PRUDENT LENDING RESTORED

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Securitization after the Mortgage Meltdown

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Legal and Economic Issues in Litigation Arising from the 2007–08 Credit Crisis

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 those loans into residential mortgage–backed securities (RMBSs) 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 2 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. Those defaults and foreclosures have driven down the value of many RMBSs 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,

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and others. Having written down and continuing to write down assets, banks are now facing liquidity, solvency, and funding issues. Counterparty 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 chapter we explore some of the causes and consequences of the 2007–08 credit crisis and its impact on various market participants. We investigate the risks that can arise from innovations in finance and technology and losses that are uniquely related to correlated events in 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 commercial and investment banks and other purchasers will generate substantial, perhaps even unprecedented levels of litigation. The facts so far are sobering. In 2007 filings of class action suits involving securities rose dramatically; the increase was even higher in 2008. The threat of private litigation (along with its settlement cost) has been heightened by recent revelations that the FBI is investigating accounting practices and pricing of securities in several major banks, while civil investigations already are under way by the U.S. Securities and Exchange Commission (SEC) and state attorneys general. These government investigations are important not only in their own right, but also because they may reveal information that may fuel further 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 as well as against a number of mortgage originators, such as Coast Financial Holdings, Countrywide Financial Corporation, 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.

Appendix 5A 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,[2] the filing date of the complaint,

1. We are grateful to Bloomberg for providing 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.

2. Rule 10b-5 of the Exchange Act of 1934; section 11 and section 12(a)(2) of the Securities Act of 1933.

Table 5-1. *MBS Underwriters in 2007 and Write-Downs Related to Subprime Loans as of August 27, 2008*

Rank	*Book runner*	*Number of offerings*	*Market share (percent)*	*Proceeds amount + overallotment sold in U.S. ($ millions)*	*Announced write-down ($ millions)*
1	Lehman Brothers	120	10.80	100,109	8,200
2	Bear Stearns	128	9.90	91,696	3,200
3	Morgan Stanley	92	8.20	75,627	14,400
4	J. P. Morgan	95	7.90	73,214	14,300
5	Credit Suisse	109	7.50	69,503	10,400
6	Banc of America Securities	101	6.80	62,776	21,200
7	Deutsche Bank	85	6.20	57,337	10,600
8	Royal Bank of Scotland Group	74	5.80	53,352	14,600
9	Merrill Lynch	81	5.20	48,407	51,800
10	Goldman Sachs	60	5.10	47,696	3,800
11	Citigroup	95	5.00	46,754	55,100
12	UBS	74	4.30	39,832	44,200

Source: Yalman Onaran and Dave Pierson, "Banks' Subprime Market-Related Losses Reach $506 Billion," Bloomberg, August 27, 2008 (www.bloomberg.com).

and the class period if the action is based on rule 10b-5. In total, the table covers 251 securities class action lawsuits (a number of the complaints are partially duplicative) against ninety-five companies. Much of the litigation is directly related to the extensive asset write-downs taken by banks. Table 5-1 summarizes the credit crisis–related asset write-downs taken through August 27, 2008, by the largest underwriters of mortgage-backed securities (MBSs) in 2007.

However, appendix 5A surely underestimates—and most likely substantially underestimates—the extent and impact of likely litigation. We anticipate three significant additional sources of litigation: litigation against companies other than those directly involved in the structured finance market that nevertheless suffered losses due to MBS and CDO exposure; non–class action litigation brought by MBS and CDO purchasers (such as money market mutual funds) and investment banks; and 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 value was 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 reportedly has already filed fifteen 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 regarding 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 from losses from mortgage exposure is the situation of Luminent Mortgage Capital, a real estate investment trust (REIT) that purchased MBSs. Luminent 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 posted as collateral. In turn, Luminent Mortgage Capital has had five rule 10b-5 class action lawsuits filed against it for making false statements as well as a countersuit filed by HSBC Holdings for breach of contract. There is speculation that Luminent may be subject to ERISA lawsuits as well. Luminent 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 write-downs announced by the commercial and investment banks to date—is poor mortgage performance.

In the remainder of this chapter we describe the process by which mortgage loans are originated and securitized and discuss the role of various participants in the mortgage securitization market. We also discuss the causes and consequences of the current credit crisis, with a focus on mortgage lending, and explore reasons why market participants may have underestimated the risks. 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 then review the legal issues facing market participants, focusing on the causes of actions available to MBS and CDO purchasers and three principles of securities law that we believe will play an important role in the class action litigation filed against banks, mortgage originators, and others. Those principles are "no fraud by hindsight"; "truth on the market"; and "loss causation." Last, we summarize our findings.

Residential Mortgage–Backed Securities and Collateralized Debt Obligations

The United States has one of the highest rates of homeownership in the world, and it has risen in recent years, from 64.0 percent in 1994 to 68.8 percent in 2006.[3] That increase was facilitated in part by aggressive lending standards that allowed people from a broad economic spectrum to own homes and by the use of mortgage securitization, which increased mortgage capital and broadly distributed the risk of loans. 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. The process by which loans are originated, securitized, and sold to investors is depicted in figure 5-1.

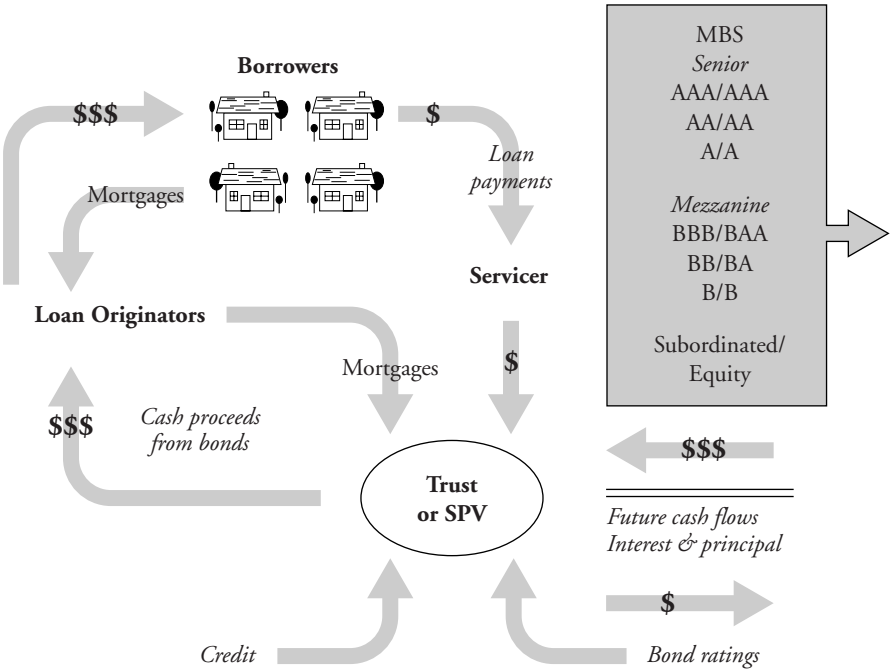
Homeowners and Loan Originators

The road to homeownership 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 that they originate in their own portfolios. Most are sold to the secondary market, where they are pooled and become the assets underlying RMBSs.

Individuals with strong credit histories qualify for traditional mortgages, whereas those with weak histories—which may 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 they may have incomplete credit histories. As can be seen in figure 5-2, 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 in mortgages originated was from subprime

3. Bureau of the Census (www.census.gov/hhes/www/housing/hvs/historic/index.html).

Figure 5-1. *Mortgage Origination and Mortgage-Backed Securitization*

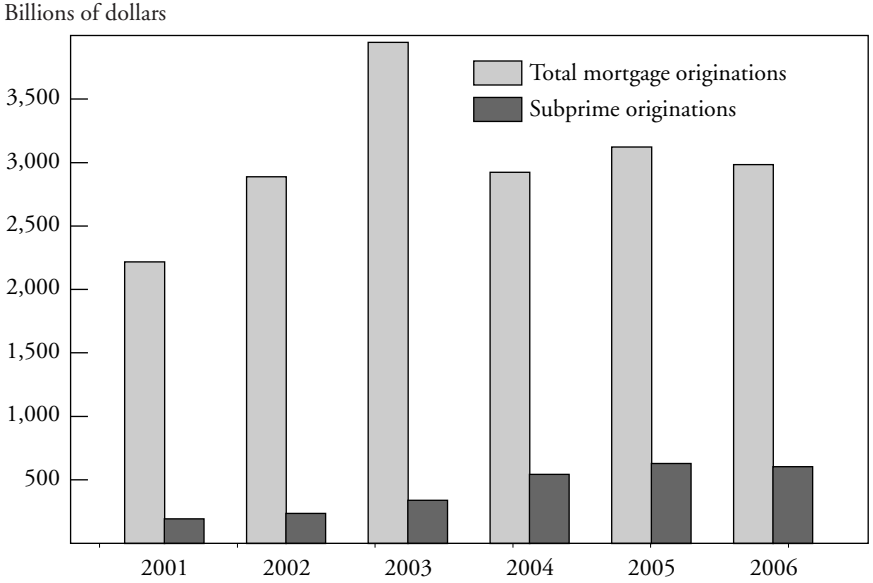


mortgages. The percentage rose to 20 percent by 2005, when originations of subprime mortgages were valued at more than $600 billion.

Most of the later-vintage subprime mortgage loans were ARMs (adjustable rate mortgages), 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 twenty-eight 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

Figure 5-2. *Mortgage Originations, 2001–06*



Sources: *The Subprime Lending Crisis: The Economic Impact on Wealth, Property Values, and Tax Revenues and How We Got Here*, report and recommendations by the majority staff of the Joint Economic Committee of the U.S. Congress, October 27, 2007; data are from "Top Subprime Mortgage Market Players and Key Data for 2006," *Mortgage Market Statistical Annual 2007* (Bethesda, Md.: Inside Mortgage Finance Publications, 2007), p. 19.

banks. Independent mortgage companies sell loans for securitization to other financial service 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, which securitize conventional conforming loans.[4] 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 twenty-five originators accounted for approximately 28 percent of the industry's roughly $500 billion in loans, whereas in 2005 the market share of the top twenty-five originators rose to approximately 85 percent of the industry total of $3.1 trillion.[5]

4. Apgar, Bendimerad, and Essene (2007, p. 6).
5. Ibid.

Issuers

MBS sponsors or originators purchase mortgage loans from loan originators, assemble them into asset pools, and structure them into MBSs. After a large-enough portfolio of mortgages is pooled, it is sold to a special purpose vehicle (SPV), which issues the MBS. The SPV is 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 typically are rated, with the former receiving ratings of AA to AAA (investment grade) and the latter receiving ratings of A to BBB. The ratings reflect both the credit quality of the underlying collateral as well as the cash flow protection provided by the subordinated tranches. In recent years, senior MBS tranches have represented more than 85 percent of the value of a typical pool, whereas mezzanine pieces have accounted for around 10 percent and have been used primarily in CDOs.[6] The most junior class (often called the equity class) has the highest credit risk and accounts for about 5 percent of the value in the pool. In some cases, the equity class receives no coupon, getting instead 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 MBSs, they arguably fit the broad definition of "investment company" in the Investment Company Act of 1940. As such, they would be subject to the act's extensive requirements.[7] However, those requirements are widely viewed (including by SEC staff) as being inconsistent with the normal operations of SPVs; hence, vir-

6. Steven Drucker (Renaissance Technologies) and Christopher Mayer (Columbia Business School and National Bureau of Economic Research), "Inside Information and Market Making in Secondary Mortgage Markets," working paper, January 6, 2008.

