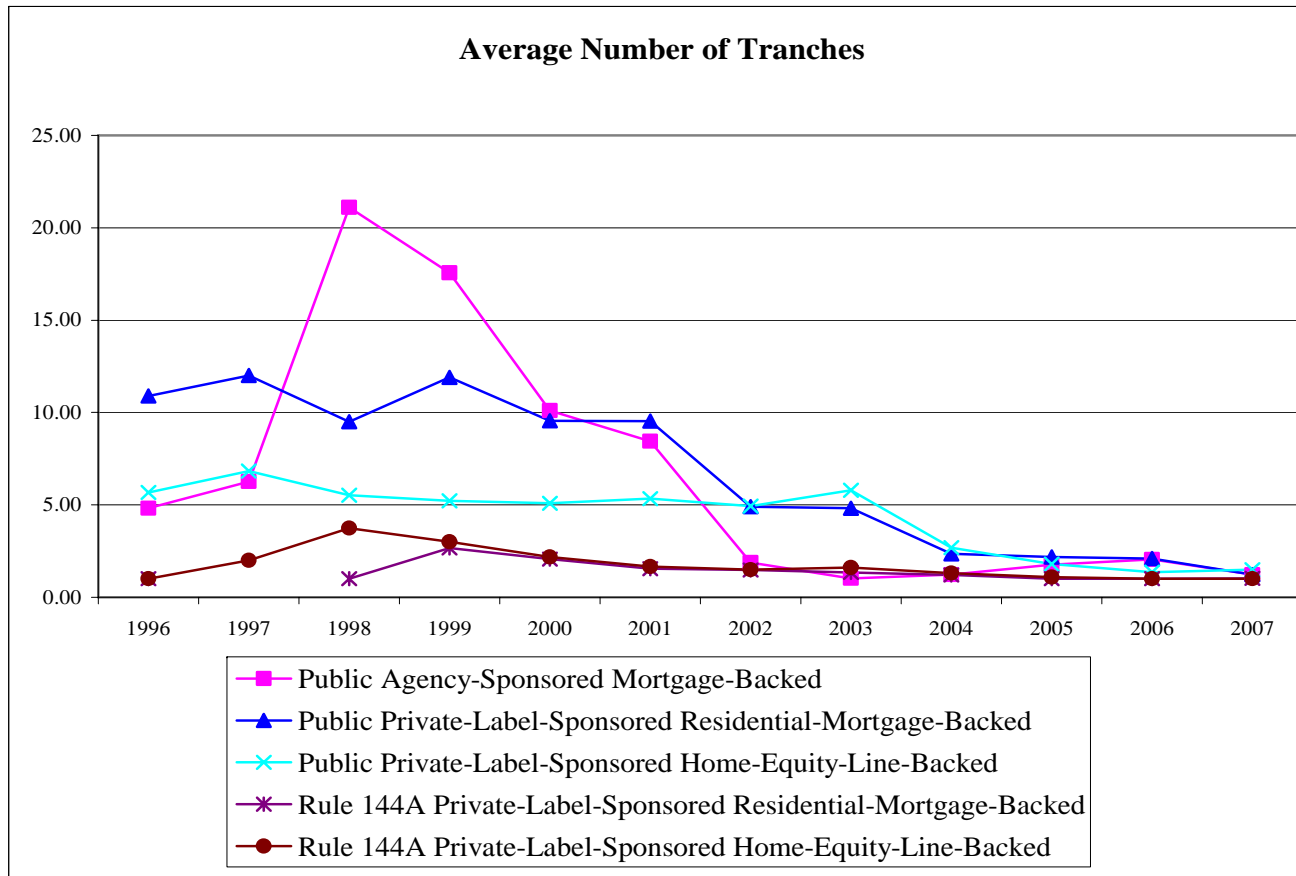
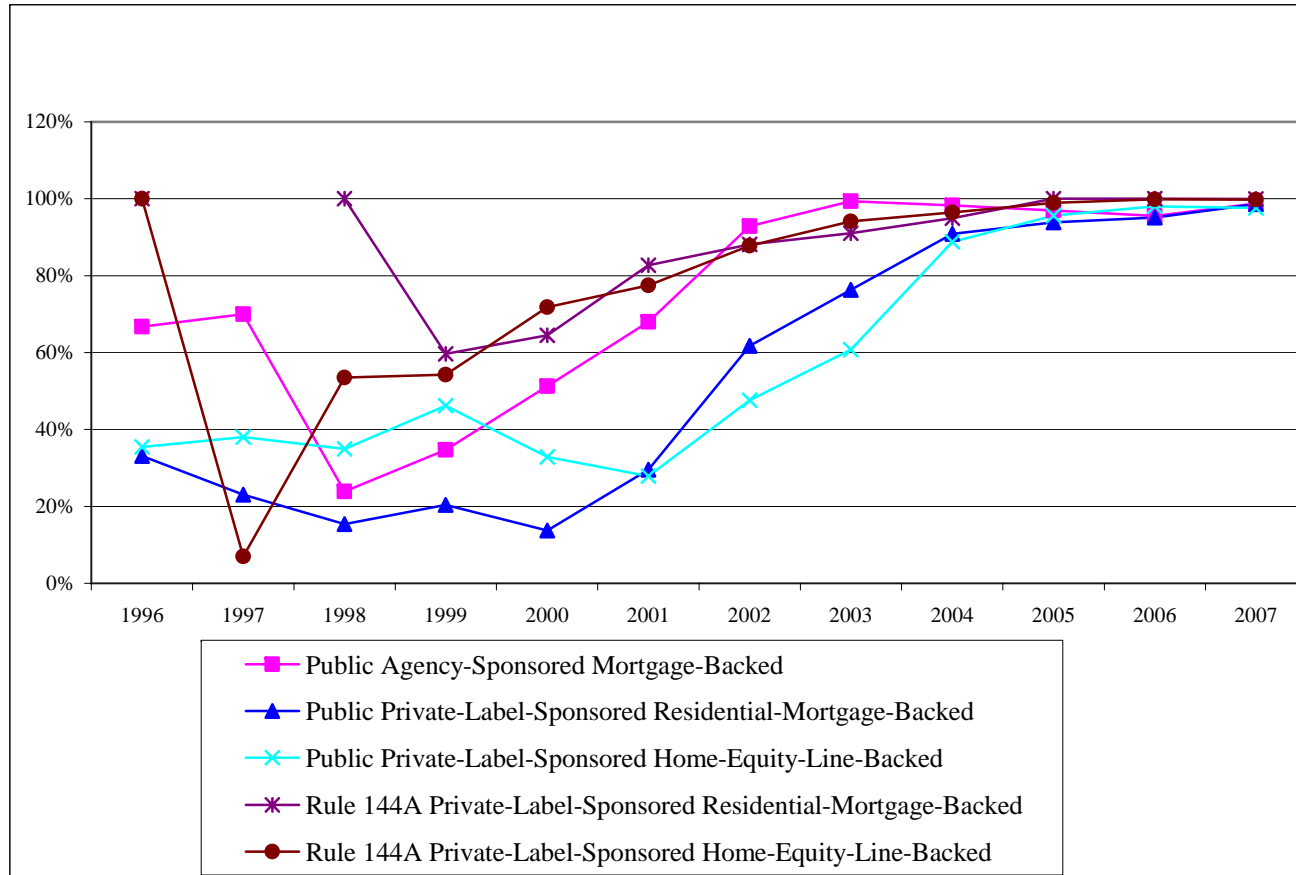


