Residential and Commercial Mortgage Securitization
Current Market Practice, Risk Management & Capital Treatment

OPSRA – Cross Firm Project

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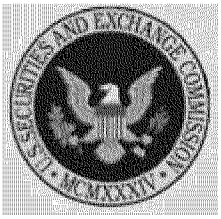

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EXECUTIVE SUMMARY

Introduction

Securitization is the process of aggregating similar assets, such as mortgage loans, into "pools" of loans and structuring those pools to create securities (e.g., Mortgage Backed Securities ("MBS")) where the holder of the security has an interest in the cash flows generated by the underlying loans. CSE firms securitize various assets, but this report focuses on two of the larger areas of securitization—Residential Mortgage Backed Securities ("RMBS") and Commercial Mortgage Backed Securities ("CMBS").

An RMBS is a security whose cash flows are derived from residential debt such as conventional mortgages, home-equity loans, and sub-prime mortgages while CMBS are securities whose cash flows stem from loans secured by commercial real estate such as office buildings, multi-family apartments, and retail property.[1] Additionally, RMBS can be classified as agency RMBS securities that are issued by the Government Sponsored Entities ("GSEs") Fannie Mae, Freddie Mac, and Ginnie Mae or non-agency RMBS, which are issued by private institutions (e.g., Countrywide). With both RMBS and CMBS structures, principal and interest payments from underlying loans are passed through to certificate holders (i.e., investors), after deduction of servicing expenses. CMBS payment structures differ from RMBS in that they often contain bullet payment provisions (e.g., a ten-year balloon payment) with a 25 to 30 year amortization schedule where as the bulk of RMBS amortize over a 15 or 30 year period with no balloon payment.

The securitization process is comprised of four sub-processes: (1) loan origination or acquisition, (2) loan accumulation, (3) security structuring, and (4) sale of securities. Each of these four sub-processes contains several intermediate steps that are discussed later in this report. At a high level, loans are accumulated through origination, through a conduit program, or through bulk purchase. Accumulation through origination occurs when the firm owns an origination facility from which loans are sourced and subsequently securitized. In conduit programs, the CSE firm receives a commitment from mortgage originators to deliver loans, with pre-determined underwriting characteristics, that are pooled together and held for securitization. Bulk purchase is simply purchasing a large pool of loans, typically through a bidding process. Because mortgage securities often require a large number of underlying loans to generate the desired cash flows, firms typically go through an accumulation period of approximately three months. During the accumulation period, firms are exposed to movements in interest rates and changes in credit spreads that can affect the value of underlying loans and the securities that are produced through their securitization. Loans are generally accumulated, structured, and sold through a Special Purpose Vehicle ("SPV"), or trust, that is created to isolate the end investor from credit exposure to the securitizing firm (i.e., the CSE firm).

This report begins with a summary of key findings and is followed by:

- An overview of RMBS and CMBS securitization markets
- A review of the securitization process and participants
- An analysis of RMBS and CMBS securitization pipelines at the CSE firms
- Inherent risks and risk management practices
- Capital treatment

[1] See "Loan Types" in the Glossary of this document for definitions of the various residential loan types.

Key Findings

Business Overview

- **Overall size and dominant exposures** – The size of the overall non-agency residential and commercial mortgage securitization pipelines at the CSE firms has grown significantly over the past few years. Residential pipelines were at $114 billion at year end 2005, which was 40% (or $33 billion) larger than they were at year end 2004. Commercial mortgage pipelines were 88% (or $23 billion) larger, finishing the 2005 year at $49 billion. In recent years, the firms' residential mortgage securitization businesses have been dominated by credit-sensitive sub-prime loans, with all CSE firms having a significant presence in this space. Additionally, a large portion of the firms' non-agency prime securitization businesses have focused on adjustable rate mortgages ("ARMs").

- **Geographic concentration** – The vast majority of residential securitization business is in the United States with a small portion in the UK where many CSE firms have started or acquired sub-prime originators over the past few years. On the commercial side, the exposures are still dominated by positions tied to United States properties; however, many firms have significant, and often lumpy, exposures in Europe and Asia. The individual commercial mortgage positions in Asia, in particular, tend to be large concentrated exposures. At year end 2004, 74% of the commercial mortgage exposure was in the U.S. with 22% in Europe and 4% in Asia. At year end 2005, exposure as a percentage of the total declined to 59% in the United States, increased slightly to 24% in Europe, and grew significantly to 13% in Asia.

- **Alternative mortgage products** – Over the past few years, alternative mortgage products rose in popularity as many borrowers focused more on the mortgage payment and less on the mortgage's interest rate as interest rates and real estate prices rise. Many CSE firms originate or purchase a significant amount of these non-traditional loans, such as option-ARMs[2] and interest-only loans, for their residential securitization business. For example, option-ARMs recently accounted for roughly 25% of Bear Stearns' ARM inventory. Most of these loans were purchased from mortgage banks and brokers, but more recently, Bear Stearns' origination facility, Bear Stearns Residential Mortgage Corporation, began generating significant amounts of this product for securitization.

- **Vertical integration within RMBS** – In recent years, CSE firms have, to varying degrees, added origination and servicing capabilities to their existing securitization operations, in efforts to enhance their securitization business by becoming more vertically integrated. A primary goal of this vertical integration is to secure the supply of loan product for the securitization business. While most CSE firms obtain the vast majority of loan product through bulk purchases, origination channels are growing in size and

[2] An option ARM is an adjustable rate mortgage loan typically with the option of four different monthly payment amounts: minimum payment, interest only, full principal and interest (30-year term) and full principal and interest (15-year term). These loans typically have a low initial fixed interest rate for a specified period of time. Beyond the fixed interest period, rates are subject to adjust monthly based on the specified index. Payment option amounts after the initial fixed interest period are subject to change annually. Deferred interest, or negative amortization, is possible with these loans.

importance. The growth has come from both the acquisition of mortgage originators (both within the U.S. and in the U.K.) and the growth of conduit operations where firms buy product from a multitude of smaller brokers on a loan-by-loan basis. In addition to increasing their origination efforts, many CSE firms now have servicing operations that provide them with steady sources of fee income and market intelligence (which ostensibly gives them a competitive advantage in pricing mortgage instruments). In the CMBS space, unlike the RMBS space, the CSE firms have historically been vertically integrated, originating most of the loans that are eventually securitized.

- **Noteworthy firm specific items**: Above, we highlighted common residential and commercial mortgage business themes for the CSE firms. However, there are a number of noteworthy firm specific items:

    1. Bear Stearns and Lehman Brothers have the largest residential mortgage franchises and are the most vertically integrated.
    2. While all the CSE firms have significant exposures to sub-prime borrowers, Bear Stearns has a dominant market-share with respect to the securitization of ARMs.
    3. Bear Stearns and Lehman Brothers continue to have substantial option-ARM positions in their pipelines. While the majority is securitized and sold, Bear Stearns has, from time-to-time, held concentrated prepayment sensitive tranches of securities based on this collateral type. Many of these positions come from making markets in Bear Stearns deals for clients.
    4. Lehman has the largest and most seasoned residential mortgage origination operation across its CSE peers.
    5. In the commercial mortgage securitization business, Morgan Stanley is by far the dominant player among its CSE peers.
    6. Morgan's CMBS business is the most geographically diverse with large Asian and European businesses to complement its U.S. based business.

Risk Management

- **The major market risks facing the mortgage securitization businesses are interest rate risk (including prepayment risk) and credit spread risk.** Which risk factor is most dominant depends on the product type and borrower characteristics. For prime and near-prime residential mortgages, the predominant risk factor is interest rate risk. For sub-prime residential mortgages and commercial mortgages, the dominant driver of risk is credit spreads. While firms monitor and track their sensitivities to interest rate and credit spread moves, a sudden shock to credit spreads is a risk that garners special attention from both the business and risk management. Because securitization businesses naturally run a long credit spread profile, all the CSE firms, in varying degrees of formality, track the exposure of their securitization pipelines to a significant widening of credit spreads.

- **Additional risks associated with residential mortgage securitizations** – In addition to the overall large long credit spread positions, there are several specific market risks on the residential mortgage side that present unique risk management challenges including: (1) prepayment sensitivity for alternative mortgage products and (2) residual tranches of RMBS securities. While these exposures are generally mitigated through a "moving not

storage" business strategy, we have periodically seen concentrated exposures in both areas.

- **Commercial mortgage trends affecting the businesses' risk profiles** – Recent trends surrounding CMBS pipelines have complicated the risk management of these activities. First, there has been increased exposure to non-investment grade positions due to greater retention of mezzanine loans and/or B-notes by some firms. Second, some firms have moved down the credit spectrum by making bridge equity investments. Finally, there has been an increase in large "trophy" properties being securitized resulting in an increase in concentration risk.

- **CSE firms are in the "moving not storage" business** – The business model across all the CSE firms' mortgage securitization businesses is one of earning a spread rather than taking directional bets or relative value coupon plays and has been dubbed a "moving not storage" business. In this vein, much of the management of the risks mentioned above entails making sure that mortgage instruments move through the securitization pipeline steadily.