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

tually all SPVs are structured so as to be exempt from the act. The primary exemption relied on is rule 3a-7 of the Investment Company Act, which provides an exemption if an 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 that exemption is one reason why it is important for an SPV's securities to be structured so that they receive the necessary investment-grade rating.

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 typically are given broad authority with respect to certain aspects of loans under pooling and servicing agreements, they may delegate that authority to servicers.

Between 2001 and 2007, the size of the MBS market grew dramatically, peaking at more than $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.[8] Using data from Securities Data Corporation, we find that MBS volume transferred from agency to non-agency sponsors between 2001 and 2007. Panels A and B of figure 5-3 indicate that the volume of agency-sponsored MBSs, in terms of both number of deals and principal amount, peaked in 2003 and that virtually all of it was registered and publicly traded. In contrast, private label (non-agency) MBS volume was at its highest level in 2005, and private label equity line-of-credit securitization peaked in 2006. Although the private label rule 144A market was much smaller than the private label registered market, it too was robust throughout the period, with private label sponsored rule 144A MBS volume peaking in 2005 and private label rule 144A equity-line-of-credit securitization at its highest level in 2006.

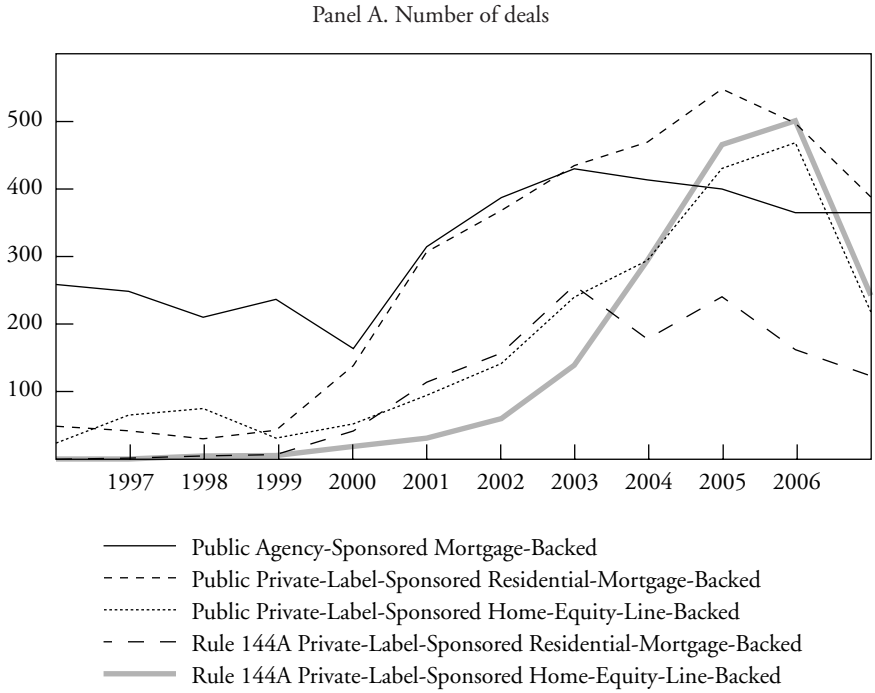
The biggest sponsors of private label MBSs in 2007 were either commercial or investment banks. As shown in table 5-1, the MBS industry in 2007 was relatively concentrated, with most deals being structured by one of the top-twenty sponsors. Each of the top-five sponsors structured at least 7 percent of the market.

The riskier tranches of MBSs may be packaged into CDOs.[9] Like MBSs, CDOs have a sponsoring organization, such as a commercial or investment bank. A CDO's sponsor establishes an SPV that issues securities, typically multiple

8. *The Subprime Lending Crisis: The Economic Impact on Wealth, Property Values, and Tax Revenues and How We Got Here*, report and recommendations by the majority staff of the Joint Economic Committee of the U.S. Congress, October 27, 2007; data are from "Top Subprime Mortgage Market Players and Key Data for 2006," *Mortgage Market Statistical Annual 2007* (Bethesda, Md.: Inside Mortgage Finance Publications, 2007), p. 19.

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

Figure 5-3. *MBS Issuance Trends, 1996–2007*



Source: Data are from SDC Platinum (http://thomsonreuters.com/products_services/financial/sdc).

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 debt and can include short-term debt, such as commercial paper, often called asset-backed commercial paper (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 generally is much shorter than the maturity of the underlying assets of the CDO or conduit. That 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 that guarantee liquidity for a fee. CDO sponsors often retain senior tranches for investment purposes. Like the market for RMBSs, the market for CDOs has grown dramatically over the past ten years, as has the ABCP market.[10] Growth slowed significantly in 2007, however, when housing prices fell, loan delinquencies rose, foreclosures increased, and the performance of recent-vintage RMBSs declined.[11]

Many CDOs, although not all, are actively managed, which entails the ongoing purchase and sale of assets. For instance, many CDO agreements with investors merely outline the type of assets that can be purchased and impose various restrictions on when assets can be bought or sold. The party entrusted with managing a CDO's assets (subject to those restrictions) is the collateral manager. The limitations imposed often are 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 those funds in a manner consistent with the CDO's asset strategy. In some ways, actively managed CDOs resemble hedge funds in that the purchasers of CDO interests are financially sophisticated investors rather than retail buyers.

CDOs often are 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 time necessary to confer with investors tends to preclude CDOs from being publicly tradable on registered exchanges or markets. Investors must therefore rely on dealers to execute trades.

10. Lucas, Goodman, and Fabozzi (2006).
11. Maller and Antonoff (2008, p. S6, col. 1).

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. They evaluate the credit and collateral risks of loans in the pool and verify the information provided by loan originators to MBS sponsors, including a borrower's identity, place of residence, and employment status. They typically review details of the note, mortgage riders, title, and mortgage insurance and may include a property appraisal as well as a review of the loan originator's property and closing procedures. The information verified by collateral appraisers 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.

Sources of Credit Enhancement

MBSs and CDOs typically are credit enhanced, meaning that their credit risk is managed so that it is 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 payment of expenses—such as principal and interest payments, charge-offs, and other fees—are available for use if the SPV's expenses are later greater than its income; overcollateralizing 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. Those 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 that asset 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 from SPVs loans that become seriously delinquent or go into foreclosure within a specified time,

Table 5-2. *Insurers of U.S. Mortgage-Related Issues, 2006–07*

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

Source: *Asset-Backed Weekly Update*, January 18, 2008 (www.abalert.com/).

and bond insurance. It is worth noting that standby liquidity arrangements for CDOs and ABCP conduits do not provide insurance against credit risk per se but instead provide insurance against liquidity risk—that is, the risk of not being able to roll over commercial paper.

Bond insurance, a commitment by an insurance company to make contractual payments if an issuer of a bond cannot meet its financial obligations, has been an important source of credit enhancement. Historically, bond insurers insured primarily municipal bonds, but they entered 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.[12] The largest insurers of structured finance products in 2007 were MBIA Insurance Corporation, Ambac Assurance Corporation, and Financial Security Assurance, a subsidiary of the Belgian-French bank Dexia. Table 5-2 summarizes the insurance written on 2006 and 2007 MBS issuances, broken down by bond insurer.

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

12. "Credit FAQ: The Interaction of Bond Insurance and Credit Ratings," Standard & Poor's, December 19, 2007 (www2.standardandpoors.com/portal/site/sp/en/us/page.article/3,1,1,0,1148450123839.html).

the obligation.[13] In at least some instances, credit rating agencies review due diligence firms' reports or summaries of reports when evaluating credit risk.

Investors

Hedge funds, corporations, banks, life insurers, pension funds, mutual funds, and wealthy individuals buy RMBSs and CDOs. In certain instances, institutional bond buyers are subject to legal limitations that permit them to buy only investment-grade or AAA-rated debt. For ERISA fiduciaries, who must "use care, skill, prudence, and diligence" in the course of investing plan assets, purchasing unrated RMBSs and CDOs runs the legal risk that the instruments may be deemed imprudent.[14] ERISA exempts CDOs, however, if CDO tranches are deemed "debt" for purposes of ERISA (and if several other requirements are 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 an SPV issues securities that are deemed to be "equity," then the mortgages will as a general matter be deemed 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 doing so would arguably constitute a "self-dealing" transaction, prohibited by ERISA. One way for a bank to avoid the "equity" label and thereby remove a potential bar to acting as sponsor of an SPV is to obtain an investment-grade rating on the securities. 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 because Department of Labor regulations exempt from ERISA requirements SPVs whose mortgage-backed securities are registered under the Securities Act of 1933.[15]

The advent of investment-grade MBSs and CDOs dramatically changed the investment opportunities for pension funds. Before their introduction, pension funds were largely precluded from investing either directly or indirectly in real estate. Investment-grade MBSs and CDOs have allowed pension funds to include real estate exposure in their portfolios while limiting credit risk (although the availability of CDOs is still somewhat restricted, given the use 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.[16]

13. Ibid.
14. 29 U.S.C. 1104(a)(1)(B).
15. See Frankel (2006, p.184) for a discussion of these regulations.
16. Maller and Antonoff (2008, p. S6, col. 1).

Servicers

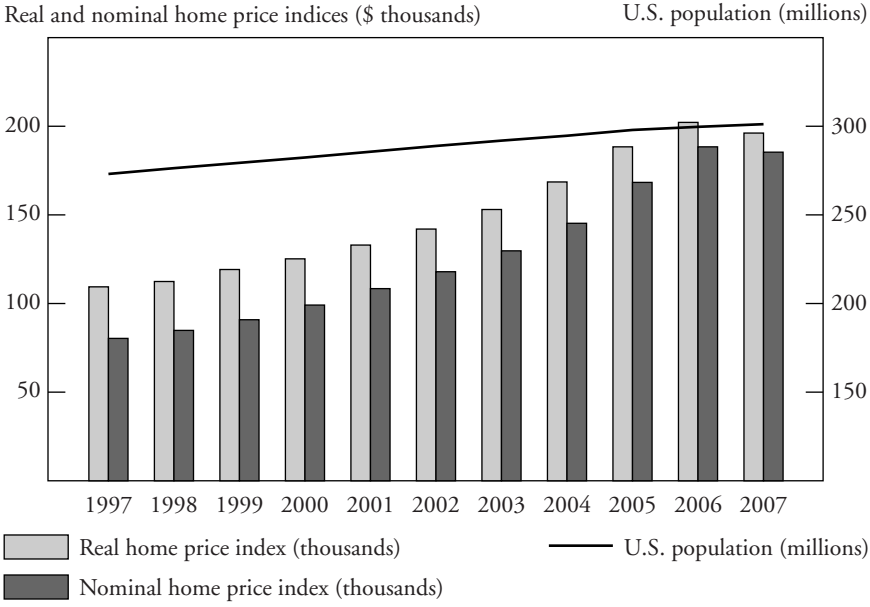
Servicers are hired to collect mortgage payments from borrowers and pass the payments, less fees (including guarantee and trustee fees), through to trustees, who then pass payments on to MBS investors. Servicers can affect the cash flows to investors because servicers control collection policies, which 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. Often a loan originator is also the 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.

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 percent a year.[17] As shown in figure 5-4, the annual rate at which housing prices increased accelerated from 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, buyers, 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 mortgage originators' vision of earning additional fees by expanding the pool of borrowers resulted in some originators lowering their underwriting standards. As shown in table 5-3, the share of subprime loans originated for borrowers for whom employment, income, or other credit-related information was not verified (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 loans originated on which borrowers paid interest only (no principal) as a percentage of subprime loans increased from zero to more than 22 percent. ARMs' share of the subprime market increased from about 73 percent to more than 91 percent.