Figure 6. Panel E. Average Percentage of Main Tranche Principal



Data Source: SDC Platinum.

Figure 7: 3-Month USD LIBOR - 3-Month Treasury-Bill



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

Table 1. Summary of Securities Class-action lawsuits as of November 15, 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)	11/10/06 – 11/10/06
ACCREDITED HOME LENDERS	6/25/07	Consolidated various actions against Accredited Home Lenders	10b-5/section 11 & 12(a)(2)	11/1/05 - 3/12/07
AMBAC FINANCIAL GROUP	8/25/08	Consolidated various actions against Ambac Financial Group	10b-5/section 11 & 12(a)(2)	10/25/06 – 4/22/08
AMER. HOME MORT. INVES.	3/19/08	Consolidated various actions against American Home Mortgage Investment	10b-5/section 11 & 12(a)(2)	6/19/05 – 8/6/07
AMER. INTERNAT. GROUP	10/09/08	Carroll v. American International Group, Inc.	Section 11 & 12(a)(2)	12/11/07 – 12/11/07
	5/21/08	Jacksonville Police and Fire Pension Fund v. American International Group, Inc.	10b-5	5/11/07 – 5/9/08
BANKATLANTIC BANCORP	12/12/07	Consolidated various actions against Bankatlantic Bancorp, Inc.	10b-5	11/9/05 - 10/25/07
BANKUNITED FIN. CORP.	9/16/08	Waterford Township Employees Retirement System v. BankUnited Fin. Corp.	10b-5	9/16/08 – 6/18/08
BEAZER HOMES	4/30/07	Miller v. Beazer Homes	ERISA	12/31/05 - 3/29/07
	8/08/07	Consolidated various actions against Beazer Homes	10b-5	1/27/05 – 5/12/08
CANADIAN IMP. BANK OF COMM.	9/19/08	Plumbers/Steamfitters Pension Fund v. Canadian Imperial Bank of Commerce	10b-5	5/31/07 – 5/28/08
CARE INVESTMENT TRUST	9/18/07	Briarwood Investments Inc. et al v. Care Investment Trust Inc.	Section 11	6/22/07 – 6/22/07
CBRE REALTY FINANCE	7/29/08	Philip Hutchinson v. CBRE Realty Finance, Inc.	Section 11 & 12(a)(2)	9/29/06 – 8/06/07
CENTERLINE HOLDING	7/07/08	Consolidated various actions against Centerline Holding Company	10b-5	3/12/07 - 12/28/02
CIT GROUP	7/25/08	Plumbers, Pipefitters, and Apprentices Pension Fund v. CIT Group, Inc.	10b-5	4/18/07 – 3/05/08
CITIGROUP GLOBAL MARKETS	7/9/08	Consolidated various actions against MAT Five LLC	Section 12(a)(2)	12/18/06 – 12/18/06

Firm	Date	Case	Cause of Action	Class Period
CITIGROUP MORT. LOAN TRUST	4/07/08	City of Ann Arbor Retirement System v. Citigroup Mortgage Loan Trust Inc.	Section 11	12/12/06 – 12/12/06
CITIGROUP	8/20/08	Consolidated various actions against Citigroup, Inc.	10b-5	N/A
	11/16/07	Rappold v. Citigroup	ERISA	1/1/07 - present
COAST FINANCIAL HOLDINGS	8/24/07	Consolidated various actions against Coast Financial Holdings	Section 11 & 10b-5	1/21/05 – 1/22/07
COMPUCREDIT CORP.	10/22/08	Waterford Township Employees Retirement System v., et al.	10b-5	11/06/06 – 06/09/08
COUNTRYWIDE FIN. CORP.	1/16/08	Snyder v. Countrywide Financial Corporation	California State Law	
	4/11/08	Consolidated various actions against Countrywide	10b-5/Section 11 & 12(a)(2)	3/12/04 – 3/07/08
	10/30/07	Argent Classic Convertible Arbitrage Fund v. Countrywide Financial Corp.	10b-5	5/16/07 – 11/21/07
	10/12/07	Saratoga Advantage Trust v. Countrywide Financial Corporation	10b-5	4/24/04 - 8/9/07
CREDIT SUISSE GROUP	6/23/08	Cornwell v. Credit Suisse Group	10b-5	2/15/07 – 4/14/08
DOWNEY FINANCIAL CORP.	9/30/08	Consolidated various actions against Downey Financial Corporation	10b-5	10/16/06 – 3/14/08
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
EVERGREEN INVEST. MGMT. CO.	6/23/08	Keefe v. Evergreen Investment Management Co.	Section 11 & 12(a)(2)	6/23/05 – 6/23/08
FCSTONE GROUP	7/16/08	Luman v. Paul G. Anderson	10b-5	4/10/08 – 7/9/08
FEDERAL HOME LOAN MORT	8/15/08	Kuriakose v. Federal Home Loan Mortgage Company	10b-5	11/21/07 – 8/05/08
	9/23/08	Mark v. Goldman Sachs & Co.	Section 12 (a)(2)	11/29/07 – 11/29/07
FED. NAT. MORT. ASSOCIATION	9/8/08	Genovese v. Ashley	10b-5	11/16/07 – 9/5/08
	10/8/08	Schweitzer v. Merrill Lynch, Pierce, Fenner & Smith, Inc.	10b-5	12/11/07 – 9/5/08
	9/16/08	Crisafi v. Merrill Lynch, Pierce, Fenner & Smith Inc.	10b-5	5/13/08 – 9/06/08
	11/10/08	N/A	ERISA	4/17/07 - present