- **The evolution of hedging options** – While mortgage securitization businesses have traditionally had a variety of instruments available to hedge interest rate risk, there have been few options for effectively hedging credit spread risk. As a result, both residential and commercial mortgage pipelines at the CSE firms were running up against certain market risk limits, such as credit spread widening scenario limits. However, with the advent of new mortgage derivative instruments, CSE firms have been able to substantially grow their pipelines while mitigating the risk of a systemic shock to credit spreads.

- **New risks** – The advent of derivatives on Asset Backed Securities ("ABS") has not only helped provide the businesses with the opportunity to hedge the considerable credit spread risk generated from these pipelines, but has also created additional trading opportunities that require risk management's attention. These synthetic positions have introduced new risks (e.g., cash/CDS basis risk and correlation risk), which are difficult to monitor and manage, and have not traditionally been associated with RMBS and CMBS securitization.

- **Additional Risks** – While the major risks in RMBS and CMBS securitization businesses are interest rate risk and credit spread risk, other risks worth mentioning are counterparty credit risk and legal and operational risk. Counterparty credit risk stems from exposure to originators regarding representations and warranties and put-back rights for bad loans. Some of the smaller, new entrants into sub-prime origination have failed or have had disputes in settling transactions with CSE firms in recent months as rates have risen and origination has slowed. As firms become more vertically integrated—adding both origination and servicing components that generally focus on sub-prime and alt-A borrowers[3]—legal and operational risks increase as well.

[3] Alt-A borrowers generally have credit scores that meet Fannie Mae or Freddie Mac underwriting standards, but are unable to qualify as "prime" borrowers for documentation or other reasons. For instance, they may be unable or unwilling to provide income verification or they may be applying for loans with high LTV ratios. Therefore, credit decisions are more reliant upon the borrowers' credit scores and the adequacy of the underlying collateral.

Capital

- The calculation of capital charges for the mortgage securitization businesses at the CSE firms varies but generally consists of a combination of VaR based charges plus standard specific risk add-on charges (i.e. Reg-Y add-ons). In addition, two firms (Bear Stearns and Lehman Brothers) have classified certain lower or non-rated retained interests (e.g., residuals) as banking book positions. The charges on the banking book positions represent a significant portion of the capital charges for the securitization business of these two firms.

- Unlike the other product areas, namely event-driven lending and hedge fund derivative products,[4] for which we did a cross-firm analysis, the mortgage securitization businesses do generate a material amount of their capital charges from the VaR related charge. However, overall, a majority of the capital held against these businesses still comes from both Reg-Y add-on charges and/or positions classified as banking book.

- While all CSE firms take some form of add-on charges for these businesses, the application of these charges is not uniform. The scope of positions subject to add-on charges or held in the banking book vary firm-to-firm. Some firms take Reg-Y specific risk add-ons on both non-investment grade securities and a portion of the loans awaiting securitization, whereas others take charges solely on the non-investment grade securities. In addition, the capital treatment may differ for the residential and commercial mortgage businesses. For example, one firm, Goldman Sachs, takes no specific-risk charges on its residential mortgage business while taking specific risk charges on virtually all of its commercial whole loans and non-investment grade CMBS tranches.

[4] "Event Driven Lending Current Market Practice, Risk Management & Capital Treatment," 4/24/2006; "Hedge Fund Derivative-Linked Products Current Market Practice, Risk Management & Capital Treatment," 6/26/2006.

MARKET OVERVIEW

Residential and Commercial Mortgage Market Trends

Since 1995, industry wide RMBS issuance has grown at a 99% compound annual growth rate[5] ("CAGR") from $53 billion in 1995 to more than $1 trillion in 2005.[6] While not growing as dramatically as RMBS, CMBS issuance increased significantly—at 30% CAGR—from $17 billion in 1995 to nearly $239 billion by year-end 2005.[7] In recent years, growth in RMBS issuance has been primarily driven by increased demand for adjustable rate products and significant increases in sub-prime and alt-A originations while CMBS issuance has been characterized by significant growth in the U.S. and dramatic growth in Europe and Asia. Significant market trends experienced over the past decade include:

Residential Mortgage Trends

- Adjustable rate RMBS issuances have increased dramatically compared to fixed rate issuances – By year-end 2005, approximately half (or $515 billion) of all RMBS issuances were adjustable rate, up from 39% (or $299 billion) in 2004. This is a significant increase from 11% (or $59 billion) in 2001.

- Sub-prime originations (including ARMs) have skyrocketed – Sub-prime originations increased to $625 billion in 2005 from $210 billion in 2001. Currently, more than 1 in 10 mortgage holders is a sub-prime borrower.[8]

- Traditional "prime" versus "sub-prime" risk buckets are becoming less distinct – Historically, the distinction between prime and sub-prime borrowers was made primarily using borrowers' FICO scores. Increasingly, however, the riskiness in underlying prime mortgages is coming more from leverage and less from prepayment risk. While this has always been the case for traditional sub-prime borrowers, the increased demand for teaser rate loans (e.g., interest only, ARMs, etc.) and second liens has some risk managers more concerned with "idiosyncratic" credit risk than with prepayment risk for prime borrowers as well.[9]

- Home equity levels for ARM products have declined significantly – In 2004, 11.4% of ARMs were originated with negative home equity. This value increased dramatically to 32.3% in 2005. Comparatively, less than 8% of ARMs were originated with negative equity for any given year between 2000 and 2003.[10] Additionally, if home values decline by 10%, more than half of the ARMs originated in 2005 will experience negative equity. This is the result of many adjustable-rate mortgage borrowers stretching their financial abilities to acquire homes with small down payments and low monthly payments.

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[5] CAGR = (Ending Value / Beginning Value) $^{(1 / \# \text{ of years})}$ -1

[6] Bloomberg, ICMO function

[7] " Commercial Mortgage Alert," www.CMAlert.com

[8] "The State of the Nation's Housing" report, Harvard University's Joint Center for Housing Studies, June 13, 2006.

[9] Sherr, David, Global Head of Mortgage Trading/Structured Finance at Lehman.

[10] Cagen, Christopher L., Ph.D., "Mortgage Payment Research. The Rumor and the Reality," First American Real Estate Solutions, February 8, 2006.

- Large commercial bank originators are increasingly self-securitizing – Large commercial banks such as Countrywide Financial and Wells Fargo are increasingly self-securitizing, which makes these institutions less reliant on investment banks for residential mortgage securitizations. This trend has led some CSE firms to pursue "vertical" business models that include origination platforms.

Commercial Mortgage Trends

- Securitization of commercial real estate has increased dramatically – Commercial real estate securitization (i.e., CMBS issuance) increased 87% in 2005 to $238.9 billion globally. In 2003 and 2004, CMBS annual issuances were up 22% and 30%, respectively, over the prior year.[11]

- Annual increases in CMBS issuance have been driven by significant growth in the U.S. combined with dramatic growth outside the U.S. Over the last decade, CMBS issuances in the U.S. have increased at a constant annual growth rate of 27% from $15.7 billion in 1995 to $169.2 billion in 2005. Outside the U.S., CMBS issuances grew at 52% CAGR from $1.1 billion in 1995 to $69.7 billion in 2005.

- Commercial banks and thrifts dominate the CMBS issuance market in the U.S. – Commercial banks and thrifts issued 63.3% (or $103.5 billion) of all CMBS backed by U.S. conduit loans in 2005 and 60.7% (or $55.1 billion) in 2004. Comparatively, investment banks issued 26.1% (or $42.7 billion) in 2005 and 29.1% (or $26.4 billion) in 2004.

- "Fusion" deals are the most prevalent CMBS deal types – Fusion deals, which involve the combining of conduit loans that would have previously been disaggregated into separate securities, accounted for more than 80% of CMBS issuances in 2005 and approximately 75% of issuances in 2004. These deals have become increasingly popular as underwriters attempt to improve the diversification of CMBS pools.

- Liquidity of CMBS has improved dramatically – There has been an influx of investors in this space. A large portion of the influx is due to improvements in available information and changes in regulations (e.g., regulations that now allow insurance companies to hold CMBS).[12]

- Bid/ask spreads on CMBS in the secondary market are extremely tight. As a result, CSE firms tend to focus less on market making and more on the deal pipeline.

[11] " Commercial Mortgage Alert," www.CMAlert.com
[12] Sherr, David, Global Head of Mortgage Trading/Structured Finance at Lehman.

SECURITIZATION PARTICIPANTS, BENEFITS & PROCESS

Securitization Participants

Main participants in U.S. securitizations include loan sellers or originators, agents of the securitization trust, rating agencies, and "certificate" investors.

Loan sellers and originators sell (or deposit) loans into a "trust," which is set up by the securitization underwriter. The loan seller/originator also provides representations and warranties that provide recourse (e.g., put back rights) if loans within the pool do not conform to advertised standards or anticipated performance.[13] After receipt of the loans, the trust sends the loan information to *rating agencies* that evaluate the collateral quality and determine subordination levels required to achieve certain bond ratings. Responsibility for coordinating and overseeing these, and other, functions falls upon "agents" of the trust.