17. S&P/Case-Shiller Home Price Indices (www.macromarkets.com/csi_housing/sp_caseshiller.asp).

Figure 5-4. *Real and Nominal Housing Prices and Population, 1997–2007*



Source: S&P/Case-Shiller Home Price Indices (www.macromarkets.com/csi_housing/sp_case shiller.asp).

Evidence is now mounting that at least some mortgage bankers and brokers may have submitted false appraisals and financial information to qualify otherwise unqualified buyers for subprime mortgage loans. Others purportedly did not document or verify subprime mortgagers' income, net worth, and credit history. According to an analysis by Fitch of a small sample of early defaults from its 2006 Fitch-rated subprime RMBSs, as much as one-quarter of the underperformance of the 2006 vintage of subprime RMBSs may have resulted from inadequate underwriting and fraud.[18] The Fitch report concludes 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."[19] Base-

18. *The Impact of Poor Underwriting Practices and Fraud in Subprime RMBS Performance*, Fitch Ratings Ltd., November 28, 2007 (www.americansecuritization.com/uploadedFiles/Fitch_Originators_1128.pdf).

19. Ibid.

Table 5-3. *Underwriting Standards in Subprime Home Purchase Loans, 2001–06*
Percent

Year	*Low- or no-doc share*	*Debt payments/ income ratio*	*Loan/ value ratio*	*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 (www.imf.org/external/pubs/ft/fmu/eng/2007/charts.pdf).

Point Analytics, a fraud analysis and consulting firm, found results consistent with Fitch's findings. BasePoint analyzed more than 3 million loans originated between 1997 and 2006 (the majority during the 2005–06 period), including 16,000 nonperforming loans that had evidence of fraudulent misrepresentation in the original applications. BasePoint's research found that as much as 70 percent of mortgages on which borrowers had early payment defaults contained fraudulent misrepresentations on applications.[20] 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.[21]

The due diligence firms that review and verify loan information and loan origination policies and procedures are the gatekeepers; they are supposed to detect loan origination fraud and lax underwriting standards. Several of these firms are currently under investigation by the state attorneys general in New York and Connecticut and by the SEC. Linked to those investigations are allegations that some MBS sponsors may have ignored or withheld information about the credit risks of mortgage pools and even may have pressured due diligence firms to overlook credit issues on loans. Government officials are investigating whether MBS

20. *Broker Facilitated Fraud: The Impact on Mortgage Lenders*, BasePoint Analytics, 2006 (www.basepointanalytics.com/mortgagewhitepapers.shtml).

21. *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).

and CDO sponsors failed 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*, those loans suffered unusually high numbers of defaults and delinquencies.[22] The number of loans reviewed by due diligence firms fell from about 30 percent in 2000 to 5 percent in 2005.[23] Even for the loans reviewed, due diligence firms encountered obvious challenges, given that many loans lacked standard documentation or, indeed, any documentation. In assessing such 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. At issue is whether the discounted prices were a reasonable reflection of the ex ante probability of losses from defaults and foreclosures.

By mid-2006, housing prices began to decline nationally, dropping by about 1.5 percent between 2006 and 2007. Although that decline seems small, some markets were hit harder than others. Home sales fell as well, as shown in figure 5-5. Interest rates increased, and more than 2 million homeowners faced interest rate resets on their mortgages by February 2008.[24] Mortgage payments increased by as much as 30 percent of earlier payments,[25] 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 their payments or defaulted. Using data from the Mortgage Bankers Association, the Government Accountability Office (GAO) found that ARMs experienced relatively steeper increases in default and foreclosure rates than did fixed-rate mortgages and accounted for a disproportionate share of the increase in the number of loans in default and foreclosure.[26] Fitch also found that the delinquency and foreclosure rates of subprime ARMs increased sharply and expects those rates to continue to rise.[27]

22. Vikas Bajaj and Jenny Anderson, "Inquiry Focuses on Withholding of Data on Loans," *New York Times*, January 12, 2008, p. A1.

23. Ibid.

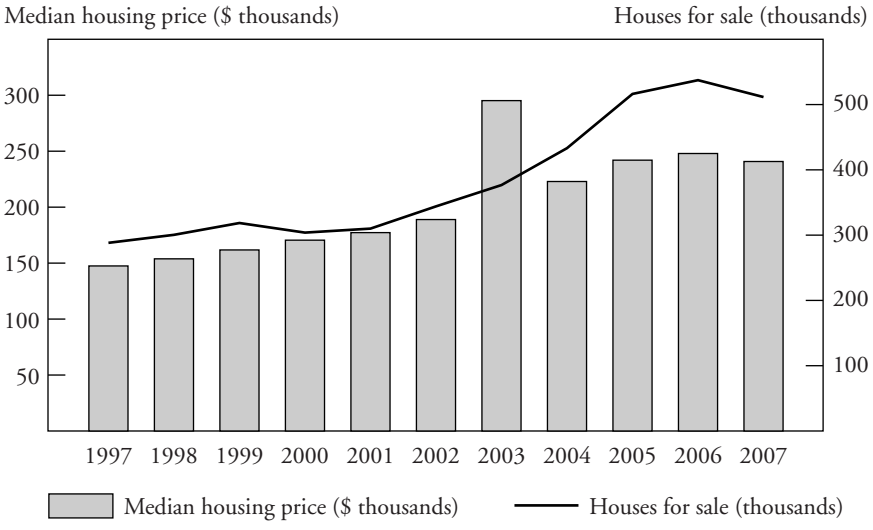
24. C. Cagan, *Mortgage Payment Reset: The Issue and the Impact*, First American CoreLogic, 2007, pp. 42–43, estimates that 2.17 million subprime ARMs will have their first reset between 2007 and 2009 (www.facorelogic.com/uploadedFiles/Newsroom/Studies_and_Briefs/Studies/20070048MortgagePaymentResetStudy_FINAL.pdf).

25. Ibid.

26. *The Subprime Lending Crisis*; data are from "Top Subprime Mortgage Market Players and Key Data for 2006," p. 19.

27. *The Impact of Poor Underwriting Practices and Fraud in Subprime RMBS Performance*, Fitch Ratings, November 28, 2007 (www.americansecuritization.com/uploadedFiles/Fitch_Originators_1128.pdf).

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



Source: Bureau of the Census (www.census.gov/hhes/www/housing/hvs/historic/index.html).

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 and colleagues estimate cumulative foreclosures of 2.2 million, with losses to homeowners of $164 billion.[28] That estimate is probably low, given that housing prices have declined more than the authors may have assumed. Using data from the Mortgage Bankers Association and Moody's, the GAO estimates defaults and forecloses to be rising overall, with the largest share being subprime loans: subprimes constitute less than 15 percent of loans serviced but about 66 percent 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.[29]

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 deals, requiring loan originators to buy back troubled

28. Schloemer and others (2006).

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

mortgages originated in 2005 and 2006.[30] Because loan originators tended to be thinly capitalized, many faced financial distress. By the end of 2007, more than twenty-five subprime mortgage originators, including New Century Financial Corporation and American Home Mortgage Investment, had filed for bankruptcy. Bank of America announced that it would buy Countrywide Financial, which had fallen on hard times. Ameriquest Mortgage Company 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 RMBSs and CDOs.[31] The ABX Home Equity Index for the lowest non-equity credit rating (BBB–), 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.[32] Moody's and other credit rating agencies began downgrading RMBSs and CDOs. For example, by September 2007, Moody's had downgraded subprime mortgage-backed securities valued at around $25 billion, or roughly 5 percent of the $460 billion in subprime MBSs that it had rated in 2006. In comparison, Moody's had downgraded only 2.1 percent by dollar volume in the subprime RMBS sector for the 2002–06 period and only 1 percent by dollar volume for all RMBSs.[33]

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 5-1, the biggest underwriters in 2007 reported huge losses tied to mortgages and other assets. In February 2008, UBS analyst Philip Finch reported that

30. 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.

31. Michael Kanef, group managing director, Moody's Investors Service, "The Role and Impact of Credit Rating Agencies on the Subprime Credit Markets," testimony before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, 110th Cong., 2nd sess., September 26, 2007.

32. The ABX tracks the performance of a basket of credit default swaps based on U.S. subprime home mortgages. Every six months, a new series is issued to track the twenty largest current deals. Thus, over time, the ABX Index covers a number of vintage-based series. Each series includes five credit rating–based tranches (AAA, AA, A, BBB, and BBB–). In using the ABX index, one must keep in mind how the index is constructed and its limitations. For example, by its nature, it does not reflect the various waterfall features inherent in CDO tranche structures.

33. Michael Kanef, group managing director, Moody's Investors Service, "The Role and Impact of Credit Rating Agencies on the Subprime Credit Markets," testimony before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, 110th Cong., 2nd sess., September 26, 2007.

"write-downs 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."[34] By August 2008, asset write-downs and credit losses at more than 100 of the world's biggest banks and securities firms had ballooned to $506.1 billion.[35] Losses were being recognized by a broad range of financial firms on assets that were not related to subprime loans. Banks wrote down Alt-A and prime MBSs, ABCP, syndicated loans, consumer loans, and many other types of securities.

To respond to asset write-downs, many financial firms needed to raise capital to meet regulatory capital requirements. By late August 2008, 100 of the world's biggest banks and securities firms had raised $352.6 billion in capital.[36] As an alternative or additional measure, firms needed to sell assets, especially unwanted inventories of mortgage-related assets. Bank inventories of mortgage-related debt typically includes debt that banks have only because they have not yet sold it to an SPV or because it is a remnant of an already completed securitization; debt that is part of an SPV that is consolidated on the banks' balance sheet for some reason; and debt that is 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 those assets was glutted and highly illiquid. As a result, firms faced steep discounts on asset prices and in many instances market prices were not readily available. The problem was further compounded because many institutional investors were trying to sell downgraded assets too. 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. The selling in turn caused bond values to fall even further, resulting in additional write-downs by investors and financial institutions.

Those write-downs and deep-discount asset sales raised fears among market participants about the creditworthiness of a number of financial institutions, which resulted in runs on 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

34. Poppy Trowbridge, "Banks at Risk from $203 Billion Write-Downs, Says UBS," Bloomberg, February 15, 2008 (www.bloomberg.com).

35. Yalman Onaran and Dave Pierson, "Banks' Subprime Market-Related Losses Reach $506 Billion," Bloomberg, August 27, 2008 (www.bloomberg.com).

36. Ibid.

massive reorganization of the financial services industry. In March 2008, JPMorgan 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 that it would file for bankruptcy protection. Commercial and other banks have not been immune to market pressures either. 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,[37] signed a definitive agreement with AIG to provide financial support, and bought preferred shares in a number of banks.[38] 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 also have 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."[39] By fall 2008, many of the bond insurers' financial strength ratings had been lowered. Without an 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 downward price pressure. This cycle could mean yet additional write-downs for investors and banks.

37. Under the plan, the Treasury will receive $1 billion of senior preferred stock, with warrants representing ownership stakes of 79.9 percent of Fannie Mae and Freddie Mac. 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 also will provide secured short-term funding to Fannie Mae, Freddie Mac, and twelve 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 Federal Housing Finance Agency will take over Fannie and Freddie under a so-called conservatorship, replacing their chief executives and eliminating their dividends. As a condition for assistance, Fannie Mae and Freddie Mac have to reduce their holdings of mortgages and securities backed by home loans. Each firm's portfolio "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.