Firm	Date	Case	Cause of Action	Class Period
FIDELITY MGMT&RESEARCH CO.	6/5/08	Zametikin v. Fidelity Management & Research Company	Section 11 & 12(a)(2)	6/5/05 – 6/5/08
FIFTH THIRD BANCORP	6/20/08 8/12/08	The Esche Fund v. Fifth Third Bancorp McGee v. Fifth Third Bancorp	10b-5/Section 11 Section 11 & 12(a)(2)	10/19/07 – 6/17/08 11/26/07 – 6/6/08
FIRST AMERICAN CORP.	6/23/08	Berks County Employees' Retirement Fund v. First American Corporation	10b-5	4/26/06 – 11/6/07
FIRST HOME BUILDERS	10/19/07	Sewell v. First Home Builders	10b-5/Section 12(a)(2)	9/1/03 - 12/31/05
FIRST HORIZON NAT. CORP.	5/09/08	Sims v. First Horizon National Corporation	ERISA	5/01/02 – 4/28/08
FIRST TRUST PORTFOLIOS	9/12/08	Gosselin v. First Trust Portfolios, L.P.	10b-5/section 11 & 12(a)(2)	7/26/05 – 7/7/08
FORTIS	10/22/08	Copeland v. Fortis	10b-5	1/28/08 – 10/6/08
FRANKLIN BANK CORP.	6/6/08	Roucher Trust v. Franklin Bank Corporation	10b-5	10/29/07 – 5/1/08
FREMONT GENERAL CORP	6/12/08 9/21/07 9/19/07 9/4/07 4/24/07 5/29/07 5/25/07 5/15/07 5/15/07	Antencio v. Fremont General Corporation Mathews v. Fremont General Corporation Miller v. Fremont General Corporation Al-Beitawi v. Fremont General Corporation McCoy v. Fremont General Corporation Sullivan v. Fremont General Corporation Salas v. Fremont General Corporation Johannesson v. Fremont General Corporation Anderson v. Fremont General Corporation	10b-5 10b-5 10b-5 10b-5 ERISA ERISA ERISA ERISA ERISA	7/28/05 – 8/10/07 5/9/06 - 2/27/07 5/9/06 - 2/27/07 5/9/06 - 2/27/07 1/1/03 - present 1/1/05 - present 12/31/05 - present 1/1/05 - present 5/9/06 - 3/5/07
GENERAL ELECTRIC CO.	7/30/08	Coyne v. General Electric Company	10b-5	3/12/08 – 4/10/08
HARBORVIEW MORT. LOAN TRT.	6/2/08	New Jersey Carpenters Vacation Fund v. HarborView Mortgage Trust	Section 11 & 12(a)(2)	4/26/06 – 10/3/06
HOME EQUITY MORT. TRT. 2006-5	6/23/08	New Jersey Carpenters Vacation Fund v. Home Equity Mortgage Trust	Section 11 & 12(a)(2)	10/30/06 – 10/30/06
HOMEBANC CORP.	11/30/07 1/4/08	Kadel v. Homebanc Corp Harbour v. Flood	10b-5/Section 11 & 12(a)(2) 10b-5	3/7/06 - 8/3/07 9/26/05 - 8/3/07

Firm	Date	Case	Cause of Action	Class Period
HOME BANK CORP.	12/17/07	Clewley v. Flood	10b-5	9/26/05 - 8/3/07
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
	2/25/08	Cedarleaf and Moening v. Huntington Bancshares Inc.	ERISA	7/01/07 - present
	5/7/08	Tom v. Huntington Bancshares Inc.	Section 11 & 12(a)(2)	11/16/07 - 5/7/08
IMPAC MORTGAGE HOLD	10/27/08	Consolidated various claims against Impac Mortgage Holdings Inc	10b-5	5/10/06 - 8/15/07
	12/17/07	Page v. Impac Mortgage Holdings, Inc.	ERISA	N/A
INDYMAC FINANCIAL INC.	6/6/08	Consolidated various against IndyMac Bancorp Inc.	10b-5	1/26/06 - 1/25/07
	6/11/08	Folsom v. IndyMac Bancorp, Inc.	10b-5	6/16/07 - 5/12/08
ISTAR FINANCIAL INC.	4/14/08	Citiline Holdings Inc. v. iStar Financial Inc.	Section 11 & 12(a)(2)	12/13/07 - 12/13/07
JP MORGAN ACCEPTANCE CORP.	3/26/08	Plumbers'/Pipefitters' Trust v. JP Morgan Acceptance Corporation	Section 11	1/1/06 - 3/31/07
KKR FINANCIAL HOLDINGS	8/7/08	Charter Township of Clinton Retirement v. KKR Financial Holdings, LLC	Section 11	5/4/07 - 5/4/07
LEHMAN BROTHERS HOLD.	2/22/08	Reese v. O'Meara	10b-5	9/13/06 - 7/30/07
	9/24/08	Fogel Capital Management v. Fuld	Section 11	2/5/08 - 2/5/08
LEVITT CORP.	9/3/08	Consolidated various claims against Levitt Corporation	10b-5	1/31/07 - 8/14/07
LUMINENT MORTGAGE CAP	2/15/08	Consolidated various claims against Luminent Mortgage	10b-5	6/25/07 - 8/6/07
MBIA	10/17/08	Consolidated various claims against MBIA Inc	10b-5	7/02/07 - 1/9/08
MERRILL LYNCH	5/21/08	Consolidated various claims against Merrill Lynch & Co.	10b-5/Section 11 & 12(a)(2)	2/26/07 - 10/23/07
	10/22/08	Louisiana Sheriffs' Pension Fund v. Merrill Lynch & Co.	Section 11 & 12(a)(2)	3/21/08 - 3/21/08
	11/13/07	Estey v. Merrill Lynch	ERISA	2/26/07 - present
MGIC INVESTMENT CORP.	5/12/08	Wayne County Employees' Retirement System v. MGIC Investment Corp.	10b-5	2/06/07 - 2/12/08