A trust generally employs four types of *agents*—a trustee, a master servicer, a primary servicer, and a special servicer—that provide trust oversight and loan servicing in accordance with a pooling and servicing agreement.[14] The *trustee* serves as the fiduciary of the trust and is responsible for trust governance, which covers all agents of the trust. The trustee is primarily concerned with preserving the rights of the investor. For CMBS transactions, the trustee is also responsible for "bond administration" functions such as principal and interest distributions to bondholders, and bond and collateral reporting via report packages (i.e., investor and tax reporting). For RMBS deals, bond administrator functions are often performed by the trustee, but can also be delegated to a separate bond administrator.

Master servicers are responsible for:

- Oversight of primary servicers, with respect to the primary servicer's responsibilities.
- Reporting to the trustee.
- Providing liquidity by advancing principal and interest, as well as certain property protection expenses, on delinquent loans. If the transaction requires a special servicer, the master servicer will insure the smooth transfer from the primary servicer to the special servicer and monitor the ultimate disposition of problem loans.

Primary servicers' responsibilities typically include:

- Collecting monthly principal, interest, and escrow payments from individual mortgagors.
- Remitting and reporting to the master servicer.
- Monitoring delinquent and problem loans (which may be handled directly by the special servicer).

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[13] Reps and warranties are contained in Master Loan Purchase Agreements that sellers sign. Claims can be either repurchase claims, where the seller must buy back the loan, or monetary claims, where the seller is required to remit cash. Typical repurchase claims include Early Payment Default ("EPD"), which provides protection against delinquency in early months (typically within the first 3 months), and breached representations and warranties (e.g., improper income verification). Two common monetary claims include prepayment premium recapture (typically 3 months) and remittance reconciliations (e.g., true ups for payments that were made, but sent to the wrong location due to the sale of a loan).

[14] A pooling and servicing agreement ("PSA") is a written agreement between a lender depositing loans to a trust, the trust, and the loan servicer. The PSA outlines the obligations of the various parties with respect to the securitized loans and usually includes some guidance with respect to the defeasance of the loans.

For commercial loans, primary servicers are also responsible for performing property inspections and collecting and analyzing property financial statements. In the absence of a master servicer, the primary servicer is responsible for the reporting and remitting of funds directly to the trustee and advancing principal and interest payments on delinquent loans. If there is no special servicer, the primary servicer handles the work-out of sub-performing and delinquent loans.

Special servicers are responsible for maximizing recoveries on nonperforming loans and Real Estate Owned ("REO") assets, and are essential to maintaining the credit quality of a pool containing nonperforming loans and REO assets. The specific arrangement varies from one transaction to another. Typically, the loans are transferred to the special servicer at some pre-determined point based on delinquency and/or other performance measures. Currently, in residential transactions, the use of a designated special servicer is not as common as in commercial products, but the practice is becoming more widespread, particularly in loan products that are expected to have high delinquencies and therefore losses.[15]

Benefits of Securitization

In addition to the obvious benefit of fee generated revenue enjoyed by underwriters, servicers, and rating agencies, securitization also provides benefits to originators and investors.[16] For originators, securitization can improve return on capital by converting an on-balance-sheet lending business into an off-balance-sheet fee income stream that is less capital intensive. Depending on the type of structure used, securitization may also lower borrowing costs, release additional capital for expansion or reinvestment, and improve risk management.

For investors, securitized assets offer a combination of attractive yields (compared with other instruments of similar quality), increase secondary market liquidity, and generally provide more protection by way of collateral overage and/or guarantees by entities with high and stable credit ratings. Securitized assets also offer flexibility because their cash flows can be structured to meet investors' particular requirements. Additionally, structural credit enhancements and diversified asset pools free investors of the need to obtain a detailed understanding of the underlying loans.

Securitization Process

Residential and commercial mortgage securitization is comprised of four sub-processes: (1) loan origination or acquisition, (2) loan accumulation, (3) security structuring, and (4) sale of securities. At the onset of the securitization process, the security underwriter sets up a trust (i.e., special purpose vehicle ("SPV")) that serves as the legal entity responsible for the various securitization functions and cash distributions.

For residential mortgages, the SPV either purchases loans from an outside seller in bulk or through a loan conduit, or from a vertically integrated "retail" origination facility (as well as from outside sellers). Some firms, such a Goldman Sachs, Merrill Lynch, and Morgan Stanley, have historically purchased loans primarily through bulk purchases in which the loan sellers aggregate loans and put out packages to bid on.[17] Other firms (i.e., Lehman Brothers and Bear

[15] Source: Fitch Corporate, www.fitchratings.com
[16] Comptroller of the Currency, "Asset Securitization; Comptroller's Handbook," November 1997.
[17] Merrill Lynch has a fairly large sub-prime origination platform in the UK (that generated approximately $63 million in revenue on $2.8 billion in origination and servicing assets), but limited origination in the US.

Stearns) have large origination facilities and conduit loan programs that are used in conjunction with bulk purchases.

Bear Stearns began originating loans through *Bear Stearns Residential Mortgage* in April of 2005. As of April 2006, Bear originated $1.5 billion in loans through this platform; and is projecting $5.0 billion in originations for 2006 and $11 billion in 2007. While Bear Stearns' origination program is growing rapidly, its conduit program[18] currently provides a much larger source of loan product for securitization, particularly in the alt-A and sub-prime space.

Among its CSE peers, Lehman Brothers has the largest origination facility at $51.9 billion in origination volume for 2005. While Lehman Brothers has had an origination facility for a number of years, other CSE firms such as Morgan Stanley and Merrill Lynch have recently purchased mortgage origination facilities. On August 10, 2006, Morgan Stanley announced that it will purchase Saxon Capital, a sub-prime residential mortgage lender. Merrill Lynch, on September 5, 2006, announced that it will purchase three mortgage businesses—First Franklin, Home Loan Services, and NationPoint. First Franklin is a wholesale originator of non-prime residential mortgage loans, Home Loan Services is a mortgage servicing company, and NationPoint is an online retail residential mortgage lender. In addition to the vertical integration experienced in the U.S. market, several of the CSE firms have purchased sub-prime originators outside the U.S., particularly in the U.K.

	Loan Acquisition and Accumulation										Securitization and Sale			
	Receive bid tape	Bid submitted / won			Receive initial pool listing from seller	Perform due diligence and negotiate contracts / Send initial pool to rating agencies			Confirm diligence kickouts / finalize pool	Settle date / funding	Begin structuring process	Finalize structure	Price securitization	Settle securitization / sell residual
Time (Days)	0	7	14	21	28	35	42	49	56	60	67	74	81	90
	Put on hedges									Loans go on balance sheet				Loans go off balance sheet / Remove hedges

Following loan origination/acquisition, loans are accumulated in the SPV for approximately 60 days until the pool of loans reaches a desired size after which point they are structured into various securities, which generally takes 2 to 3 weeks, and then are priced and sold. In total, the entire residential securitization process takes approximately 90 days to complete (as depicted in the table above).

For bulk purchases from sellers, the acquisition and accumulation phase consists of several steps that precede the securitization and sale of the pooled loans.

- Receipt of bid tape – On day one, CSE firms receive a bid tape from the seller that contains preliminary data on loan pools. The seller typically also sends a request to settle in 60 days. At this point some investment banks put on hedges to mitigate the risk that changes in interest rates will impact the value of the loans that they are bidding on.

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[18] Through conduit programs, CSE firms purchase newly originated closed loans from mortgage banks and/or mortgage brokers through bulk and flow channels.

- Bid submitted – After approximately one week of reviewing the bid tapes, the investment bank submits a bid for the pool of loans.
- Receipt of initial pool listing from seller – If the investment bank wins the bid for the loans, the seller will send an initial pool listing. This pool listing is much more specific providing loan-by-loan detail for the mortgage pool. The initial pool listing is generally received by the investment bank approximately 3 weeks after the bid is won (which is 28 days into the total process).
- Due diligence, negotiation, and rating – Over the next 28 to 30 days, the investment bank performs due diligence on the pool listing, negotiates contracts with the seller, and sends the initial pool to rating agencies. The collateral term sheets and structural term sheets are written and approved by the seller, the depositor, underwriter and rating agencies, then distributed to investors for feedback on potential deal structure and pricing.
- Confirm and finalize – Upon completion of due diligence and receipt of pool rating, the investment bank notifies the seller of any loan kick outs, which are returned to the seller (typically for credit toward future purchases) and the loan pool is finalized. For example, loans may not meet underwriting standards or they may not meet performance requirements such as early payment default by the borrower.
- Settlement and funding – Following pool finalization, the investment bank settles with the seller at which time funding occurs. This generally occurs on the 60th day (as initially requested by the seller) at which time the loans are placed on the investment bank's balance sheet.