38. As part of the deal, AIG will issue a series of convertible participating serial preferred stock to a trust that will hold the new securities for the benefit of the Treasury. The preferred stock will get 79.9 percent of any dividends paid on AIG's common stock and will give the government almost 79.9 percent of the voting power. The securities then will be converted to common stock at a special shareholders' meeting.

39. Tomoeh Murakami Tse, "Insurer of Bonds Loses Top Rating," *Washington Post,* January 19, 2008, p. D01.

What Went Wrong?

The question, then, is this: how could the credit crisis have happened? At the end of 2008, there were perhaps more hypotheses than answers, and a full analysis obviously is far beyond the scope of this chapter.[40] The answer will likely involve, in part, market participants' experience or lack thereof with the securitization of a relatively new class of assets—subprime mortgage products that previously had not been originated and that perhaps had been built on unanticipated declining loan underwriting standards. The credit risk of the pools of mortgages that included subprime loans, especially hybrid ARMs, were different from the credit risk of mortgage pools previously securitized. It appears that borrowers may have been qualified to borrow money on the basis of the low teaser rates for the early years of loans rather than the higher rates for 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 rate and housing price risks, than mortgage pools in the past. Between 2001 and 2006, the number of subprime mortgages increased and the share of ARMs in total subprime MBSs rose from 60.8 percent to 74 percent.[41] Those changes, coupled with lower underwriting standards, may not have been fully appreciated by market participants. The market had limited experience in 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 the performance of various pools of mortgages under different market conditions. For example, loan originations shifted away from depository institutions to mortgage brokers and firms specializing in loan originations. Those 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.[42] Other structural changes in the residential mortgage origination industry may have contributed to lower credit standards and permitted fraudulent loan underwriting.

40. Steven L. Schwarcz, "Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown," Duke Law School Legal Studies Paper 175, November 2007 (http://ssrn.com/abstract=1056241).

41. Sandra Thompson, director of the Division of Supervision and Consumer Protection, Federal Deposit Insurance Corporation, statement on "Mortgage Market Turmoil: Causes and Consequences," testimony before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, March 22, 2007.

42. *Broker Facilitated Fraud: The Impact on Mortgage Lenders*, BasePoint Analytics, 2006.

Mason and Rosner note the impact of increasingly automated valuation and underwriting systems.[43]

The issues raised by such changes may have been masked. 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.[44] 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 2001–05.[45] Similarly, subprime mortgages originated during 2001–05 performed *better* than those originated in 2000.[46] The strong credit performance of subprime loans between 2001 and 2005 may have resulted in MBS ratings being too high, in hindsight. Calomiris argues that because subprime loan products were relatively novel, later vintages (2005–06) of MBSs and CDOs with subprime collateral were rated on the basis of subprime loan defaults and losses from earlier vintages (2001–03).[47] That 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.

The answer also may involve in part the experience or lack thereof of market participants with RMBSs and CDOs that had somewhat different structures and were more complex and less transparent than in the past. RMBSs, for example, changed dramatically over time. In addition to holding more complex collateral, private label RMBS deals, as shown in figure 5-6, increased in average size over time, peaking in 2005. That increase 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

43. Joseph R. Mason (LeBow College of Business, Drexel University) and Joshua Rosner (Graham Fisher & Company), "How Resilient Are Mortgage-Backed Securities to Collateralized Debt Obligation Market Disruptions?" working paper, February 15, 2007.

44. Yuliya Demyanyk and Otto Van Hemert, "Understanding the Subprime Mortgage Crisis," working paper, August 19, 2008 (http://ssrn.com/abstract=1020396).

45. *The Subprime Lending Crisis.*

46. Ibid.

47. Charles W. Calomiris (Columbia Business School and National Bureau of Economic Research), "The Subprime Turmoil: What's Old, What's New, and What's Next," working paper, August 20, 2008.

tranches for those 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 constituted 20 percent of total offering principal, whereas it was 91 percent in 2005. Similar patterns exist for agency-sponsored RMBSs and rule 144A deals. The reduced complexity of the structure of MBSs was in part a response to the development of highly customizable CDOs. Previous RMBSs catered to the needs of investors for tailor-made duration and risk exposures. With the rise of CDOs, RMBSs were no longer the only way to fulfill that demand. In contrast to RMBSs, CDOs have more tranches than ever before; those tranches are increasingly complex and may include, for example, interest-only and principal-only strips and other difficult-to-value securities.[48] In addition, the credit risk of the underlying assets is relatively opaque to market participants, who are several times removed 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 the chain. CDOs especially have experienced substantial changes in the last eight years in terms of asset distribution and transaction structure.[49] Although it is tempting to point a finger at MBS originators as the 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.

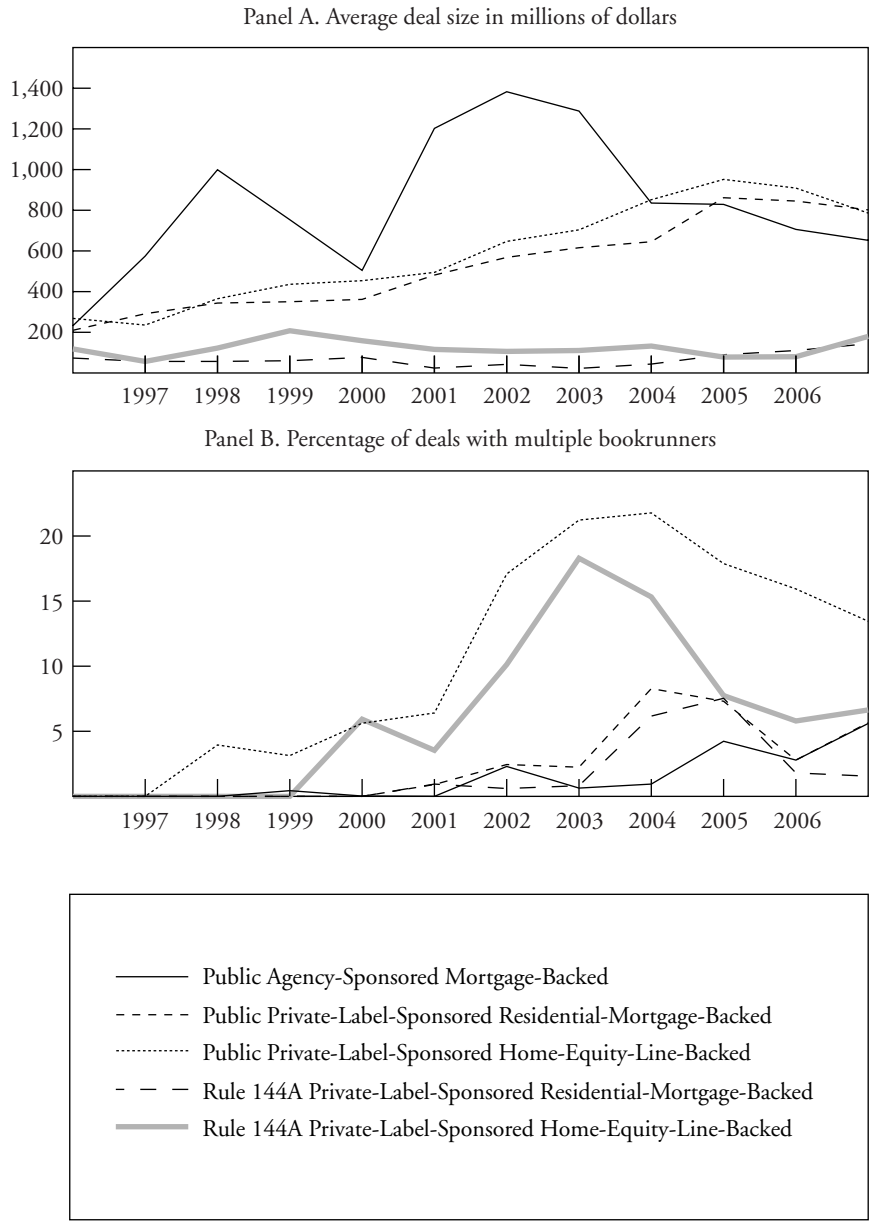
The market appears to have not fully anticipated the probability or effect of correlated market events or the very small probability of an extremely negative outcome. So, for example, SPVs wrote repurchase agreements to protect against mortgage fraud and defaults. That protection is of limited value, 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 if they go bankrupt. Consistent with this thesis, Mason and Rosner suggest that credit rating models may underestimate the correlation of defaults and hence understate risk.[50] In turn, market participants appear to have not fully appreciated

48. Mason and Rosner, "How Resilient Are Mortgage-Backed Securities?"

49. Jian Hu (Moody's Investors Service), "Assessing the Credit Risk of CDOs Backed by Structured Finance Securities: Rating Analysts' Challenges and Solutions," August 31, 2007 (http://ssrn.com/abstract=1011184).

50. Joseph R. Mason (LeBow College of Business and Drexel University) and Joshua Rosner (Graham Fisher and Company), "Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage-Backed Securities and Collateralized Debt Obligations Market Disruptions," working paper, May 2007.

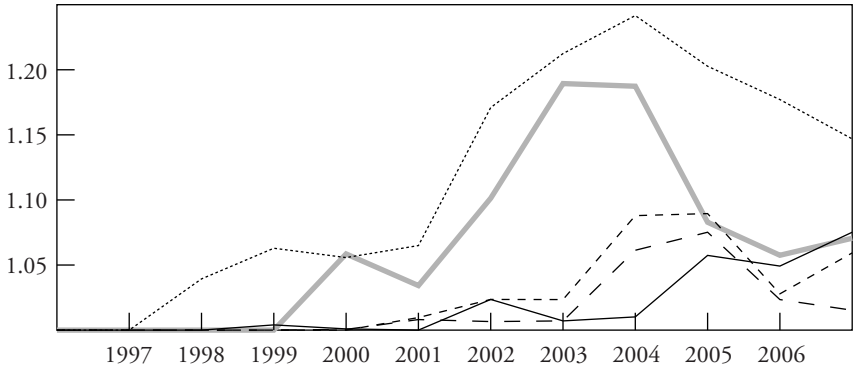
Figure 5-6. *Changes in Mortgage-Backed Securities, 1996–2007*



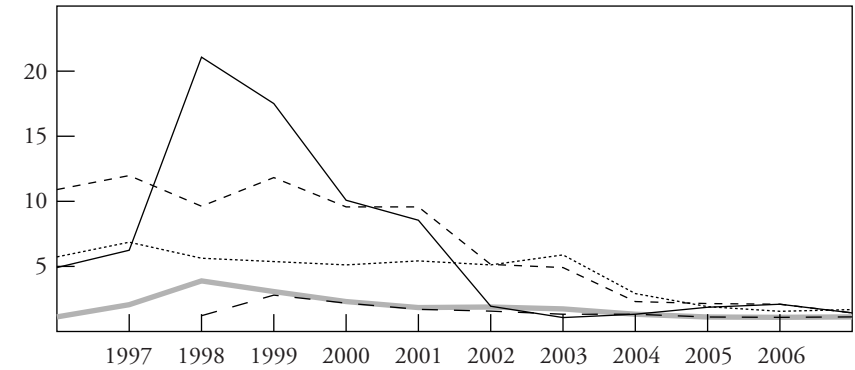
(continued)

Figure 5-6. *Changes in Mortgage-Backed Securities, 1996–2007* (Continued)