Firm	Date	Case	Cause of Action	Class Period
MONEYGRAM INTERNATIONAL	10/3/08	Consolidated various claims against MoneyGram International Inc.	10b-5	1/24/07 – 1/14/08
MOODY'S CORP.	6/27/08	Consolidated various claims against Moody's Corp.	10b-5	2/23/06 – 10/24/07
MORGAN ASSET MGMT.	2/5/08	Hartman v. Morgan Asset Management Inc.	Section 11 & 12(a)(2)	12/06/06 – 11/07/07
	12/21/07	Willis v. Morgan Asset Management Inc.	Section 11 & 12(a)(2)	N/A
	12/6/07	Atkinson v. Morgan Asset Management Inc.	Section 11 & 12(a)(2)	12/06/04 – 10/03/07
	3/31/08	Hamby v. Morgan Asset Management Inc.	ERISA	11/04 /06 – 1/30/08
	4/04/08	DeJoseph v. Morgan Asset Management Inc.	10b-5	12/08/06 – 12/05/07
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
MUNICIPAL MORT. & EQUITY	1/30/08	Geimis v. Municipl Mortgage & Equity, LLC	10b-5	1/30/03 – 1/28/08
NATIONAL CITY CORP	1/24/08	Casey v. National City Corporation	10b-5	4/30/07 - 1/2/08
	5/20/08	Parker and Enns v. National City Corporation	Section 11 & 12(a)(2)	12/1/06 – 12/1/06
	1/10/08	N/A	ERISA	N/A
NETBANK INC	9/19/07	Adcock v. Netbank, Inc. et al	10b-5	5/1/06 - 9/17/07
NEW CENTURY FINANCIAL	3/24/08	Consolidated various claims against New Century Financial	10b-5/Section 11 & 12(a)(2)	5/05/05 - 3/13/07
NEXTWAVE WIRELESS	9/16/08	Lifschitz v. NextWave Wireless	10b-5	3/30/07 – 8/07/08
NOMURA ASSET ACCT. CORP.	6/30/08	Plumbers' Union Pension Fund v. Nomura Asset Acceptance Corporation	Section 11 & 12(a)(2)	7/1/05 – 11/30/06
NOVASTAR FINANCIAL	10/19/07	Novastar Financial Securities Litigation	10b-5	5/4/06 - 2/20/07
OPTEUM INC	9/29/08	Consolidated various complaints against Opteum	10b-5/section 11 & 12(a)(2)	11/3/05 - 5/10/07
PERINI CORPORATION	8/20/08	Isham v. Perini Corporation	10b-5	11/2/06 – 1/17/08

Firm	Date	Case	Cause of Action	Class Period
PFF BANCORP	8/12/08	Perez v. PFF Bancorp	ERISA	N/A
PREMIUM CONNECTIONS	5/5/08	Aldridge v. Premium Connections, Inc.	10b-5/Section 12(a)(2)	N/A
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
REGIONS FINANCIAL CORP:	3/14/08	Williams v. Regions Financial Corporation	ERISA	11/04/06 - present
RAIT FINANCIAL TRUST	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
RESIDENTIAL ACCREDIT LOANS	10/14/08	New Jersey Carpenters Health Fund v. RALI Series 2006-QO1 Trust	Section 11 & 12(a)(2)	1/26/06 – 2/26/07
SALLIE MAE	1/31/08	Burch v. SLM Corporation ("Sallie Mae")	10b-5	1/18/07-1/3/08
SECURITY CAPITAL ASSUR.	4/24/08	Consolidated various claims against Security Capital Assurance Ltd.	10b-5/Section 11 & 12(a)(2)	3/15/07 - 3/17/08
SOCIETE GENERALE	10/17/08	Various consolidated claims against Societe Generale	10b-5	8/01/05 – 1/25/08
SOVEREIGN BANCORP	4/28/08	Wentworth v. Sovereign Bancorp, Inc.	ERISA	1/1/05 – 4/28/08
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
	9/11/08	Plumbers and Steamfitters Union Fund v. State Street Corporation	Section 11 & 12(a)(2)	9/11/05 – 9/11/08
	6/30/08	Yu v. State Street Corporation	Section 11 & 12(a)(2)	6/30/05 – 6/30/08
SWISS REINSURANCE COMPANY	9/10/08	Plumbers Union Local Pension Fund v. Swiss Reinsurance Company	10b-5	3/1/07 – 11/19/07
TARRAGON CORPORATION	9/11/07	Judelson v. Tarragon	10b-5	1/5/05 - 8/9/07
THE BEAR STEARNS COMPANIES	3/17/08	Eastside Holdings Inc. v. The Bear Stearns Companies Inc.	10b-5	12/14/06 – 3/14/08

Firm	Date	Case	Cause of Action	Class Period
THE BEAR STEARNS COMPANIES	3/17/08	Howard v. The Bear Stearns Companies Inc.	ERISA	12/14/06 – 3/14/08
	3/18/08	Becherv. The Bear Stearns Companies Inc.	10b-5	12/14/06 – 3/14/08
	3/25/08	Greek Orthodox Archdiocese Foundation v. The Bear Stearns Companies Inc.	10b-5	3/12/06 – 3/14/08
	6/2/08	Bransbourg v. The Bear Stearns Companies Inc.	10b-5	12/14/06 – 3/14/08
THE BLACKSTONE GROUP	10/27/08	Various consolidated actions against The Blackstone Group	Section 11 & 12(a)(2)	6/25/07 – 6/25/07
THE CHARLES SCHWAB CORP.	10/2/08	Various consolidated actions against The Charles Schwab Corporation	Section 11 & 12(a)(2)	3/17/05 – 3/17/08
THE FIRST MARBLEHEAD CORP.	4/10/08	Keller v. The First Marblehead Corporation	10b-5	8/10/06 – 4/7/08
	4/18/08	Byrne v. The First Marblehead Corporation	10b-5	8/10/06 – 4/7/08
	5/12/08	Largent v. The First Marblehead Corporation	10b-5	8/10/06 – 4/7/08
THE MCGRAW-HILL COMPANIES	8/17/07	Reese v. Bahash	10b-5	7/25/06 - 8/15/07
THE PMI GROUP	9/04/08	Various consolidated complaints against The PMI Group, Inc.	10b-5	11/02/06 – 3/03/08
THE RESERVE PRIMARY FUND	9/18/08	Miller v. The Primary Fund	Section 11 & 12(a)(2)	9/28/07 – 9/16/08
	11/07/08	Pogozelki v. The Primary Fund	10b-5/Section 11 & 12(a)(2)	9/28/07 – 9/16/08
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
UBS FINANCIAL SERVICES	11/06/08	Gott v. UBS Financial Services Inc.	Section 11 & 12(a)(2)	5/30/06 – 9/18/08
WACHOVIA CORP.	6/06/08	Bristol County Retirement System v. Wachovia Corporation	10b-5	5/08/06 – 4/11/08