Following settlement and funding for the pool of loans, the process enters the structuring phase of securitization. By structuring loans into securities, investment banks are able to split credit risk into several tranches, placing the risk with parties that are willing or best able to absorb the risk. A simple example of tranching securities is to separate the loans' cash flows into three tranches—a first loss tranche, a second loss tranche, and a senior tranche. The first loss tranche is usually capped at levels approximate to the "expected" level of portfolio credit losses. For example, if the pool of residential mortgages is expected to have losses equivalent to 3 percent of the total cash flows, then the first loss tranche would be capped at that level. The second loss tranche covers losses in excess of the first loss tranche, but is generally capped at some multiple of the pool's expected losses (typically 3 to 5 times). Because of subordination, the senior tranche generally has little exposure to credit risk, but may be exposed to other risks such as interest rate risk and prepayment risk.

The structuring of cash flows into various tranches is done utilizing subordination and other credit enhancement methods, which can be provided either through external guarantees (i.e., third-party or seller guarantees) or internally through structural or cash flow driven methods. Aside from coupon payments to investors, the cost of credit enhancement is usually the largest securitization expense with external credit enhancement typically costing more than internal enhancement. The type and size of credit enhancement are negotiated with rating agencies, and are dictated by the desired credit rating. For CSE sponsored deals, subordination and other internal credit enhancements are the primary tools used to achieve the desired credit ratings for RMBS tranches.

The three most common types of *external credit enhancement* are third-party letters of credit ("LOCs"), surety bonds, or limited guarantees by the seller to cover a certain percentage of cash flow shortfalls. Third-party LOCs are generally utilized by issuers with credit ratings below the level sought on the security. Similar to a seller guarantee, an LOC covers a certain amount of loss, or percentage of losses, and any draws on the LOC are often repaid by excess

cash flows (if available). Surety bonds are guarantees issued by third parties, usually AAA rated mono-line insurance companies, that guarantee (or wrap) 100 percent of the principal and interest payments.

Internal credit enhancements include the use of excess spread, spread accounts, cash collateral accounts, collateral investment amount ("CIA"), and subordinate security classes.

- Excess Spread – Portfolio yield on a pool of assets is generally greater than fees and expected losses. This excess spread or "residual" amount (if available) can be used by the trust to cover unexpected losses. Any unused residual may revert to the seller as additional profit or may be retained by the investment bank or other external investors.
- Spread Account – A spread account involves using monthly finance charges from the underlying pool of assets to cover unexpected losses.
- Cash Collateral Account – A cash collateral account is a segregated trust account that can be drawn on to cover principal or interest shortfalls if excess spread is reduced to zero. The cash collateral account can be funded by the issuer, but is usually funded with a third-party loan that is repaid only after all certificate holders are repaid in full.
- Collateral Investment Amount ("CIA") – A CIA is an uncertified, privately placed, ownership interest in the trust that is subordinate in payment rights to all investor certificates. CIAs serve the same purpose as cash collateral accounts—they make up for shortfalls if excess spread is negative.
- Subordinate Security Classes – Subordinate classes are junior in claim to senior debt. Additionally, securities often contain more than one class of subordinate debt, and one subordinate class may have a higher claim than others.

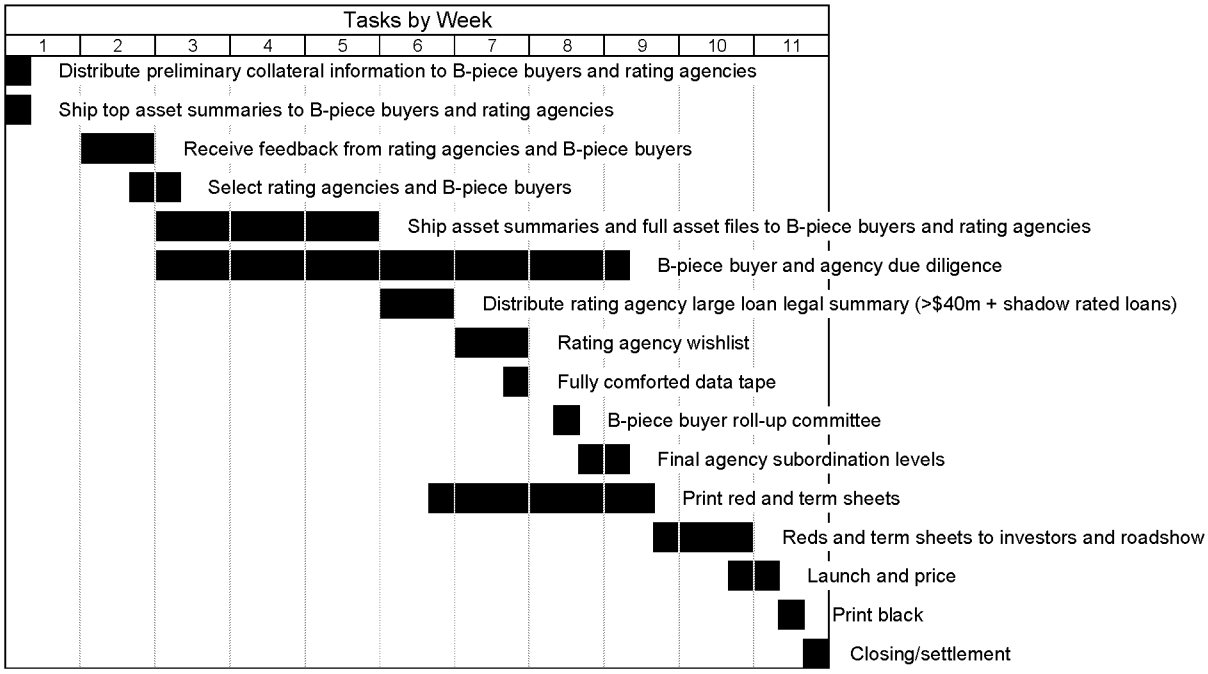
Two key documents for this portion of the securitization process include the Prospectus and the Pooling and Servicing Agreement ("PSA"). The Prospectus is drafted and reviewed by all parties to the transaction including the seller, depositor, underwriter, master servicer, servicers, trustee, and rating agencies. The PSA is drafted based on the final structure described in the Prospectus, and also incorporates rating agency requirements and the general industry standards for a transaction. Once the Prospectus is finalized, it is distributed to investors prior to the closing or settlement date. The PSA (along with any additional servicing agreements) are finalized and approved by all applicable parties (i.e., the seller, depositor, underwriter, servicers, trustee, and rating agencies). Following the distribution of the Prospectus to investors and finalization of the PSA, the pool of loans are offered as securities to the market and documents are filed with the Commission.

For commercial mortgage securitizations in the United States, investment banks generally originate and securitize commercial mortgage loans versus syndicating the loans directly to investors. In Europe and Asia, some CSE firms syndicate a portion of commercial loans in whole loan form. Even though whole loan syndication is not common practice in the US, many of the CSE firms pointed out that they do frequently combine their commercial loans with loans from other institutions in "fusion" deals, where the intent is to diversify across property types, or to achieve a desired securitization deal size.

Another important distinction between RMBS and CMBS transactions is the amount of upfront effort, in CMBS deals, that goes into structuring subordinate bonds rated BB+ and below. This includes distributing preliminary collateral information to "B-piece buyers" and rating agencies, and receiving feedback prior to final selection of the rating agencies and B-piece

buyers. CSE firms stated that this is the case because, unlike RMBS, the intent is to immediately sell all CMBS bonds created during the securitization process. Practices are similar in the U.S. and Europe with the exception that European CMBS are not usually tranched below BB because the market is not very well developed.

As depicted in the table below, the first few weeks are dedicated to ensuring that B-piece buyers and rating agencies are fully informed on the deal and have an opportunity to provide input. By being in early contact with B-piece buyers and rating agencies, the investment banks hope to (1) assess the level of demand for the deal (especially the non-investment grade pieces of the deal), (2) determine what, if any, additional structuring is required to make the deal successful (e.g., combining the loan with other commercial loans to provide greater diversification), and (3) get an idea about how the rating agencies feel about the deal (e.g., what the proper subordination levels might be).



Once rating agencies and B-piece buyers are selected and due diligence is done, the "red" prospectus (draft copy) is written and approved by the depositor, issuers/underwriters, master servicer, special servicer, trustee, and rating agencies. The red prospectus and term sheets are distributed to investors after which the issuer/underwriter finalizes the pool of assets, prices the deal, and prints and distributes the "black" prospectus (final) to the investors.

While the CMBS structure is being marketed to investors, details on how the deal will be governed are also being negotiated:

- The Pooling and Servicing Agreement (PSA) is drafted based on the special servicer provisions, trustee provisions, rating agency requirements, master servicer bid letter terms and the general industry standards for a CMBS transaction.
- PSA is finalized by agreement of the named parties in the document.
- The master servicer completes negotiations with each individual primary servicer and finalizes the Primary Servicing Agreements
- The depositor offers the pooled assets as securities to the market and files the official documents to complete the transaction with the Commission.