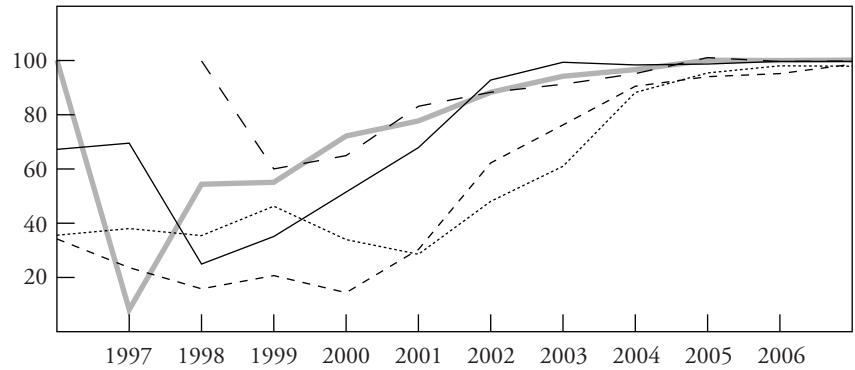
Panel C. Average number of bookrunners



Panel D. Average number of tranches



Panel E. Average percentage of main tranche principal



Source: Data are from SDC Platinum (http://thomsonreuters.com/products_services/financial/sdc).

the probability of bond insurer downgrades or their impact 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 from the credit rating agencies, other CDOs tend to mimic that structure.[51] If that structure has some risk that rating agencies do not fully recognize or if some information is not disclosed to or understood by investors or rating agencies, the same weakness or deficiency will likely be repeated by a large number of CDOs. That herding may result in correlated downgrades later. Those 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 is dominated by black swans—rare events that have extreme impacts that can be and usually are 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 failure of the market to fully anticipate the probability or effect of correlated market events is the market's apparent lack of appreciation of certain types of funding risk for banks. Most banks rely on short-term secured borrowing to finance certain assets; they then use those assets as collateral. If the value of the assets, which in this instance included MBSs and derivative positions, falls, banks receive margin calls, and they may need to raise cash to meet their 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. The lower prices set off rounds of write-downs and the further need to raise cash and delever. Gorton and Allen and Carletti argue that Financial Accounting Standards Board Statement (FASB) 157 exacerbated the problem, because firms had to value assets for accounting purposes at market prices that were lower than cash flow and risk characteristics would otherwise suggest were appropriate.[52] The problem was also made worse by heightened counterparty risk. Market participants did not know which banks were finan-

51. Peter Tufano (1989).

52. See Gary Gorton (Yale School of Management and National Bureau of Economic Research), "The Panic of 2007," working paper, 2008, and Franklin Allen (University of Pennsylvania) and Elena Carletti

cially weak and so refused to lend more generally. Even banks with collateral were denied loans, as lenders feared that 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 for raising 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 its financial obligations, began denying not only "unsecured financing, but short-term secured financing as well, even when the firm's collateral consisted of agency securities with a market value in excess of the funds to be borrowed. Counterparties would not provide securities lending services and clearing services. Prime brokerage clients moved their cash balances elsewhere."[53] The 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 more than $18 billion in liquidity on Monday, March 10, 2008.[54] By Tuesday, March 11, its liquidity pool declined to $11.5 billion. On Wednesday, March 12, its liquidity pool actually increased by $900 million, for a total of $12.4 billion. On Thursday, March 13, however, the firm's liquidity pool fell sharply and continued to fall on Friday,[55] until Bear Stearns had no choice but to be acquired by JPMorgan Chase at a fire-sale price or to fail altogether. The holding company's capital ratio was 13.5 percent on February 29, 2008, which far exceeded the threshold of 10 percent established by the Federal Reserve Board (Federal Reserve) for being "well capitalized."[56] Its ratio never fell below 10 percent during the week of March 10. Until Friday, March 14, Bear Stearns's short-term credit ratings were investment grade.[57]

Even more surprising was the funding run on Goldman Sachs, which had minimal asset write-downs or issues with bad MBSs and CDOs. To avoid being

(University of Frankfurt and European University Institute), "The Role of Liquidity in Financial Crises," working paper, 2008.

53. Christopher Cox, chairman of the SEC, "Turmoil in U.S. Credit Markets: Examining the Recent Actions of Federal Financial Regulators," statement before the U.S. Senate Committee on Banking, Housing and Urban Affairs, 110 Cong., 1st sess., April 3, 2008.

54. "Chairman Cox Letter to Basel Committee in Support of New Guidance on Liquidity Management," SEC, March 20, 2008 (www.sec.gov/news/press/2008/2008-48.htm).

55. "Answers to Frequently Asked Investor Questions Regarding the Bear Steams Companies, Inc.," SEC, March 18, 2008 (www.sec.gov/news/press/2008/2008-46.htm).

56. "Chairman Cox Letter to Basel Committee in Support of New Guidance on Liquidity Management."

57. Mark Pittman and Caroline Salas, "Bear Stearns Has Credit Ratings Slashed after Bailout," Bloomberg, March 14, 2008 (www.bloomberg.com).

acquired to mitigate funding issues, it was forced to convert to a commercial bank holding company regulated by the Federal Reserve. A few days before Goldman Sachs applied to be a commercial bank, it reported positive earnings for the quarter and $102 billion in liquidity, and its stock price was around $133 per share.[58] Even Goldman Sachs, however, could not withstand funding pressures. Ultimately it sought access to the insured deposits of a commercial bank 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.[59] We also now know that a lack of confidence in a bank's creditworthiness can cause such a run on its secured funding that it can fail, even though its capital exceeds the Federal Reserve's standard for being well capitalized[60] and its liquidity exceeds SEC recommendations. Even given adherence to regulatory standards, a number of investment and commercial banks experienced financial distress during this period, with investment banks generally faring worse early on than commercial banks. Investment banks generally held a greater portion of their assets for trading purposes than commercial banks. Because FASB 157 requires firms to mark the value of traded assets to market, investment banks were forced to revalue more of their assets sooner than most 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 guar-

58. Goldman Sachs Group, Inc., Third Quarter Results, Form 8-K, September 16, 2008 (www.sec.gov/Archives/edgar/data/886982/000095012308011074/y71185e8vk.htm).

59. See Anil K. Kashyap (University of Chicago and National Bureau of Economic Research), Raghuram G. Rajan (University of Chicago and National Bureau of Economic Research), and Jeremy C. Stein (Harvard University and National Bureau of Economic Research), "Rethinking Capital Regulation," working paper, 2008, for the argument that the cycle could be broken if firms were able to buy capital insurance.

60. 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 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." "Answers to Frequently Asked Investor Questions Regarding the Bear Steams Companies, Inc.," press release, SEC (www.sec.gov/news/press/2008/2008-46.htm).

anteed by the Federal Reserve and that we now know can disappear within hours.

The question, then, is whether the market could reasonably have anticipated that investment banks could face such a dramatic funding crisis. Critics have asserted that gross leverage (assets divided by stockholders' equity) was high over the period.[61] Measuring leverage for financial service firms, however, is more complex than for industrial firms, and gross leverage is rarely used. Instead leverage is nearly always measured by using globally accepted Basel standards.[62] Under the Basel 2 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 the impact of off–balance sheet positions, especially over-the-counter (OTC) derivatives, and differences in the riskiness of assets (it weights high-risk positions more than low-risk positions). The largest investment banks were "required to maintain an overall Basel capital ratio of not less than the Federal Reserve's ten percent 'well-capitalized' standard for bank holding companies"[63] and to maintain tentative net capital of at least $1 billion and net capital of at least $500 million.[64] 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.[65] The liquidity requirements, like those of other international and domestic regulators contemplating similar issues, did not anticipate the 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.[66] According to a May 2008 report of the International Organization of Securities Commissions (IOSCO), firms' problems arose because "the inability to obtain secured or unsecured debt financing, difficulty in obtaining funds from a subsidiary,

61. See, for example, Kara Scannell, "SEC Faulted for Missing Red Flags at Bear Stearns," *Wall Street Journal*, September 27–28, 2008, p. A3.

62. "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." Government Accountability Office (2007).

63. Securities and Exchange Commission (2008, p. 8).

64. "SEC Holding Company Supervision with Respect to Capital Standards and Liquidity Planning," SEC, March 7, 2007 (www.sec.gov/divisions/marketreg/hcliquidity.htm). Tentative capital is net capital before deductions for market and credit risk. SEC (2008, p. 11).

65. SEC (2008, p. 4).

66. Cox, "Turmoil in U.S. Credit Markets: Examining the Recent Actions of Federal Financial Regulators."

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."[67] 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 on by both commercial and investment banks. Similarly, it would have been difficult if not impossible to understand the flaw in the fundamental assumption in the funding models of most investment banks and many commercial banks—that is, that secured lending that needs to be refinanced frequently will be available, even when markets are stressed.[68]

Legal Issues Raised by Credit Crisis Losses

Needless to say, a number of different parties have been adversely affected by the losses resulting from the decline in the value of financial instruments—particularly instruments tied to the value of mortgages—and they are bringing or are likely to bring legal claims seeking to recover some of those losses. We begin by discussing some of the possible claims by CDO and MBS purchasers, then examine some of the issues facing plaintiffs bringing the various class action lawsuits (appendix 5A). Plaintiffs will have to successfully navigate three basic principles of securities law to defend their claims: there can be no "fraud by hindsight"; there can be no actionable disclosure deficiency with respect to information that the market knew (the "truth on the market" defense); and plaintiffs must prove loss causation for their claimed damages. The application of those principles is necessarily informed by the evolving nature of the securitization market in the years immediately before the credit crisis.

Obviously, it is impossible to cover the entire spectrum of the types of claims that will be brought by different parties as a result of the current financial crisis. Perhaps most notably, we will not specifically discuss various legal issues raised by exposure due to credit default swaps, the derivative actions that have been filed against firms under state law, or claims arising out of losses suffered by mutual fund investors and purchasers of auction rate securities. The exclusion of such

67. Technical Committee of the International Organization of Securities Commissions (2008, p. 14).
68. See Brunnermeier (2009).

claims is not to say that some of them will not also raise some of the issues that we discuss, such as the requirement that plaintiffs establish loss causation.

Claims by CDO Purchasers

To understand the fallout from the credit crisis and the legal claims that it has generated, it is important to recognize that many of the losses suffered by investors, particularly the commercial and investment banks, are due to CDO exposure. 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 commercial paper issued by ABCP conduits that held super-senior securities. Banks' purchases of ABCP typically were 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 amounts of asset write-downs. On February 14, 2008, UBS announced approximately $18.7 billion in losses for its full-year 2007 results. Approximately 50 percent of those losses were due to UBS's super-senior positions, and another 16 percent arose from its CDO warehouse positions acquired through its CDO origination and underwriting business.[69] On October 24, 2007, Merrill Lynch disclosed $7.9 billion in write-downs, including $5.6 billion in super-senior CDO losses.[70] On January 17, 2008, the firm announced further write-downs of $11.5 billion for its CDO positions, and in July 2008, it sold a $30.6 billion gross notional amount of U.S. super-senior CDOs for $6.7 billion. Those securities were valued at $11.1 billion before the sale. Super-senior CDO exposures wrecked havoc at other banks as well.[71]

From the standpoint of both litigation and regulatory policy, 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

69. The UBS Shareholder Report on UBS's Write-Downs, 2008 (www.ubs.com/1/ShowMedia/investors/shareholderreport?contentId=140333&name=080418ShareholderReport.pdf).

70. The Merrill Lynch, October 24, 2007, 8-K (http://ir.ml.com/sec.cfm?DocType=Current&Year=2007).

71. See, for example, Morgan Stanley's 2008 10-K (filed January 29, 2008), in which it attributed most of its $9.4 billion loss to super-senior CDOs (www.sec.gov/Archives/edgar/data/895421/000119312509013429/d10k.htm).