Firm	Date	Case	Cause of Action	Class Period
WACHOVIA CORP.	7/07/08	Lipetz v. Wachovia Corporation	10b-5	5/08/06 – 4/11/08
	2/29/08	Miller v. Wachovia Corporation	Section 11 & 12(a)(2)	5/01/07 – 5/01/07
	6/09/08	N/A	ERISA	1/01/06 - present
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
WSB FINANCIAL GROUP	4/11/08	Consolidated various complaints against WSB Financial Group	Section 11 & 12(a)(2)	12/21/06 – 12/21/06

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 Bear Stearns & Co., Inc.	120	10.80%	\$100,109	\$8,200
2	Morgan Stanley	128	9.90%	\$91,696	\$3,200
3	JP Morgan	92	8.20%	\$75,627	\$14,400
4	Credit Suisse	95	7.90%	\$73,214	\$14,300
5	Banc of America Securities LLC	109	7.50%	\$69,503	\$10,400
6	Deutsche Bank AG	101	6.80%	\$62,776	\$21,200
7	Royal Bank of Scotland Group	85	6.20%	\$57,337	\$10,600
8	Merrill Lynch Goldman Sachs & Co.	74	5.80%	\$53,352	\$14,600
9	Citigroup	81	5.20%	\$48,407	\$51,800
10	UBS	60	5.10%	\$47,696	\$3,800
11		95	5.00%	\$46,754	\$55,100
12		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	Market	2007	Market
	Issuance	Share	Issuance	Share
	(\$mil)	(%)	(\$mil)	(%)
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	<u>1,473.1</u>	<u>3.0</u>	<u>651.9</u>	<u>1.7</u>
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, 2006–1st Half of 2008

	1H-2008	No.	Market	2007	No.	Market	2006	Market	
	Issuance	of	Share	Issuance	of	Share	Issuance	No. of	Share
	(\$mil)	Deals	(%)	(\$mil)	Deals	(%)	(\$mil)	Deals	(%)
Bank of New York	15,493.6	25	30.9	96,562.5	162	23.5	66,162.5	155	13.8
Deutsche Bank	7,801.1	27	15.5	61,313.1	126	14.9	50,486.7	136	10.5
LaSalle Bank	7,516.5	6	15.0	99,474.9	127	24.2	104,469.6	164	21.7
State Street	3,162.0	6	6.3	3,330.0	4	0.8	0.0	0	0.0
Ahorro y Titulizacion	2,493.8	1	5.0						
Citibank	2,041.5	4	4.1	10,590.7	19	2.6	2,986.1	6	0.6
Stichting Security	1,895.1	3	3.8						
Titulizacion de Activos	1,577.9	1	3.1	3,108.4	2	0.8	0.0	0	0.0
Mizuho Trust	941.0	1	1.9	139.9	1	0.0	758.9	1	0.2
Fortis Bank	752.3	1	1.5						
HSBC Bank	716.2	4	1.4	7,328.4	33	1.8	6,367.1	30	1.3
BNP Paribas	602.3	1	1.2	4,653.3	11	1.1	4,897.6	9	1.0
Deloitte & Touche	413.2	2	0.8	921.8	2	0.2	642.4	2	0.1
U.S. Bank	296.4	2	0.6	16,883.3	41	4.1	28,149.9	65	5.9
Wells Fargo				61,613.6	88	15.0	61,997.5	77	12.9
Investors Bank & Trust				5,739.7	9	1.4	7,709.9	15	1.6
Ernst & Young				2,728.1	1	0.7	1,147.5	2	0.2
Law Debenture Trust				1,809.5	12	0.4	7,525.6	43	1.6
Wilmington Trust				1,718.4	4	0.4	0.0	0	0.0
GestiCaixa				1,523.1	1	0.4	384.2	1	0.1
Europea de Titulizacion				1,194.8	1	0.3	0.0	0	0.0
First Commercial Bank				309.3	1	0.1	432.0	1	0.1
Capita IRG Trustees				303.5	1	0.1	316.7	1	0.1
Bank of Nova Scotia				125.0	1	0.0	0.0	0	0.0
Others	<u>3,762.6</u>	<u>15</u>	<u>7.5</u>	<u>29,448.9</u>	<u>58</u>	<u>7.2</u>	<u>136,142.7</u>	<u>350</u>	<u>28.3</u>
Total	50,196.7	100	100.0	410,820.2	705	100.0	480,576.9	1,058	100.0

Source: *Asset-Backed Weekly Update* (November 15, 2008).