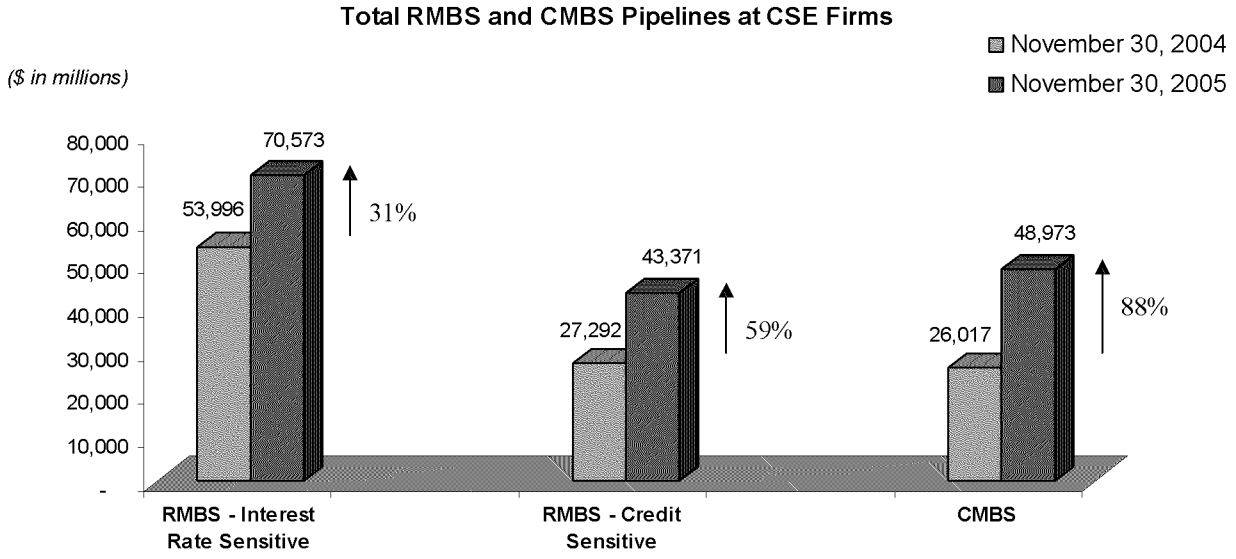
RMBS AND CMBS PIPELINES AT THE CSE FIRMS

When analyzing data from the CSE firms, we looked at CMBS and RMBS securitizations separately, and then segregated RMBS further into interest rate sensitive instruments and credit sensitive instruments.[19] Additionally, the data included residential and commercial whole loans that are in the pipeline awaiting securitization as well as RMBS and CMBS residuals. Data were aggregated as follows:

Residential Mortgage Loans and Securities

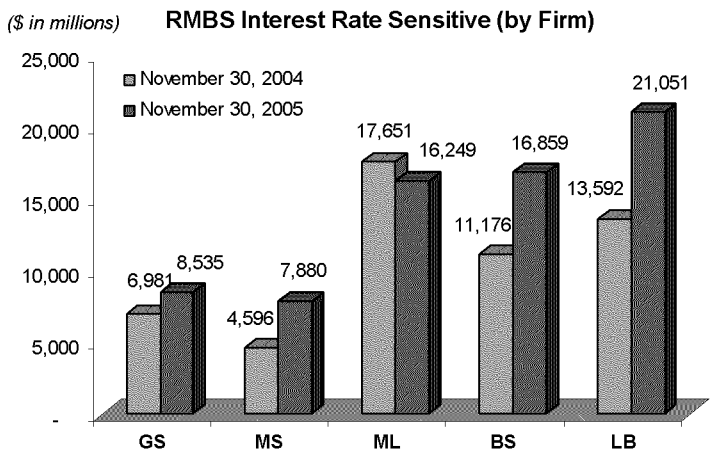
Interest Rate Sensitive	Credit Sensitive	Commercial
Loans	Loans	Whole Loans (US)
Prime fixed rate loans	Sub-prime	Whole Loans (Europe and Asia)
Prime hybrid ARM loans	Non-performing	Securities
Alt-A	Scratch and Dent	
FHA/VA loans		
Securities	Securities	
Agency CMO	Sub-prime	
Prime fixed rate securities	Non-performing	
Prime hybrid ARM securities		
Alt-A		
FHA/VA securities		
REMIC residuals		

The graph below shows that RMBS Credit Sensitive and CMBS pipelines increased significantly, on a percentage basis, from year-end 2004 to year-end 2005 while RMBS Interest Rate Sensitive increased modestly. This is similar to the increases encountered in the overall RMBS and CMBS markets. CMBS holdings at the CSE firms increased by 88% from $26 billion to $49 billion, RMBS credit sensitive loan volumes were up 59% to $43 billion, and RMBS Prime was up 31% to $71 billion.

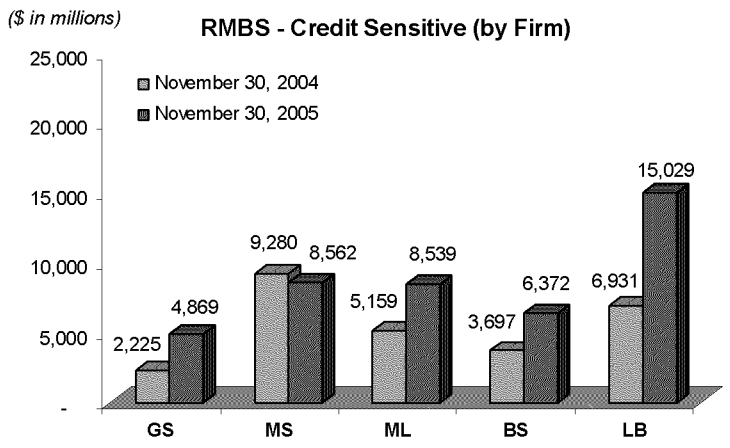


[19] Interest rate sensitive instruments are primarily exposed to the risk that the value of an instrument will decline due to increases in interest rates. Credit sensitive instruments are primarily exposed to credit spread risk, which is the risk that the spread over a reference rate will increase for an outstanding debt obligation.

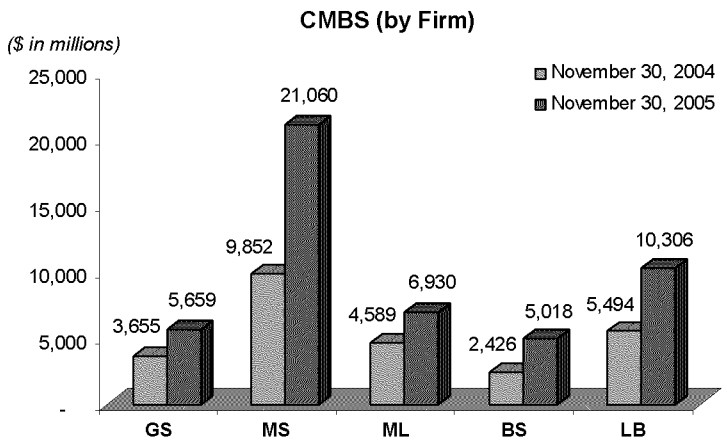
The *increase in RMBS Interest Rate* sensitive instruments was primarily a function of significant increases in hybrid and option ARM products. Lehman's and Bears' volumes increased substantially combined with smaller increases at Morgan Stanley and Goldman Sachs. These increases were partially offset by a decline in volume at Merrill Lynch. Lehman's increase was driven primarily by an increase in option ARM products, which increased from virtually zero in the 4th quarter of 2004 to $5.2 billion in the 4th quarter of 2005. Approximately 90% of the option ARM products were to Alt-A quality borrowers. Bear Stearns' increase was driven by an increase in ARMs and Alt-A loans. Similar to Bear Stearns, Morgan Stanley experienced significant growth in residential ARM products. Merrill Lynch, who as of November 30, 2004 had the largest RMBS rate sensitive pipeline, has traditionally underwritten variable rate securities tied to one or six month LIBOR. In recent years, Merrill began issuing mainly 3/1 and 5/1 hybrid ARMs that have fixed interest rates for a specified amount of time (3-years for a 3/1 and 5-years for a 5/1) after which time they become adjustable rate instruments with annual resets. This is consistent with what has occurred in the residential mortgage market as a whole.



CSE firms' *RMBS Credit* sensitive pipelines increased for all firms with the exception of Morgan Stanley. The largest increase occurred at Lehman Brothers where the primary driver was non-prime loans (which consists of sub-prime, scratch and dent, and sub-prime second liens) that increased by $8.1 billion from November 30, 2004 to November 30, 2005. At Bear, the primary driver was sub-prime loans that increased from $2.8 billion to $4.5 billion on the same dates. Goldman Sachs and Merrill Lynch experienced growth in sub-prime loans of $2.3 billion and $3.4 billion respectively. Although Morgan Stanley's RMBS credit sensitive pipeline declined slightly at year-end 2005 (compared to year-end 2004), the volume remained relatively high.