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, viewing the situation ex post, underestimated the risk of many of those securities. Relative to the errors in rating MBSs, 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 simply because there is no registration statement, CDO purchasers will not be able to bring section 11 claims under the Securities Act of 1933 against the issuers or sponsors of CDOs. Nor can CDO purchasers bring section 12(a)(2) actions under the Securities Act of 1933 for misleading disclosures in communications made during the CDO sales process. Under the Supreme Court's decision in *Gustafson* v. *Alloyd Co.*, communications made in private offerings (such as rule 144A offerings) are not "by means of a prospectus or oral communication," which is a necessary prerequisite to having a cause of action under section 12(a)(2).[72]

Another 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 its implication for regulatory policy going forward. A number of commentators, including 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."[73] However, the need for such a revision 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 involving CDOs will involve contractual claims. It is unclear at this point how fruitful the CDO "subscription agreement," pursuant to which purchasers agree to buy CDO interests, will be as a source of contractual claims because such 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 indenture agreements for ensuring compliance with the terms of the

72. *Gustafson* v. *Alloyd Co.*, 513 U.S. 561 (1995).

73. *Containing Systematic Risk: The Road to Reform*, Report of the Counterparty Risk Management Policy Group III, August 6, 2008 (www.crmpolicygroup.org/docs/CRMPG-III.pdf).

agreement. Table 5-4 documents the identity of CDO trustees for 2006 through the first half of 2008.[74] 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 the holders of the more senior CDO tranches obviously will resist. Indeed such "tranche warfare" litigation is already well under way. For instance, Deutsche Bank, as trustee of a CDO indenture agreement, has sought judicial resolution of a dispute between various CDO tranche holders over how CDO proceeds should be distributed.[75] The 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 to the CDO tranche holders whatever assets are held by the CDO. Appendix 5B documents the CDOs that were on the path to liquidation as of May 30, 2008, whereas table 5-5 documents CDO sponsors by number of CDO defaults as of January 18, 2008.[76] 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 distributions. 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, hypothetically, holders of various CDO tranches would enjoy. Such computer simulations are typically provided to QIBs during the marketing of CDOs.

There is yet another potential source of litigation by CDO purchasers—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 as a result of the original assets of Corvus having been sold and replaced with poorly performing assets, its investment was rendered largely worthless. HSL Nordbank brought a number of claims against Barclays, including claims that Barclays had not adequately disclosed the

74. The table is based on data presented in *Asset-Backed Weekly Update*, November 15, 2008 (www.abalert.com/). We are grateful to *Asset-Backed Weekly* for providing us with a free subscription to their publication.

75. See, for example, the complaint filed in *Deutsche Bank Trust Company* v. *Lacrosse Financial Products LLC*, Supreme Court of the State of New York, County of New York, December 3, 2007 (http://securities.stanford.edu/).

76. The tables are based on data presented in *Asset-Backed Weekly Update,* January 18, 2008 (www.abalert.com/) and from *UBS CDO Research,* May 30, 2008.

Table 5-4. *Trustees for CDOs Issued Worldwide, 2006 through First Half of 2008*

	2008 (first half)			*2007*			*2006*		
Trustee	*Issuance ($ millions)*	*Number of deals*	*Market share (percent)*	*Issuance ($ millions)*	*Number of deals*	*Market share (percent)*	*Issuance ($ millions)*	*Number of deals*	*Market share (percent)*
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	3,762.6	15	7.5	29,448.9	58	7.2	136,142.7	350	28.3
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 (www.abalert.com/).

Table 5-5. CDO Sponsors by Number of Defaults as of January 18, 2008

Collateral manager	*Defaulted issuance ($ millions)*	*Number 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) (www.abalert.com/).

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

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 that collateral managers improperly substituted poorly performing assets for existing CDO assets—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 that 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 claims of improper substitution of subpar performing assets for existing CDO assets (as was alleged in the HSL Nordbank case). Potential ERISA duty of loyalty claims, to which ERISA fiduciaries also are subject, could be brought based on transactions between CDOs and affiliates of CDO sponsors, assuming that the CDO sponsors and collateral managers are one and the same. Being involved in transactions with CDOs, such as by being the counterparty to certain types of derivative transactions entered into by the CDOs, is 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 claim to exemption from ERISA commonly used by CDOs is the argument 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 because Department of Labor regulations exempt from ERISA those SPVs whose MBSs are registered under the Securities Act of 1933.[77]

Another interesting source of potential litigation with respect to CDO purchases is the claim that the pricing of CDO assets or interests therein was inflated relative to the "true" value of the assets or interests. 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 found in a long line of cases that have held that, absent adequate disclosure, when the price charged an investor bears no reasonable relation to the "prevailing price," it operates as a fraud on purchasers under rule 10b-5.[78] Such pricing claims are likely to be challenging to prove, in part because of the lack of 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. 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. Other standard sources of financial data also lack comprehensive pricing data on CDOs.

Besides the difficulty of obtaining CDO information, two additional issues could loom large in the context of valuation claims. First, as the earlier discussion of CDOs emphasized, many CDOs are structured to cater to the needs and preferences of targeted investors, with the result that there is substantial heterogeneity across CDOs. That customization makes pricing comparisons across CDOs quite challenging, even when data are available. Second, if CDO purchasers

77. See Frankel (2006, p. 184) for a discussion of these regulations.

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

received adequate disclosure, then it would be difficult to claim that there was fraudulent conduct in the valuation of a CDO.

Claims by MBS Purchasers

Although the most dramatic losses occurred for purchasers of CDOs, MBS credit ratings also were downgraded and investors suffered significant losses. Litigation brought by major purchasers of MBS already is under way.[79] One possible basis for a claim, given that the vast bulk of MBSs are registered, is a false or misleading registration statement, giving rise to section 11 liability. The issuer of the security, the SPV sponsor, underwriters, and auditors all will be subject to potential section 11 liability (with all but the issuer 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 actions are likely candidates for being characterized as misleading disclosures in the registration statement or offering documents for registered MBSs? MBS purchasers could pursue potentially any of the four following actions, each of which relates in some way to the underwriting quality of the underlying mortgages themselves:

—outright fraud with respect to mortgage origination documents, rendering statements made in the offering process false

—inadequate disclosure of underwriting standards for the underlying mortgages

—misrepresentation of the extent to which exceptions were made to underwriting standards

—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 because 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 the MBSs in question.

One interesting issue that will arise in the context of litigation is the circumstances in which misstatements will be deemed "material," a requirement for

79. See, for example, *Luminent Mortgage Capital Inc.* v. *Merrill Lynch* (Eastern District Court of Pennsylvania).

bringing action under section 11, section 12(a)(2), rule 10b-5, and most related claims under state law. For instance, to what extent should the determination of the materiality of a misrepresentation turn on the hedging strategy of an MBS purchaser? Consider, for example, an MBS purchaser who buys the most junior tranches of an MBS as well as the MBS tranche that is entitled only to prepayment penalties collected when homeowners pay 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 because fewer interest payments will be paid. The converse also is 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 prepayment 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, because 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 firm looms as a potentially critical issue in litigation 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 those actors 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 MBSs will arguably affect the availability of section 11 due diligence defenses with respect to material misstatements in MBS registration statements. In this regard, plaintiffs are likely to point to the decision in *In re Worldcom, Inc. Securities Litigation*, wherein the court concluded that the 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.[80] 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.

80. *In re Worldcom, Inc. Securities Litigation*, 346 F.Supp. 2d 628 (S.D.N.Y. 2004). The key issue here will be what constitutes a "red flag" that calls for further investigation before a due diligence defense will be viable. The discussion in *In re Worldcom* is quite sparse on this critical issue.

In short, it is quite likely that plaintiffs, in attempting to establish liability for various disclosure deficiencies, will try to use information uncovered by ongoing federal and state investigations. For example, the New York and Connecticut attorneys general 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 MBSs. It has been reported that the FBI also is investigating issues relating to the quality of loan underwriting standards. As of the writing of this chapter, it was still unclear what revelations, if any, those investigations will produce.

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

Although the litigation by purchasers of CDOs and MBSs is noteworthy, by far the most important litigation likely to arise from the credit crisis is 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 (see summary in appendix 5A). Of course, the litigation extends well beyond financial firms, with rule 10b-5 class action, section 11, and ERISA complaints being filed against nonfinancial firms as well.

Plaintiffs undoubtedly will argue that the information provided by the banks sponsoring MBS special purpose vehicles and underwriting MBSs or sponsoring CDOs establishes scienter, one of the main hurdles in bringing rule 10b-5 actions. Plaintiffs will claim that banks knew that the MBS and CDO interests held on their own books were worth significantly less than reported and that that information was both material and not adequately disclosed in 10-Ks and other disclosure documents. Similarly, plaintiffs will argue that the "contingent losses" faced by banks as a result of bringing SPV or SIV (structured investment vehicle) 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 that when acting in the role of fiduciary with respect to ERISA-covered plans, they breached their fiduciary duties by purchasing (or making available) imprudent investments on behalf of ERISA plans.

We believe, however, that plaintiffs that bring 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 that 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.

No Fraud by Hindsight

The basic distinction between reasonable ex ante expectations and ex post losses is fundamental to finance theory and has long been reflected in the U.S. securities laws. That distinction will go to the core of many of the alleged actionable deficiencies with respect to disclosures by banks and mortgage originators to their security holders. It is also likely to prove quite important in the litigation brought by MBS and CDO purchasers. In our judgment, an important stumbling block for a number of the claims being brought will be whether plaintiffs have a cause for action in the 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 those participants themselves suffered huge losses. More specifically, the class periods of many of the rule 10b-5, section 11, and ERISA class action lawsuits begin in 2006 or even earlier, as shown in appendix 5A. The timing raises the important question of whether the credit crisis was foreseeable in 2006 or before.[81]

Judge Henry Friendly pithily captured the distinction between ex ante expectations and ex post losses in *Denny* v. *Barber*, when he explained that there can be "no fraud by hindsight."[82] Judge Friendly made that observation in the course of rejecting a claim that Chase Manhattan Bank had engaged in fraud as evidenced, according to the plaintiffs, by inadequate disclosure of the bank's participation in making risky loans that eventually resulted in the bank suffering significant losses. More recently, in *Olkey* v. *Hyperion 1999 Term Trust*, the Second Circuit Court considered a claim by investors in a closed-end fund that held MBSs that the fund should face liability under sections 11 and 12(a)(2) of the Securities Act of 1933 and rule 10b-5.[83] The investors claimed, among other things, that there was misrepresentation in the fund prospectuses because the prospectuses failed to disclose the risky nature of the underlying MBS portfolio. They also claimed that the fund failed 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 sub-

81. The complaints filed to date typically assert that the losses were foreseeable, but with little in the way of substantiation, at least at this time. See, for example, *Coulter* v. *Morgan Stanley* Class Action Complaint: "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).

82. *Denny* v. *Barber*, 576 F.2d 465 (2d Cir. 1978).