Table 6. CDO Liquidations as of May 30, 2008

Name	EOD Date	Collateral Manager	Original Balance (\$mil)	Type	Vintage
<u>Liquidated</u>					
Adams Square Funding I	10/18/07	Credit Suisse Alternative Capital	500	Sub Mezz	2006
Ansley Park ABS CDO	11/6/07	SunTrust Capital Markets	600	Sub Mezz	2006
ARCA Funding 2006-II	2/21/08	TCW Asset Management	700	Sub Mezz	2006
BFC Silverton CDO	11/13/07	Braddock Financial Corporation	750	Sub Mezz	2006
Carina CDO	10/26/07	State Street Global Advisors	1,500	Sub Mezz	2006
Corona Borealis CDO	2/1/08	New York Life Investment Mgmt.	1,500	Sub Mezz	2007
Diogenes CDO III	12/11/07	State Street Global Advisors	800		2007
Durant CDO 2007-1	1/23/08	SCM Advisors	400		2007
Hamilton Gardens CDO II	3/5/08	Rabobank International	400		2007
IMAC CDO 2007-2	1/18/08	Ivy Asset Management Corp.	500	Mezz	2007
Kefton CDO I	2/12/08	Terwin Money Management	670	Sub Mezz	2006
Markov CDO I	11/16/07	State Street Global Advisors	2,000	Mid	2007
Mystic Point CDO	12/11/07	Fortis Investment Management	500	Sub Mezz	2006
Pampelonne CDO I	11/9/07	Vertical Capital	1,250		2006
Pampelonne CDO II	11/9/07	Vertical Capital	2,000		2007
PASA Funding 2007	2/22/08	AllianceBernstein	3,000		2007
TABS 2006-5	11/1/07	Tricadia CDO Management	1,500	Sub Mezz	2006
TABS 2007-7	11/9/07	Tricadia CDO Management	2,250	CDO^2	2007
Vertical ABS CDO 2007-1	10/19/07	Vertical Capital	1,500	Sub Mezz	2007
Visage CDO 2006-2	12/24/07	TCW Asset Management	400	Sub HG	2007
<u>Notice of Liquidation</u>					
6th Avenue Funding 2006-1	2/29/08	6th Avenue Investment Mgmt. Co.	825	Sub HG	2006
ACA ABS 2007-2	10/18/07	ACA Management	750	Sub Mezz	2007
Brooklyn SF CDO	2/25/08	Deutsche Investment Mgmt.	1,000	Sub HG	2006
Camber 6	3/3/08	Cambridge Place Collateral Mgmt.	750	Sub Mezz	2006
Careel Bay CDO	2/11/08	Allegiance Advisors	750	Sub Mezz	2007
Cherry Creek CDO I	4/15/08	Surge Capital Management	300	Sub Mezz	2006
Draco 2007-1	2/13/08	Declaration Mgmt. & Research	2,000	Mezz	2007
Gulf Stream-Atl. CDO 2007-1	2/7/08	Gulf Stream Structured Advisors	500	Sub Mezz	2007
Halyard CDO I	2/8/08	Solent Capital	750	Sub Mezz	2006
Hartshorne CDO I	11/9/07	ZAIS Group	1,000	Mezz	2007
IXIS ABS CDO 2	2/1/08	IXIS Securities North America	502	Sub Mezz	2006
Kleros Real Estate CDO III	2/5/08	Strategos Capital Management	1,000	Sub Mid	2006
Lancer Funding II	2/5/08	ACA Management	1,000		2007
Neo CDO 2007-1	11/16/07	Harding Advisory	300	Mezz	2007

Octans I CDO	12/18/07	Harding Advisory	1,500	Sub Mezz	2006
Timberwolf I	4/3/08	Greywolf Capital Management	1,000	Sub Mezz	2007
Tricadia CDO 2007-8	3/10/08	Tricadia CDO Management	501		2007
Visage CDO 2006-1	11/20/07	TCW Asset Management	400	Sub Mezz	2006

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ACA ABS 2006-1	3/5/08	ACA Management	750	Sub Mezz	2006
ACA ABS 2006-2	11/5/07	ACA Management	750	Sub Mezz	2006
Armitage ABS CDO	12/4/07	Vanderbilt Capital Advisors	3,000	Sub HG	2007
Auriga CDO	2/13/08	250 Capital	1,500	Sub Mezz	2006
Bernoulli High Grade CDO II	3/4/08	Babcock & Brown Securities	1,500		2007
Bonifacius CDO	1/24/08	Collineo Asset Management	2,500		2007
Broderick CDO 2006-2	2/27/08	Seneca Capital Management	1,600	Sub Mid	2006
Broderick CDO 2007-3	11/14/07	Seneca Capital Management	1,500	Sub HG	2007
Brookville CDO I	2/19/08	Petra Capital Management	500		2007
Cairn Mezz ABS CDO II	2/4/08	Cairn Financial Products	750	Sub Mezz	2006
Cairn Mezz ABS CDO III	4/25/08	Cairn Financial Products	1,000	Sub Mezz	2007
Cairn Mezz ABS CDO IV	2/27/08	Cairn Financial Products	500	Mezz	2007
Camber 7	3/12/08	Cambridge Place Collateral Mgmt.	900	Sub Mezz	2007
Cetus ABS CDO 2006-1	4/10/08	GSC Partners	1,000	Sub Mezz	2006
Cetus ABS CDO 2006-2	3/12/08	GSC Partners	1,000	Sub Mezz	2006
Cetus ABS CDO 2006-3	12/7/07	GSC Partners	1,250	Sub Mezz	2006
Cetus ABS CDO 2006-4	11/5/07	GSC Partners	1,500	Sub Mezz	2006
Cherry Creek CDO II	11/14/07	Surge Capital Management	500	Sub Mezz	2007
Diversey Harbor ABS CDO	12/27/07	Vanderbilt Capital Advisors	750	Sub HG	2006
Duke Funding XII	3/28/08	Duke Funding Management	750	Sub Mezz	2006
E*Trade ABS CDO VI	12/17/07	E*Trade Global Asset Management	750	Mezz	2007
FAB US 2006-1	4/2/08	Gulf International Bank (UK)	3,000		2006
Faxtor HG 2007-1	2/28/08	Faxtor Securities B.V.	1,500		2007
Fort Denison Funding	12/13/07	Basis Capital Securitisation	1,500	Sub Mezz	2007
Fourth Street Funding	3/12/08	NIR Capital Management	2,500		2007
G Square Finance 2006-2	5/6/08	Wharton Asset Mgmt. Bermuda	1,600	Sub Mid	2006
GSC ABS CDO 2006-3g	2/1/08	GSC Partners	1,500	Sub Mid	2007
GSC ABS CDO 2006-4u	10/31/07	GSC Partners	500	Sub Mezz	2006
SC CDO 2007-1r	11/5/07	GSC Partners	750	Sub Mezz	2007
Highridge ABS CDO I	11/27/07	ZS Structured Credit Capital Mgmt.	1,000	Sub HG	2007
Highridge ABS CDO II	4/3/08	ZS Structured Credit Capital Mgmt.	500		2007
Independence V CDO	2/29/08	Declaration Mgmt. & Research	900	Sub Mezz	2004
Independence VII CDO	4/9/08	Declaration Mgmt. & Research	1,000	Sub Mezz	2006
Ivy Lane CDO	3/26/08	Princeton Advisory Group	1,000	Sub Mezz	2006
Jupiter High Grade CDO V	11/2/07	Harding Advisory	1,250	HG	2007
Jupiter High-Grade CDO VII	11/30/07	Harding Advisory	1,500		2007
Lacerta ABS CDO 2006-1	2/7/08	Unknown	500	Sub Mezz	2006