The *CMBS* graph to the right shows that Morgan Stanley was, by far, the largest contributor to growth in CMBS volumes across CSE firms. Morgan Stanley's CMBS pipeline increased significantly to $21.1 billion on November 30, 2005 due to dramatic growth in Asia and Europe and significant growth in the United States. Morgan's CMBS pipeline in Asia was more than six times larger at the end of 2005 than it was at year-end 2004—increasing from $0.6 billion at year-end 2004 to $4.5 billion at year-end 2005. The firm's European pipeline increased more than three fold from $1.1 billion at year-end 2004 to $3.6 billion by the end of 2005 while the U.S. CMBS pipeline increase by 61% from $8.1 billion to $13.0 billion over the same period. Lehman experienced the second largest increase in CMBS pipeline volume also driven by dramatic growth in Europe and Asia, and significant growth in the U.S. From November 2004 to November 2005, European positions increased from $0.9 billion to $3.1 billion, Asia increased from $0.4 billion to $1.2 billion, and the U.S. pipeline increased from $4.2 billion to $6.0 billion.



RISK MANAGEMENT

Although mortgage securitization businesses face numerous risks (i.e., interest rate risk, credit spread risk, prepayment risk, default risk, and structuring risk), the major risks are interest rate risk (including prepayment risk) and credit spread risk.[20] The degree to which each of these risks impacts the overall risk profile is dependent upon factors such as the loan type (i.e., are the loans residential or commercial) and by the product mix (e.g., fixed rate versus variable rate, prime versus sub-prime, etc.). For example, CMBS are susceptible to interest rate risk and credit spread risk, but not necessarily to prepayment risk. Additionally, fixed rate loans, especially residential loans, are much more susceptible to interest rate risk and prepayment than are variable rate loans. For prime and near-prime residential mortgages, the predominant risk factor is interest rate risk. For sub-prime residential mortgages and commercial mortgages, the dominant driver of risk is credit spread exposure.

While firms monitor and track their sensitivities to interest rate and credit spread moves; a sudden shock to credit spreads is a risk that garners special attention from both the business and risk management. Because securitization businesses naturally run a long credit spread

[20] Interest rate risk is the risk that the value of an instrument will decline due to increases in interest rates. Credit spread risk is the risk that the spread over a reference rate will increase for an outstanding debt obligation. This risk is typically driven by perceived credit deterioration by market participants. Prepayment risk is the risk that falling interest rates will lead to heavy prepayments of mortgages or other loans—forcing the investor to reinvest at lower prevailing rates. Default risk is the risk that a bond issuer will default, by failing to repay principal and interest in a timely manner. Structuring risk is the risk that subordination levels change dramatically resulting in the inability to successfully execute the deal, or requiring that the deal be priced down to gain market acceptance.

profile, all the CSE firms, with varying degrees of formality, track the exposure their securitization pipelines have to a significant widening of credit spreads.

The business model across all the CSE firms' mortgage securitization businesses is one of earning a spread rather than taking directional bets or relative value coupon plays and has been dubbed a "moving not storage" business. In this vein, much of the management of the risks mentioned above surrounds making sure that instruments move through the securitization pipeline. To ensure this occurs, there are both upfront risk management processes as well as on-going risk monitoring that takes place. For residential mortgages, the upfront processes include the underwriting (if originating the loans), re-underwriting, and due diligence to ensure that the loans comply with the firm's stated guidelines. In the commercial mortgage business, in addition to due-diligence and underwriting performed on the loans originated, all large loans generally go to both a business and management level committee for approval. Independent risk management functions are represented on the management level committee. In addition to monitoring the key risk sensitivities and market values against established limits, special emphasis is placed on monitoring of aged inventory. This is a key metric in highlighting changes in market conditions and whether inventory may be incorrectly priced.

Residential Mortgage Backed Securities

In the RMBS space, there are particular risks associated with certain types of residential products that present unique risk management challenges. These exposures include prepayment sensitivity on alternative mortgage products and exposure to residual tranches of residential mortgage securities. While these exposures are generally mitigated through a "moving not storage" business strategy, we have periodically seen concentrated exposures in both these areas.

With respect to prepayment sensitivity, data is quite limited on mortgage products such as option-ARMs and other alternative mortgage products that CSE firms (and the industry in general) have recently been securitizing in large volumes. At least one firm has from time-to-time had significant positions of highly prepayment sensitive interest only tranches based on option-ARM loans and other less transparent mortgage products. In this particular case, these securities are thinly traded, and as such, there is a fair amount of disagreement over what the correct prepayment sensitivities should be. Consequently, risk measurement and price verification efforts can be challenging.

With respect to exposure on residual tranches, sub-prime residential mortgages have required additional scrutiny in recent months. While the vast majority of sub-prime RMBS are sold quickly (and pre-sold through forward sales agreements in many cases), the CSE firms have tended to keep a portion of the residual tranches for several months, the belief being that, due to lack of information, the market has miss-priced these instruments. After a proper amount of seasoning of the pool of loans, the firms have generally been able to sell the residual tranches at a handsome return on investment. While this practice remains the norm in the industry, some firms (e.g., Bear Stearns) have begun selling out these residuals more aggressively. In Bear Stearns' case, the firm was faced with a residuals book that had grown in excess of $1 billion, which necessitated a change in the businesses' philosophy. Bear Stearns has partnered with a small group of hedge funds to sell, on a forward basis, some of the residual interests that they would have typically held in the past. In exchange for providing the residuals, Bear

Stearns receives a fee from the hedge fund investors. While the upside is limited, this strategy feels much more like "moving not storage."

Additional risks worth mentioning include counterparty credit risk and legal and operational risk. Counterparty credit risk arises from exposure to originators regarding representations and warranties and put-back rights for bad loans. We have seen some of the smaller, new entrants into sub-prime origination close up shop or have disputes in settling with CSE firms. As firms become more vertically integrated, adding both origination and servicing components, and generally focusing on sub-prime and alt-A borrowers, legal and operational risks increase as well.

Commercial Mortgage Backed Securities

For commercial loan securitization, bond execution (i.e., securitizing and selling commercial loans as CMBS) is primarily a function of rating agency subordination levels, treasury rates, the shape of the treasury yield curve, swap spreads, and CMBS spreads. Because of this, the risks associated with commercial mortgage securitization that garner the most attention by CSE firms are interest rate risk and credit spread risk, with credit spread risk typically being dominant. Other risks, such as prepayment risk, do not necessarily impact commercial mortgages because commercial borrowers do not tend to prepay like residential mortgage borrowers. Most commercial mortgages contain either prepayment penalties or yield maintenance features that deter borrowers from prepaying. For fixed rate loans, CSE firms mitigate interest rate risk and credit spread risk primarily by hedging with interest rate swaps[21] and CMBS total return swaps ("TRS"). Interest rate risk on floating rate CMBS are typically not hedged because the instruments are less exposed to interest rate movements due to the resetting nature of their coupon. Additionally, since variable rate CMBS generally trade over one month LIBOR, they are not exposed to changes in the shape of the LIBOR yield curve.

Regarding rating agency subordination levels, a key concern is the need to obtain an investment grade rating for the higher pieces of the capital structure. This requires creating sufficient subordination in the capital structure, or tranches that take the losses from defaults before the losses affect the value of the investment grade pieces. CSE firms seek to minimize the subordination required by the rating agencies through various techniques, notably by diversifying the loan assets that form the basis for a particular deal (e.g., by mixing loans backed by properties of different types or in different locations).

Hedging credit spread risk is fairly common for subordination levels down to BBB (i.e., investment grade structures), but becomes more difficult for non-investment grade instruments. Hedging investment grade credit spread risk generally involves shorting baskets of AAA CMBS via total return swaps on an index such as Lehman's CMBS Index. Since such indexes are not readily available for non-investment grade CMBS, CSE firms have historically placed heavy emphasis on placing the non-investment grade bonds early on in the process. This is an area where some firms have indicated that it is important to be in the moving and not storage business, while other firms (as mentioned below) have begun to relax this standard.

[21] For investment grade CMBS, CSE firms utilize interest rate swaps to hedge interest rate risk and may use treasuries to hedge the non-investment grade portion if they are not placed early on in the process.

Additionally, the following recent trends in the industry have impacted the risk profile of these businesses: (1) increased exposure to non-investment grade positions stemming from greater retention of mezzanine loans and/or B-notes by some firms; (2) movement down the credit spectrum driven by bridge equity investments; and (3) an increase in large, highly concentrated, "trophy" properties being securitized. The result of these trends has been an increase in the exposure to non-investment grade commercial real estate mortgages and an increase in concentration risk.