83. *Olkey* v. *Hyperion 1999 Term Trust*, 98 F.3d 2 (2d Cir. 1996).

stantial losses when interest rates changed. In rejecting their claims, the court 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 Court 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*.[84] The court stressed that to establish a disclosure deficiency as a result of the loss of value of bonds (securitized by homes), 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 circuit courts is in line with the Second Circuit Court's ex ante approach toward considering disclosure adequacy. For instance, in *Ford Motor Company Securities Litigation*, the Sixth Circuit Court 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.[85] On a similar note, *In re K-Tel Int'l, Inc. Securities Litigation*, the Eighth Circuit Court conditioned the duty to disclose the impact of a future occurrence on the ability to "reasonably estimate[]" that occurrence.[86]

A number of pieces of evidence will speak to what was foreseeable at different points in time, some of which have already been discussed here, such as the profound changes in the RMBS and CDO markets in recent years. One way to consider this issue is to look at banks' reported value-at-risk (VaR) estimates, a metric widely used by banks immediately before the credit crisis to measure the risk inherent in at least some of their financial positions. Did those estimates predict, even in a rough way, the size of subsequent asset write-downs or which firms were most exposed if credit markets tightened? Based on the VaR figures disclosed in banks' 10-Ks from 2006 (summarized in table 5-6), the answer appears to be a resounding "no." Table 5-6 indicates that 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, not a firm-wide VaR (a figure that UBS, the bank with the highest reported VaR, does report). Toward the

84. *Teamsters Local 445 Freight Division Pension Fund* v. *Dynex Capital*, 2008 U.S. App. LEXIS 13449 (2d Cir., June 26, 2008).

85. *Ford Motor Company Securities Litigation*, 381 F.3d 563 (6th Cir. 2004).

86. *In re K-Tel Int'l, Inc. Securities Litigation*, 300 F.3d 881, 893 (8th Cir. 2002).

Table 5-6. *Value at Risk, 2004–07*[a]
Millions of dollars

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

Source: Securities and Exchange Commission, 2006 10-K annual reports (www.sec.gov).

a. VaR statistics as reported in the 10-K or 20-F (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 were not yet available for 2007.

b. Represents a 99 percent confidence interval, one-day holding period.

c. Represents a 95 percent confidence interval, one-day holding period.

d. Aggregate (trading and nontrading portfolio) VaR.

e. Trading portfolio VaR.

other end of the spectrum, the third-lowest reported VaR estimate was that of Merrill Lynch, whose VaR was less than half that of Goldman Sachs. Of course, Merrill Lynch has had among the highest asset write-downs, 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 write-downs as of August 27, 2008 (summarized in table 5-1) is a meager 0.2. The average ratio of asset write-downs 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 regarding 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 an SPV was created and interests therein sold to investors. A commonly held view among those who structure asset-backed securities is that one needs at least

two years of historical information about asset performance, preferably through different economic conditions, to predict future performance accurately in different scenarios. In the case of MBSs and CDOs that own MBSs, the relevant information is the historical information for *that* type of mortgage pool or MBS. This observation is potentially important because most of the MBSs 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 establish that there were false or misleading material disclosures or a violation of the duty to disclose material information, not merely observe that they suffered extensive economic losses.

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 that bank sponsors of SPVs and CDOs and underwriters of MBSs had any knowledge concerning these matters that was not also known to the market at large. Indeed, it is unclear what basis one could use to establish that 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 in which the market is as informed as a defendant regarding 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, assuming that 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 Court succinctly summarized this doctrine in *Ganino* v. *Citizen Utilities Co.*, "a misrepresentation is immaterial if the information is already known to the market because the misrepresentation cannot then defraud the market."[87] Consider, for example, a claim that a bank knew (because a due diligence firm informed the bank that the underwriting quality of some mortgages was questionable) that the true value of a pool of mortgages held in an SPV or on its own books was lower than that publicly reported in the offering materials or in the bank's disclosures to the market. If the underwriting quality for the specific type of mortgage in question (for example, 2006

87. *Ganino* v. *Citizen Utilities Co.*, 228 F.3d 154, 167 (2000).

refinancing no-documentation mortgages originated by mortgage brokers) is impaired on a marketwide basis (and not just for the mortgage pool in question), then it becomes debatable whether the information on underwriting quality held by the bank was any different from that known by the market based on existing marketwide information. 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 that the disclosed information is arguably "material"—is placed on the plaintiff.

Even assuming that a bank had private information that the underwriting quality of the mortgages held by an 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), what the market knew and when it knew is nevertheless still legally relevant. 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 the information known by the market at large. In that connection, it is worth noting that large and diversified pools of mortgages or MBSs, 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 also will be potentially relevant to claims that there was inadequate disclosure of financial exposure to off–balance sheet losses. Even assuming an obligation to disclose such information, the question will remain whether nondisclosures were material or whether the market was already aware of potential exposure. 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 of off–balance sheet exposure or the lack thereof.

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.[88] In fact, such 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

88. Gorton and Souleles (2006).

by which information relating to off–balance sheet exposure would have reached the market and been impounded in security prices. How one might establish or disprove that 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 appendix 5A, claim that the market is "semi-strong efficient"—that is, that the security prices of defendants reflected all readily available information. That argument is required to establish reliance on a classwide basis under the "fraud on the market" doctrine, but it raises the specter of a successful truth-on-the-market argument regarding the nonmateriality of off–balance sheet exposure if information about it was readily available.

Second, there are at least two important sources of disclosures besides firms' periodic reports under the Securities Exchange Act and in 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 MBSs), are readily accessible for all publicly traded MBSs. Table 5-7 summarizes some of the information disclosed in the registration statements of two representative Banc of America MBS deals; one from 2001 and another from 2006. The summaries reveal three things that appear to be true more generally for most MBS registration statements during that period. First, the quality of the MBS disclosures appears to increase over time; that is, more information was disclosed in 2006 than 2001. The difference may simply be a function of the SEC's promulgation in 2004, after a number of years of study and consultation, of Regulation AB, which mandated certain disclosures for asset-backed securities, including MBSs. 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 JPMorgan Chase, 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

Table 5-7. *Summary of Some Information Disclosed in Two Banc of America MBS Issuances from 2001 and 2006*

	Issue date 6/27/01		*Issue date 4/15/06*	
Information	*Range or total*	*Weighted average*	*Range or total*	*Weighted average*
Unpaid principal balance	$276,063 to $1,000,000	$490,115	$430,400 to $2,864,000	$714,114
Interest rates (percent)	5.250 to 7.625	6.90	5.125 to 7.250	6.22
Rate ceiling (percent)	10.250 to 12.625	11.90	11.125 to 13.250	12.22
Months to first adjustment date	58 to 60 months	59 months	5 to 36 months	35 months
Remaining terms to stated maturity	119 to 360 months	359 months	359 to 360 months	359 months
Original term	120 to 360 months	360 months	360 months	--
Loan age	0 to 2 months	1 month	0 to 1 month	1 month
Original loan-to-value ratio	8.29 to 95.00	67.94	40.91 to 95.00	73.91
Debt-to-income ratio			13.80 to 61.00	39.27
Credit scores			642 to 810	749
Latest maturity date	July 1, 2031	--	March 1, 2036	--
Percent of interest-only mortgage loans			80.31	--
Percent of "alternative" underwriting guideline mortgage loans		30.47	--	
Percent of mortgage loans secured by investor properties		2.57	--	
Percent of leasehold mortgages			0.00	--
Geographic concentration of mortgaged properties in excess of 5 percent of the aggregate unpaid principal balance				
Maximum single zip code concentration (percent)	1.99		8.02	

sponsored by the bank and conduits sponsored by unrelated institutions. For example, JPMorgan Chase disclosed $2.68 billion in sponsored unused ABCP conduit liquidity guarantees outstanding and another $99 million in unsponsored conduits for the second quarter of 2007, which ended June 30. 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 that off–balance sheet exposures, including transfers of financial assets in securitizations, are "priced" by the market (see the literature survey in Schipper and Yohn 2007).[89] For example, Niu and Richardson document that off–balance sheet debt relating to securitization has the same risk relevance to a firm's stock—the stock's capital asset pricing model (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—that is, investors' ability to force a firm, either as a result of contract or reputational concerns, to purchase off–balance sheet debt.[90] Consistent with those findings, Landsman, Peasnell, and Shakespeare report that analysts treat securitizations as secured borrowing in much the same way that analysts view securitized assets and liabilities as belonging to sponsoring banks.[91] Lim, Mann, and Mihov document that the market impounds off–balance sheet financing of operating leases into corporate debt yields, despite limited disclosure by firms of such arrangements.[92] Of course, whether the market knew and priced certain information will ultimately turn on the specific factual circumstances at question in the litigation.

Loss Causation

In the wake of the Supreme Court's 2005 decision in *Dura Pharmaceuticals* v. *Broudo,* the issue of loss causation has become increasingly important in securities class action litigation.[93] Loss causation requires plaintiffs to prove in a rule 10b-5 action that the losses that they seek to recover were "caused" by misconduct

89. Schipper and Yohn (2007).

90. Flora Niu (School of Business and Economics, Wilfrid Laurier University) and Gordon D. Richardson (Joseph L. Rotman School of Management, University of Toronto), "Earnings Quality, Off–Balance Sheet Risk, and the Financial-Components Approach to Accounting for Transfers of Financial Assets," Social Science Research Network, 2004 (http://ssrn.com/abstract=628261).

91. Wayne R. Landsman (University of North Carolina at Chapel Hill), Ken V. Peasnell (Lancaster University), and Catherine Shakespeare (Ross School of Business, University of Michigan), "Are Asset Securitizations Sales or Loans?" research paper, August 2006 (http://ssrn.com/abstract=924560).

92. See Steve Lim, Steven Mann, and Vassil Mihov (all affiliated with the M. J. Neeley School of Business, Texas Christian University), "Market Evaluation of Off–Balance Sheet Financing: You Can Run but You Can't Hide," working paper, 2003.

93. *Dura Pharmaceuticals* v. *Broudo,* 544 U.S. 336.

that ran afoul of rule 10b-5 and not by marketwide declines. Perhaps the most notable loss causation decision is the Fifth Circuit Court's opinion in *Oscar Private Equity Investments* v. *Allegiance Telecom, Inc.* that loss causation must be established before classwide reliance can be presumed under a fraud-on-the-market theory *at the class certification stage*.[94] 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 marketwide 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 interbank 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 5-7, the most dramatic market break in the TED spread occurred on August 9, 2007,[95] although some commentators perceived signs of distress emerging as early as July 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.[96] It bears emphasizing that the most relevant spread for valuing securities will depend on the instruments in question. For instance, super-seniors, which were the source of substantial losses for banks, were not downgraded by rating agencies until mid-October 2007.[97]

There is an important and ongoing academic debate on what caused the increases in spreads over time. Some financial economists interpret the jump in the TED spread as a sign that banks perceived an increase in borrower default risk (counterparty risk), even though the counterparties in the LIBOR wholesale

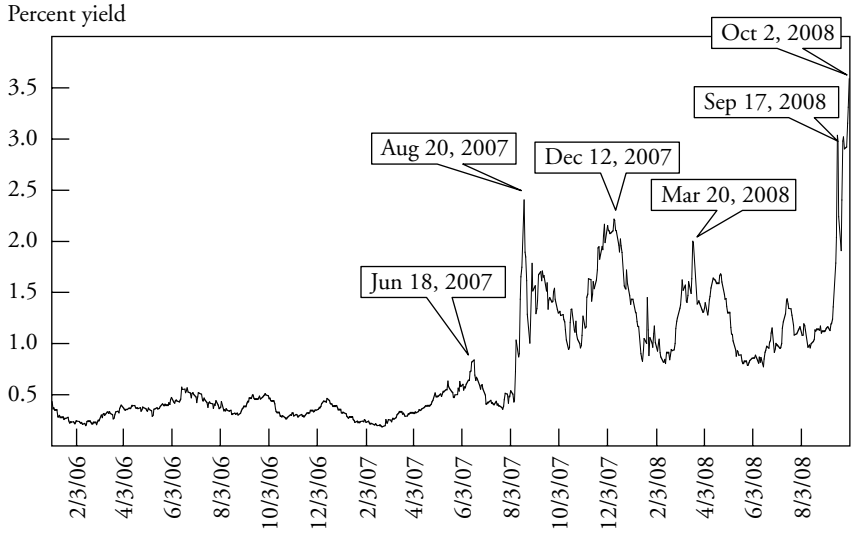
94. *Oscar Private Equity Investments* v. *Allegiance Telecom, Inc.*, 2007 U.S. App. LEXIS 11525 (May 16, 2007).