Libra CDO	4/30/08	Lehman Brothers Asset Mgmt.	2,500	Sub Mezz	2006
Millstone IV CDO	11/30/07	Church Tavern Advisors	2,250	HG	2007
MKP CBO VI	11/15/07	MKP Capital Management	420	Sub Mezz	2006
Montrose Harbor CDO I	11/29/07	Vanderbilt Capital Advisors	400	Sub Mezz	2006
Mugello ABS CDO 2006-1	2/6/08	Unknown	1,250		2006
Neptune CDO IV	1/4/08	Chotin Fund Management	500	Sub Mezz	2007
Nordic Valley 2007-1 CDO	12/18/07	250 Capital	500	Sub Mezz	2007
Norma CDO I	3/10/08	NIR Capital Management	1,000	Sub Mezz	2007
NovaStar ABS CDO I	2/4/08	NovaStar Asset Management Co.	1,600	Sub Mezz	2007
Octans III CDO	12/4/07	Harding Advisory	750		2006
Orion 2006-2	11/6/07	NIBC Credit Management	750	Mezz	2006
Palmer ABS CDO 2007-1	3/6/08	GSC Partners	1,500	HG	2007
Pinnacle Peak CDO I	1/17/08	Koch Global Capital	1,000		2007
Pinnacle Point Funding II	12/13/07	Blackrock Financial Management	600	Sub Mezz	2007
Pyxis ABS CDO 2007-1	2/1/08	Putnam Advisory Co	600		2007
Ridgeway Court Funding I	1/25/08	Credit Suisse Alternative Capital	500	Sub Mezz	2006
Rockbound CDO I	12/6/07	Brigade Capital Management	1,500		2007
Sagittarius CDO I	11/6/07	Structured Asset Investors	1,500		2007
Scorpius CDO	2/12/08	Strategos Capital Management	2,000	Sub Mezz	2006
Sherwood Funding III	10/19/07	Church Tavern Advisors	1,500	Sub HG	2007
STACK 2007-1	12/17/07	TCW Asset Management	2,200	HY	2007
Stillwater ABS CDO 2006-1	4/14/08	Long Lake Partners	297		2006
Stockton CDO	2/22/08	Princeton Advisory Group	900	HY	2007
Tenorite CDO I	2/7/08	Blackrock Financial Management	1,000	Sub Mezz	2007
Tourmaline CDO I	4/3/08	Blackrock Financial Management	750	Sub Mezz	2005
Tricadia CDO 2006-7	11/20/07	Tricadia CDO Management	500	Sub Mezz	2007
Volans Funding 2007-1	1/8/08	VERO Capital Management	1,100	Sub Mezz	2007
Wadsworth CDO	2/26/08	Hartford Investment Mgmt. Co.	1,200	Sub HG	2006
Webster CDO I	10/18/07	Vanderbilt Capital Advisors	1,000	Sub HG	2006
Western Springs CDO	2/7/08	Deerfield Capital Management	500	HG	2007

Retracted

Citius II Funding	2/7/08	Aladdin Capital Management	2,000	Prime HG	2006
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Event of Default

888 Tactical Fund	12/13/07	Harding Advisory	1,000		2007
Aardvark ABS CDO 2007-1	1/2/08	Harbourview Asset Mgmt. Corp.	1,500		2007
ACA ABS 2007-1	11/15/07	ACA Management	1,500	Sub Mezz	2007
ACA Aquarius 2006-1	5/13/08	ACA Management	2,000	Sub Mezz	2006
Acacia Option ARM 1 CDO	5/16/08	Redwood Asset Management	500	Mid	2007
Adams Square Funding II	2/14/08	Credit Suisse Alternative Capital	1,000	Sub Mezz	2007
Alpha Mezz CDO 2007-1	4/30/08	Countrywide Alt. Asset Mgmt.	500	Sub Mezz	2007
ARCA Funding 2006-I	3/27/08	Unknown	710	Sub Mezz	2006