Traditionally, CSE firms have brought in buyers ("B-piece buyers") who purchase the lower part of the capital structure of the deal early in the securitization process. As a result, the lower and non-rated tranches are typically sold out when the securitization is complete, and the firm is only exposed to this risk during the ramp-up phase. More recently, however, firms have increased the amount of loans that they segregate prior to securitization. Rather than contributing all loans to a pool to be securitized and having various levels of tranches from AAA to un-rated, firms have chosen with increased frequency to tranche the loan into three components prior to securitization—investment grade, mezzanine, and first-loss. The firm then contributes the investment grade loan to the pool to be securitized, sells off the first-loss tranche and keeps the mezzanine loan. The rationale for holding onto the mezzanine loans may vary but typically include: (1) taking a view on underlying property, or property manager, where they believe that an event will take place that will lead to a significant credit upgrade and then the firm will either sell the loan later at a profit or contribute it to a securitization; (2) increasing control over a subsequent refinancing or recapitalization; and (3) wishing to aggregate these mezzanine loans to structure a Collateralized Debt Obligation ("CDO").

At many CSE firms, another recent trend has been to move further down the credit spectrum in the commercial real estate financing business in what is referred to as "Bridge-Equity." With the increase in the number of properties going up for sale, coupled with the short auction time-frames, the big commercial real estate investors/sponsors, such as Tishman Speyer and Beacon Capital Partners, need partners for both the debt financing and for the equity until they can bring in additional investors such as pension funds or international investors. The agreement is that the CSE firm will be taken out by the new equity investors. If they are not, similar to a bridge loan in the corporate lending space, there are onerous conditions (e.g., the payment of high fees) that are intended to pressure the investor/sponsor into finding additional investors and take the investment bank out of its commitment. If the sponsor is unable to sell the equity, the agreement allows the investment bank to syndicate the equity much more broadly. This equity is typically priced at a discount to the market value, which provides an additional cushion. Lehman Brothers has engaged in these transactions for quite some time,[22] but other CSE firms, including Morgan Stanley and Goldman Sachs, have recently expanded into this practice as well.

While commercial mortgage securitization pipelines generally consist of a diversified portfolio of mortgages across property type (e.g., office properties, multi-family, retail, etc.) and geography, some CSE firms engage in the origination of out-sized commercial loans on single-assets. One of the most extreme examples of this is Goldman Sachs' $1.7 billion loan for the acquisition of Rockefeller Center in 2005.[23] One way CSE firms mitigate the concentration

[22] Lehman Brothers provided more than $500 million of debt and equity capital to Beacon Capital Partners in 2003 to facilitate the acquisition of the John Hancock Tower in Boston.

[23] There are relatively few block-buster single asset securitizations that occur during a given year.

risk to large single asset loans is by participating in "fusion deals." For example, a fusion deal may involve the combining of a large single asset loan that has marquee value with other loans to reduce the idiosyncratic exposure to the marquee property. By diversifying in this manner, CSE firms are generally able to achieve better subordination levels from rating agencies.

The Evolution of Hedging Options

While mortgage securitization businesses have traditionally had a variety of instruments available to hedge the interest rate risk associated with their pipelines, there have been few options for hedging credit spread risk inherent in these portfolios. As a result, both residential and commercial mortgage pipelines at the CSE firms were running up against certain market risk limits, such as credit spread widening scenario limits. However, with the advent of new mortgage derivative instruments, CSE firms have been able to substantially grow their pipelines while mitigating the risk of the businesses to a systemic shock to credit spreads.

For sub-prime residential mortgages, the main hedge against credit spread risk is pre-selling (i.e. forward sales) of certain tranches that is done prior to securitizing the loans. These pre-sales are typically done for very homogenous products for which it is fairly certain that the product will be originated and purchased for securitization by the investment bank. In 2005, additional hedging options such as CDS on Asset Backed Securities ("ABS ") were introduced that allows CSE firms to hedge securitization pipelines. These instruments are dubbed Pay-as-you-go ("PAUG") swaps,[24] and are used to hedge sub-prime residential, CMBS tranches, and other ABS. The hedges reference security tranches ranging from AAA to BB. Most of the activity in the CMBS space has been in the AAA tranche while sub-prime residential hedging has typically focused on the BBB tranche.[25] In February 2006, CDS IndexCo and Markit Group Limited launched ABX HE, a synthetic ABS index on U.S. home equity (i.e. sub-prime).[26]

For commercial loans, most firms have traditionally used TRS referencing CMBS indices to hedge a portion of the exposure to CMBS spreads for the Investment Grade portion (AAA to BBB) of their pipeline. More recently, similar to the residential side, new synthetic instruments have been created to hedge CMBS spread risk including: (1) CDS on ABS (i.e., PAUGs); (2) new U.S. CMBS CDS benchmark indices (AAA through BBB-); and (3) other products such as CMBS Credit baskets and tranches of CDOs referencing CDS on ABS. It is important to note that while these synthetic positions provide a means for hedging risk, they also introduce new risks (e.g., cash/CDS basis risk and correlation risk) that have not traditionally been associated with RMBS and CMBS securitization businesses. With the advent of CDOs comprised of residential and commercial mortgage assets, issuing firms have become exposed not only to losses from widening credit spreads, but also to changes in the correlation of defaults of the underlying collateral for the deal. This risk is difficult to measure and hence to manage.

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[24] In a pay-as-you-go settlement approach, a credit event triggers a series of payments over time, instead of a one-time settlement as in a corporate CDS. This contract, which uses failure to pay as the sole credit event, attempts to replicate a financial guarantee contract. Rather than making a one-off payment, the protection seller would make good on any shortfall from the asset-backed bond throughout the life of the instrument.

[25] Source: John Schrader's presentation on "Mortgage CDS (P.A.U.G.s)" to Bear Stearns' Executive Committee.

[26] ABX HE is based on ISDA's Pay-As-You-Go template, and is has five sub-indices that are based on the rating of the reference obligations (AAA through BBB-).

CAPITAL

This section of the report discusses the capital treatment of both commercial and residential whole loans and securities by the five CSE firms. Our intent is to highlight where there are consistencies across the firms as well as highlight firms that are outliers.

One of the first questions when it comes to capital is whether a position is in the trading book or banking book. For the commercial and residential mortgage securitization businesses, the vast majority of the CSE firms' positions are in the trading book. However, there are a couple of exceptions. First, Bear Stearns and Lehman Brothers categorize certain lower or non-rated retained interests in securitizations (e.g., residuals) as banking book positions and have applied higher charges to these positions than would otherwise be generated in the trading book. These charges generate a substantial portion of Bear Stearns' and Lehman Brothers' capital charges for their mortgage securitization activities. With that said, the scope of products to which these charges apply as well as the application of the charge differ substantially between Bear Stearns and Lehman Brothers (see details below).

Secondly, Merrill Lynch has a significant amount of prime mortgages in its investment portfolio. The firm's Prime Loan Trading ("PLT") operation buys Prime loans in bulk and originates prime loans through its Global Private Client financial advisors. As a result of the firm's increased focus on other areas such as sub-prime, the PLT portfolio has decreased over the past few years from 88% of the total average residential mortgage assets in 2003 down to 63% for 2005. These loans are bought for investment and thus considered held to maturity. As such they are in the firm's banking book. At December 31, 2005, the investment portfolio had around $15 billion of Prime Mortgage loans and generated $780 million in capital. In contrast, Merrill Lynch's other residential whole loans and RMBS in the trading book stood at $15 billion as well and generated $506 million in capital charges (mostly from specific risk add-ons).

The calculation of capital charges for the mortgage securitization businesses at the CSE firms varies but generally consists of a combination of VaR based charges plus standardized specific risk add-on charges (i.e. Reg-Y add-ons). As stated above, a couple of firms (Bear Stearns and Lehman Brothers) also have classified certain retained interests (e.g., residuals) as banking book positions and have applied higher charges on these positions than would otherwise be generated in the trading book. Unlike the other product areas analyzed in OPSRA's cross-firm projects, namely event-driven lending and hedge fund derivative products, the mortgage securitization businesses do generate a material amount of their capital charges from the VaR related component. However, overall, a majority of the capital held against these businesses still comes from both Reg-Y add-on charges and/or charges on banking book positions. As such, the similarities and differences of the firms' approaches in this area are discussed in detail below.

Regulation-Y add-on Charges

While all CSE firms take some form of add-on charges for these businesses, the application of these charges is not uniform. The scope of positions subject to add-on charges or banking book charges vary firm-to-firm. Some firms take Reg-Y specific risk add-ons on both non-investment grade securities and a portion of the loans awaiting securitization, whereas others just take charges on the non-investment grade security tranches. In addition, the capital treatment by a firm may differ for its residential and commercial mortgage businesses. For

example, one firm, Goldman Sachs, takes no specific-risk charges on its residential mortgage business while taking specific risk charges on virtually all of its commercial whole loans and non-investment grade CMBS tranches.

Below is the scope of the Reg-Y add-on charges on a firm-by-firm basis:

Bear Stearns

1). Residential – Specific risk add-on charge of 8% is applied to non-investment grade tranches of RMBS. Residential loans do not receive a specific risk add-on charge. (See banking book charges for additional charges on certain residuals).