95. On August 9, 2007, the European Central Bank and the Federal Reserve injected money into the banking system because of concerns over credit market conditions. On the 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.

96. Brunnermeier (2009).

97. Mark Pittman, "Moody's Downgrades $33.4 Billion of Subprime Bonds," Bloomberg, October 11, 2007 (www.bloomberg.com).

Figure 5-7. *Three-Month US$ LIBOR–Three-Month Treasury Bill Spread*



Source: Federal Reserve Bank of Saint Louis (http://research.stlouisfed.org/fred2/data/DTB3.txt) and British Bankers'Association (www.bba.org.uk/bba/jsp/polopoly.jsp?d=141&a=627).

money market are among the largest, most well-established banks.[98] Others, however, believe that the spread widened because cash-constrained banks have been unwilling to lend (liquidity risk).[99] Regardless of the answer, the important legal point is that increases in spreads appear to have resulted from marketwide factors. That conclusion is important because losses arising from the decline in the market value of MBS and CDOs that resulted from marketwide increases in counterparty and liquidity risk will have a difficult time being traced to misconduct by individual firms that is actionable under rule 10b-5.

Even if an institution fails in its legal duty to disclose the full details of potential exposure, including under extreme market conditions, the relevance of such

98. The contributing banks for the LIBOR rate (US$) in 2007 were Bank of America, Bank of Tokyo–Mitsubishi UFJ, Barclays Bank, Citibank, Credit Suisse, Deutsche Bank, HBOS, HSBC, JPMorgan Chase, Lloyds TSB Bank, Rabobank, Royal Bank of Canada, Norinchukin Bank, Royal Bank of Scotland Group, UBS, and WestLB.

99. John B. Taylor (Stanford University) and John C. Williams (Federal Reserve Bank of San Francisco), "A Black Swan in the Money Market," Working Paper W13943 (Cambridge, Mass.: National Bureau of Economic Research, April 2008) (http://ssrn.com/abstract=1121734).

disclosure 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 that it would have but for the actionable misconduct. If such a disclosure—say, at the beginning of 2006—of a firm's full potential exposure would not have changed the firm's stock price, then loss causation will fail to exist as there simply would be no such 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 that banks and other market participants could reasonably have known the extent of their trading partners' counterparty risk and thus avoided losses. The challenge for plaintiffs, however, will be to show that a single institution could have known such information. Consider, for example, one of the most exposed investments, the lower tranches of MBS issued against subprime mortgages. Those tranches often were repackaged into CDOs, which were repackaged yet again into other CDO structures. SPVs issuing the MBSs 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. It therefore 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 in which CDO tranches are issued, are difficult to track. Indeed, some CDO purchasers used confidentiality agreements to prohibit CDO collateral managers from knowing their identities.

ERISA Litigation

Appendix 5A indicates that 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 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."[100] The Citigroup ERISA complaint alleges that the losses from the ERISA violations were "over $1 billion."[101] 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 states merely that State Street's alleged ERISA violations caused "hundreds of millions of dollars of losses."[102]

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 the defendant's breach of its fiduciary duty. Second, the damages resulting from a breach of fiduciary duty under ERISA have tended to be quite generous, at least as reflected in the terms on which ERISA lawsuits were settled before the *Dura Pharmaceuticals* decision.

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 allegedly therefore were ERISA fiduciaries—knew or should have known that the companies faced substantial losses. They therefore should have disclosed that information to plan participants or should have refused to purchase the securities in the first place.

Several interesting issues will arise with respect to such claims, 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 that 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 such a duty, surely it 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

100. *Johannesson* v. *Fremont General Corporation* Complaint, p. 4 (http://securities.stanford.edu/).

101. *Rappold* v. *Citigroup* Complaint (http://securities.stanford.edu/).

102. See *Unisystems, Inc.* v. *State Street Bank and Trust Company* Complaint (http://securities.stanford.edu/).

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 that logic has an interesting implication for damages resulting from such violations. In such cases, ERISA fiduciaries' failure to disclose adverse information would not have *caused* the losses suffered by plan participants with respect to the securities that they held at the time the breach of the duty to disclose but rather merely *delayed* it, because the information eventually came out.

Loss Causation in ERISA Litigation

Plaintiffs bringing ERISA actions have long relied on the Second Circuit Court's 1985 opinion in *Bierwirth* v. *Donovan* to argue that damages should be calculated on the basis of the best-performing fund available in the plan.[103] In times of market decline, such a fund might well be a money market mutual fund. That 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."[104] 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 by the defendant (in *Dura Pharmaceuticals* the misconduct was actionable under rule 10b-5). Applying the same reasoning to ERISA damages, one could argue that market and industry-wide declines are not the "result" of a breach of fiduciary duty. Such an argument, given the important implication that 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.

The Rating Agencies

Many commentators have blamed the rating agencies, principally Moody's, Standard & Poor's, and Fitch, for investor losses. Both Moody's and McGraw-Hill, the parent company of Standard & Poor's, are facing rule 10b-5 class action lawsuits. This litigation raises some interesting issues. The crux of plaintiffs' claims is that

103. *Bierwirth* v. *Donovan*, 754 F.2d 1049.
104. 29 U.S.C. 1109 (2000).

the rating agencies "assigned excessively high ratings to bonds backed by risky subprime mortgages."[105] The challenges facing plaintiffs here are two-fold: specifying the precise meaning of "excessively high" and establishing why "excessively high" ratings, so defined, "inflated" the stock prices of the rating agencies to the detriment of their security holders. As to the first issue, if the ratings criteria for MBSs 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 that rating 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 if one stipulates 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 issuers had very few choices for ratings), the mere fact that business practices might be questionable does not establish that a stock price did not 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, many of the losses as well as the controversy over the quality of ratings have 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 for the success of offerings but for their rating services. Rating agencies do not purchase rated tranches with a view toward 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.

Conclusions

Two of the strengths of the U.S. capital market are its ability to innovate and to spread risk widely among investors. The recent past has highlighted, however, that successful innovation and risk spreading are predicated on the ability of sophisticated market participants to rely on information conveyed across the

105. See, for example, *Teamsters Local 282 Pension Trust Fund* v. *Moody's Corporation* Complaint.

chain of participants that originate, appraise, and service collateral and underwrite, manage, insure, rate, and sell securities. When information cannot be or is not conveyed or when 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 may serve to identify weak links in that chain. Alternatively, the litigation may serve to highlight where the market may have underappreciated certain risks or failed to anticipate particular circumstances. That distinction is one with which current litigants undoubtedly will have to struggle.

Appendix 5A. *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. Investment	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. International 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 Financial 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

(continued)

Appendix 5A. *Summary of Securities Class Action Lawsuits as of November 15, 2008* (continued)

Firm	*Date*	*Case*	*Cause of action*	*Class period*
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
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	10b-5	11/06/06 – 06/09/08
Countrywide	1/16/08	*Snyder* v. *Countrywide Financial Corporation*	California state law	
Financial Corp.	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 Investment Mgmt.	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 Mortgage	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
Federal National Mortgage 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	Fed. Nat. Mort. Association ERISA Litigation	ERISA	4/17/07 – present
Fidelity Mgmt & Research	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	*The Esche Fund* v. *Fifth Third Bancorp*	10b-5/Section 11	10/19/07 – 6/17/08
	8/12/08	*McGee* v. *Fifth Third Bancorp*	Section 11 & 12(a)(2)	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 National 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	*Antencio* v. *Fremont General Corporation*	10b-5	7/28/05 – 8/10/07
	9/21/07	*Mathews* v. *Fremont General Corporation*	10b-5	5/9/06 – 2/27/07
	9/19/07	*Miller* v. *Fremont General Corporation*	10b-5	5/9/06 – 2/27/07
	9/4/07	*Al-Beitawi* v. *Fremont General Corporation*	10b-5	5/9/06 – 2/27/07
	4/24/07	*McCoy* v. *Fremont General Corporation*	ERISA	1/1/03 – present
	5/29/07	*Sullivan* v. *Fremont General Corporation*	ERISA	1/1/05 – present
	5/25/07	*Salas* v. *Fremont General Corporation*	ERISA	12/31/05 – present
	5/15/07	*Johannesson* v. *Fremont General Corporation*	ERISA	1/1/05 – present
	5/15/07	*Anderson* v. *Fremont General Corporation*	ERISA	5/9/06 – 3/5/07
General Electric	7/30/08	*Coyne* v. *General Electric Company*	10b-5	3/12/08 – 4/10/08

(continued)

Appendix 5A. *Summary of Securities Class Action Lawsuits as of November 15, 2008* (continued)

Firm	*Date*	*Case*	*Cause of action*	*Class period*
Harborview Mort. Loan Trust	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. Trust 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	*Kadel* v. *Homebanc Corp*	10b-5/Section 11 & 12(a)(2)	3/7/06 – 8/3/07
	1/4/08	*Harbour* v. *Flood*	10b-5	9/26/05 – 8/3/07
Homebank 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.	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 Holdings	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	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. *J. P. 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 Holding	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
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 Management	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. *Municiapl 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	National City Corp. ERISA Litigation	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

(continued)

Appendix 5A. *Summary of Securities Class Action Lawsuits as of November 15, 2008* (continued)

Firm	*Date*	*Case*	*Cause of action*	*Class period*
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
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
	3/17/08	*Howard* v. *The Bear Stearns Companies Inc.*	ERISA	12/14/06 – 3/14/08
	3/18/08	*Becherv* v. *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

(continued)

Appendix 5A. *Summary of Securities Class Action Lawsuits as of November 15, 2008* (continued)

Firm	*Date*	*Case*	*Cause of action*	*Class period*
UBS AG	1/29/08	*Garber* v. *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
	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	Wachovia Corp. ERISA Litigation	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.

Appendix 5B. *CDO Liquidations as of May 30, 2008*

Name	*EOD date*	*Collateral manager*	*Original balance ($ millions)*	*Type*	*Vintage*
Liquidated					
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

(continued)

Appendix 5B. *CDO Liquidations as of May 30, 2008* (continued)

Name	*EOD date*	*Collateral manager*	*Original balance ($ millions)*	*Type*	*Vintage*
Notice of liquidation					
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
Notice of acceleration					
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

(continued)

Appendix 5B. *CDO Liquidations as of May 30, 2008* (continued)

Name	*EOD date*	*Collateral manager*	*Original balance ($ millions)*	*Type*	*Vintage*
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
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

(continued)

Appendix 5B. *CDO Liquidations as of May 30, 2008* (continued)

Name	*EOD date*	*Collateral manager*	*Original balance ($ millions)*	*Type*	*Vintage*
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 2006-1	4/15/08	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

(continued)

Appendix 5B. *CDO Liquidations as of May 30, 2008* (continued)

Name	*EOD date*	*Collateral manager*	*Original balance ($ millions)*	*Type*	*Vintage*
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, proprietary data, May 30, 2008 (underlying data from Standard & Poor's and trustee reports).

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