ART CDO 2006-1	2/1/08	Allianz Risk Transfer	1,000	Sub HG	2006
Aventine Hill CDO I	2/6/08	FSI Capital	750		2007
Bantry Bay CDO I	12/3/07	Investec Bank	241	Mezz	2007
BelleHaven ABSCDO 2006-1	4/14/08	NIBC Credit Management	1,996	Sub HG	2006
Biltmore CDO 2007-1	2/7/08	ING Clarion Capital	1,000		2007
Brigantine HG Funding	4/14/08	Delaware Asset Advisers	2,000	Sub HG	2006
Cairn HG ABS CDO II	2/29/08	Cairn Financial Products	896	Sub Mid	2006
Citation HG ABS CDO I	3/13/08	Highland Financial Holdings Group	1,100	Sub HG	2007
Class V Funding I	5/12/08	CSFB Alternative Capital	200	Sub Mezz	2005
Class V Funding II	1/22/08	Credit Suisse Alternative Capital	300	CDO^2 Mezz	2006
Class V Funding III	11/19/07	Credit Suisse Alternative Capital	1,000		2007
Costa Bella CDO	4/24/08	PIMCO	500	Sub Mezz	2006
Delphinus	1/4/08	Delaware Asset Advisers	1,600		2007
Duke Funding XIII	5/5/08	Duke Funding Management	1,800	Mezz	2007
E*Trade ABS CDO IV	5/7/08	E*Trade Global Asset Management	300	Sub Mezz	2005
ESP Funding I	2/28/08	Elliott Structured Products	1,000	Sub HG	2006
Fiorente Funding	3/18/08	VERO Capital Management	850		2006
Forge ABS HG CDO I	1/30/08	Forge ABS	1,500		2007
Furlong Synth. ABSCDO 2006-14	14/15/08	Invesco	500	Sub Mezz	2006
G Square Finance 2007-1	3/5/08	Wharton Asset Mgmt. Bermuda	1,700	Sub Mid	2007
Gemstone CDO VII	4/15/08	HBK Investments	1,101	Sub Mezz	2007
Glacier Funding CDO IV	4/15/08	Terwin Money Management	400	Sub Mezz	2006
HG Struct. Credit CDO 2007-1	2/27/08	Bear Stearns Asset Management	4,000		2007
HSPI Diversified CDO Fund I	5/12/08	Halcyon Securitized Products	600	CDO^2 Mezz	2006
HSPI Diversified CDO Fund II	5/1/08	Halcyon Securitized Products	700		2007
Hudson HG Funding 2006-1	5/5/08	Unknown	1,500	Sub HG	2006
Independence VI CDO	5/5/08	Declaration Mgmt. & Research	950	Sub Mezz	2005
Kleros Preferred Funding III	1/4/08	Strategos Capital Management	2,000	Sub Mid	2006
Kleros Preferred Funding IV	12/14/07	Strategos Capital Management	2,000	Sub Mid	2006
Kleros Preferred Funding IX	4/11/08	Strategos Capital Management	2,000		2007
Kleros Preferred Funding V	12/19/07	Strategos Capital Management	1,200	Sub Mid	2007
Kleros Preferred Funding VI	12/14/07	Strategos Capital Management	3,000	Sub Mid	2007
Kleros Preferred Funding VII	2/8/08	Strategos Capital Management	1,500		2007
Kleros Real Estate CDO I	4/29/08	Strategos Capital Management	1,000	Sub Mid	2006
Kleros Real Estate CDO II	4/7/08	Strategos Capital Management	1,000	Sub Mid	2006
Laguna Seca Funding I	4/8/08	GSC Partners	500	Mezz	2007
Libertas Preferred Funding II	5/16/08	Strategos Capital Management	500	Sub Mezz	2007
Liberty Harbour II CDO	5/12/08	250 Capital	3,350		2007
Lochsong	5/19/08	Unknown	1,200	Sub HG	2006
Longport Funding III	2/11/08	Delaware Asset Advisers	750	Sub Mezz	2007
Longridge ABS CDO I	4/2/08	ZS Structured Credit Capital Mgmt.	500	Sub Mezz	2006
Longridge ABS CDO II	2/13/08	ZS Structured Credit Capital Mgmt.	500	Sub Mezz	2007
Longshore CDO Funding 2007-3	2/8/08	Structured Asset Investors	1,300		2007

Longstreet CDO I	4/22/08	J.P. Morgan Investment Mgmt.	500	Sub Mezz	2006
Maxim High Grade CDO I	4/14/08	Maxim Capital Management	2,000	Sub HG	2006
Maxim High Grade CDO II	4/14/08	Maxim Capital Management	2,000	Sub HG	2007
McKinley Funding III	12/11/07	Vertical Capital	1,510	Sub Mid	2006
MKP Vela CBO	5/1/08	MKP Capital Management	1,500	Sub Mezz	2006
Mulberry Street CDO II	4/28/08	Clinton Group	700	Sub Mezz	2003
Neptune CDO V	11/9/07	Chotin Fund Management	350		2007
Newbury Street CDO	3/6/08	MFS Investment Management	2,000		2007
Octans II CDO	5/8/08	Harding Advisory	1,500	Sub Mezz	2006
Octonion I CDO	2/8/08	Harding Advisory	1,000	Sub Mezz	2007
Pacific Pinnacle CDO	2/4/08	Blackrock Financial Mgmt.	1,000	Sub Mezz	2007
Plettenberg Bay CDO	3/6/08	Investec Bank	500	Sub Mezz	2007
Preston CDO I	2/12/08	J.P. Morgan AM	350	HY	2007
Raffles Place Funding II	4/4/08	UOB Asset Management	1,000		2006
Ridgeway Court Funding II	1/15/08	Credit Suisse Alternative Capital	3,000		2007
Rockville CDO I	4/17/08	Petra Capital Management	1,200	Sub Mezz	2006
Silver Marlin ABS CDO I	2/22/08	Sailfish Struct. Investment Mgmt.	1,250		2007
Singa Funding	3/11/08	Lion Capital Management	1,000	Sub Mezz	2006
Sorin Real Estate CDO 2007-6	5/12/08	Sorin Capital Management	550	Mezz	2007
Squared CDO 2007-1	1/18/08	GSC Partners	1,100	Sub Mezz	2007
Static Residential CDO 2006-C	4/18/08	Unknown	750	CDO^2	2006
Straits Global ABS CDO I	5/7/08	Declaration Mgmt. & Research	400	Sub HY	2004
SF Advisors ABS CDO III	4/18/08	Structured Finance Advisors	275	Sub Mezz	2002
Summer Street 2007-1	2/1/08	GE Asset Management	400		2007
TABS 2005-4	3/19/08	Tricadia CDO Management	400	Sub Mezz	2006
TABS 2006-6	11/16/07	Tricadia CDO Management	1,500	Sub HG	2006
Tahoma CDO I	3/25/08	Bear Stearns Asset Management	1,000	CDO^2	2006
Tahoma CDO III	2/25/08	Bear Stearns Asset Management	350	Sub Mezz	2007
Tallships Funding	4/4/08	Bear Stearns Asset Management	1,500	Mezz	2006
Tasman CDO	3/17/08	Credaris	300		2007
Tazlina Funding CDO I	4/23/08	Terwin Money Management	1,500		2006
Tazlina Funding CDO II	5/19/08	Terwin Money Management	1,500	Mezz	2007
Topanga CDO II	4/15/08	Metropolitan West Asset Mgmt.	1,000	Sub HG	2006
Tourmaline CDO II	3/31/08	Blackrock Financial Management	1,000	Sub Mezz	2006
Tourmaline CDO III	3/31/08	Blackrock Financial Management	1,500	Sub HY	2007
Vertical ABS CDO 2007-2	2/14/08	Vertical Capital	737	Sub Mezz	2007

Source: *UBS CDO Research* (May 30, 2008) (underlying data from Standard & Poor and trustee reports).

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