2). Commercial – Specific risk add-on charge of 8% is applied to B-Notes as non-investment grade equivalents. B-Notes are commercial loans (not CMBS tranches) which are not yet investment-grade quality and are not currently slated for inclusion in a securitization. The firm also subjects any commercial loan to undiversified properties (e.g., single asset loan) that is > $200 million with an 8% specific risk add-on charge. At December 31, 2005, no such exposures existed. As a matter of business practice, Bear Stearns' commercial mortgage securitization business does not typically originate as many concentrated single asset loans as compared to others such as Morgan Stanley and Goldman Sachs. Finally, in contrast to most other firms, Bear does not apply a specific risk charge to its non-investment grade CMBS tranches.

Lehman Brothers

1). Residential – Specific risk add-on charge of 8% is applied to all non-investment grade tranches of RMBS that are in the trading book (i.e. not 1st loss positions). Residential loans do not receive a specific risk add-on charge. (See banking book charges for additional charges on certain retained interests).

2). Commercial - Specific risk add-on charge of 8% is applied to all non-investment grade tranches of CMBS that are in the trading book. This is a negligible amount since Lehman puts CMBS positions rated BB and below in its banking book calculation—a very conservative stance compared to its peer firms. (See banking book charges for details). Commercial loans do not receive a specific risk add-on charge.

Goldman Sachs

1). Residential – unlike all other CSE firms applying Basel II, Goldman Sachs does not take specific risk add-on charges on its residential mortgage securitization positions.

At the time of the review, Goldman had no specific risk charge for residual tranches[27] of its RMBS securitizations. However, the firm was contemplating a variety of options with respect to the capital treatment for such positions including: (1) putting them in the banking book; (2) keeping in the trading book but applying a Reg-Y type add-on; or (3) proving there is a two-way market for these residuals and keeping the current treatment.

2). Commercial – while its approach to capital on the residential mortgage side was less conservative than its CSE peers, Goldman applies specific risk add-on charges to a larger scope of its commercial mortgage positions than most of its peers. All commercial whole

[27] The business stated that they almost always keep the first loss piece off of residential deals.

loans and all non-investment grade CMBS are subject to specific risk add-on charges. Most of the positions will be subject to an 8% charge, but at December 31, 2005 the average charge applied for loans was 5.2% and 7.8% for security tranches. The reason for the lower percentage, particularly with respect to the loans, is that for large loans in excess of than $250 million, the Credit department will rate the whole loan and, if it is investment grade, it will receive a lower charge. This seems somewhat counterintuitive, the largest positions (e.g. Rockefeller Plaza) will be more likely to be rated by Credit and have lower charges than less concentrated positions.

Merrill Lynch

1). Residential – for those positions in the trading book, the firm applies the standard Reg-Y specific risk add-ons for both investment grade and non-investment grade loans. Investment grade loans receive a 1.6% capital charge (equivalent to a 20% risk weight). Similar to the other firms, non-investment grade loans receive an 8% capital charge (equivalent to a 100% risk weight).

2). Commercial - the firm applies the standard Reg-Y specific risk add-ons for both investment grade and non-investment grade loans. Investment grade loans receive a 1.6% capital charge (equivalent to a 20% risk weight). Similar to the other firms, non-investment grade loans receive an 8% capital charge (equivalent to a 100% risk weight).

Morgan Stanley

1). Residential - the firm applies the standard Reg-Y specific risk add-ons for both investment grade (mostly 1.6%) and non-investment grade loans and RMBS (8%).

2). Commercial – the firm applies the standard Reg-Y specific risk add-ons for both investment grade (mostly 1.6%) and non-investment grade loans and CMBS (8%).

Banking Book Charges (Residuals)

As discussed above, both Bear Stearns and Lehman Brothers apply some rather large charges on a portion of their lower and non-rated retained interests from securitizations. These particular charges represent a substantial portion of both firm's capital for their mortgage securitization businesses and, based on the size of their mortgage businesses relative to their entire operations, they represent a material amount of the capital charges for the firms as a whole. The other firms, Goldman Sachs, Merrill Lynch, and Morgan Stanley are much more diversified, whereas Bear Stearns and Lehman Brothers are heavily weighted towards their mortgage operations (particularly residential mortgages).

Below we discuss both the scope of products which receive a banking book type charge and the calculation of the charge for Bear Stearns and Lehman Brothers:

Bear Stearns

For Bear, these charges apply only to unrated residuals within the firm's residential mortgage business. At December 31, 2005, the total amount of these unrated residuals stood at $1.540 billion.

Rather than calculating a capital charge on these positions per se, Bear simply deducts 50% of the value of the residuals, $770 million as of December 31, 2005, straight from Tier 1 and Tier 2 capital. These pseudo banking book charges represented over 51% of the total

capital charges for the residential mortgage business and roughly 48% of the total mortgage securitization business at December 31, 2005.

As stated previously in the write up, Bear Stearns has started to shift away from holding its residuals and has moved to pre-selling a substantial portion of these tranches. Any substantial change in the amount of these positions held on the books will greatly change the amount of capital required to be held at Bear.

Lehman Brothers

For Lehman, these banking book charges apply to a much wider variety of lower and non-rated security tranches for both the commercial and residential mortgage securitization businesses. Also, the firm applies a dollar for dollar charge against these positions (equivalent to a 1250% risk weight).

The banking book for residential mortgages consists of non-rated positions, residuals, NIM residuals and first loss positions in Lehman originated deals.[28] This excludes new issue residuals (NIMs),[29] which are captured in VaR as part of the trading book. As of December 31, 2005, these positions were approximately $307 million.

The banking book for the commercial mortgage business consists of all CMBS tranches rated BB and below. The banking book capital charge for this business was less than the RMBS space, as the firm typically does not retain non-investment grade tranches on CMBS deals. As of December 31, 2005, these positions were $150 million.

The banking book charges at Lehman Brothers at December 31, 2005 were $457 million. This represented 57% of the capital charge for the mortgage securitization businesses. Adding in specific risk charges on non-investment grade securities, these non-VaR charges represented over 62% of the capital charge for the mortgage securitization businesses.

[28] Unlike Bear, we have recently confirmed that Lehman's business strategy regarding residuals, particularly off of sub-prime deals, continues to be to hold and wait for the underlying loans to season before looking to an exit strategy.

[29] During the review, the firm stated that these positions were approximately $200 million and roll-off quickly (i.e. short duration).

GLOSSARY

Loan Type Definitions

Adjustable Rate Mortgages ("ARMs") – Mortgage loans in which the interest rate changes periodically, usually in relation to an index, and payments may go up or down accordingly.

Alt-A Loans – Alt-A mortgage loans consist primarily of loans that are first lien loans made to borrowers whose credit is generally within typical Fannie Mae or Freddie Mac guidelines, but that have loan characteristics that make them non-conforming under those guidelines. For instance, the loans may have higher loan-to-value ("LTV") ratios than allowable or may exclude certain documentation or verifications. Therefore, credit decisions are more reliant upon the borrowers' credit scores and the adequacy of the underlying collateral

Hybrid ARMs – Hybrid ARMs provide a fixed initial interest rate for a fixed period of time, followed by periodic rate adjustment, typically once a year. For example, a 3/1 hybrid ARM has an initial fixed rate for the first three years, after which time the interest rate shifts to variable, resetting annually.

Conventional Loans – Loans that meet the size and underwriting criteria set by Fannie Mae and Freddie Mac. The current limit is $417,000 for single family loans.

High Loan-to-Value Loans ("HLTV") – HLTVs are mortgages where the loan is greater than 85% of the value of the property. Normally the loans are made to borrowers with good credit ratings and are used for debt consolidation.

Jumbo Loans – Loans that exceed size limits set by Fannie Mae and Freddie Mac, but conform in all other respects.

Option ARM – An adjustable rate mortgage loan with the option of four different monthly payment amounts: minimum payment, interest only, full principal and interest (30-year term) and full principal and interest (15-year term). These loans typically have a low initial fixed interest rate for a specified period of time. Beyond the fixed interest period, rates are subject to adjust monthly based on the specified index. Payment option amounts after the initial fixed interest period are subject to change annually. Deferred interest, or negative amortization, is possible with these loans.

Second Mortgages/Home Equity Lines of Credit ("HELOC") – Loan made after there is already one mortgage recorded against the property. Typical reasons usually include cash out, debt consolidation, establishing an equity line of credit.

Sub-prime Loan – Loans to borrowers whose creditworthiness or loan quality does not meet the standards of a conventional mortgage. Sub-prime borrowers are segmented into A-, B, C, C- or D based on the credit, income, and LTV ratios. Such loans have a higher risk of default than loans to conventional borrowers. Generally, sub-prime borrowers display a range of credit risk characteristics that may include one or more of the following:

- Two or more 30-day delinquencies in the last 12 months or one or more 60-day delinquencies in the laser 24 months.
- Judgment, foreclosure, repossession, or charge-off in the prior 24 months.
- Bankruptcy in the last 5 years.
- Relatively high default probability as evidenced by, for example, a credit bureau risk score (FICO) of 620 or below (depending on the product/collateral).
- Debt service-to-income ratio of 50% or greater, or otherwise limited ability to cover family living expenses after deducting total monthly debt-service requirements from monthly income.