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A grayscale photograph of a house with a gabled roof, a chimney, and a stone foundation. The house is the background for the right side of the page.

BEAR STEARNS QUICK GUIDE TO NON-AGENCY MORTGAGE-BACKED SECURITIES

FAST

FINANCIAL ANALYTICS & STRUCTURED TRANSACTIONS
FIXED INCOME RESEARCH



**BEAR STEARNS QUICK GUIDE TO
NON-AGENCY MORTGAGE-BACKED SECURITIES**

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This book is designed to serve as an introduction to the wide array of investment vehicles that are available in the U.S. non-agency residential mortgage market. Because of the manner in which these markets have evolved over time, the non-agency sector comes complete with a hearty serving of jargon that, for investors new to it, could be a source of confusion. In summarizing the “genealogy” of what we recognize today as individual segments of this market, and in discussing the alphabet soup of acronyms that may be applied to each one, we hope to dispel that confusion.

As is the case with the *Bear Stearns Quick Guide to Agency Mortgage-Backed Securities*, which served as the inspiration for this effort, the current volume is intended to be a concise reference, a means by which potential non-agency investors can quickly develop or supplement a “top-level” understanding of this market. To that end, we steer clear of a very detailed examination of the issues, since these can be effectively addressed in research pieces on individual topics. For example, we conduct an ongoing discussion of current market issues in our weekly publication *Across the Curve in Rates and Structured Products*, and recommend it to readers of this Guide. Instead, we undertake this discussion of the non-agency sector with the twin goals of brevity and utility guiding our efforts, and with the particular intention of introducing this important segment of the fixed-income universe to investors who may not currently be participants in it.

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September 2006

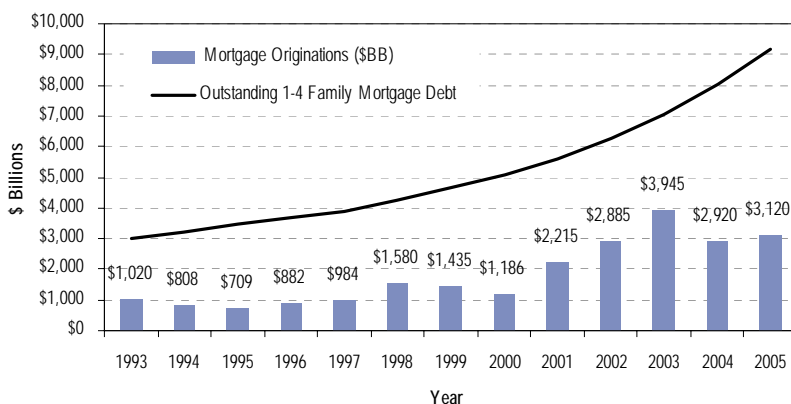
THE U.S. MORTGAGE MARKET

1. MORTGAGE DEBT AND MORTGAGE-BACKED SECURITIES

As of December 2005, an estimated \$9.15 trillion of 1-4 family residential mortgage debt was outstanding in the United States, of which 94.7% or \$8.67 trillion was held by the household sector¹. With the estimated value of residential real estate held by households at \$19.82 trillion as of the same date, the composite residential mortgage loan-to-value ratio for the household sector stood at 43.7%. Approximately 70% of U.S. homeowners have mortgages on their property, and the estimated aggregate loan-to-value ratio for these borrowers as of year-end 2005 was 62.5%.

Mortgage origination volume has been at or near record levels in each of the past five years, spurred by rising levels of homeownership, which is currently in excess of 69%, and strong growth in home prices (see Figure 1). As a result, the growth rate of outstanding 1-4 family debt in recent years has exceeded its long-term average.

Figure 1. Mortgage Originations and Outstanding Mortgage Debt (\$ Billions)



Source: Bear Stearns, LoanPerformance, Freddie Mac, Fannie Mae, Ginnie Mae, Inside Mortgage Finance

It is clear from Figure 1 that the absolute level of mortgage originations can fluctuate substantially from year to year, to a degree that is independent of the long-term rate of population and/or homeownership growth. This ebb and flow of mortgage originations occurs because of the influence of

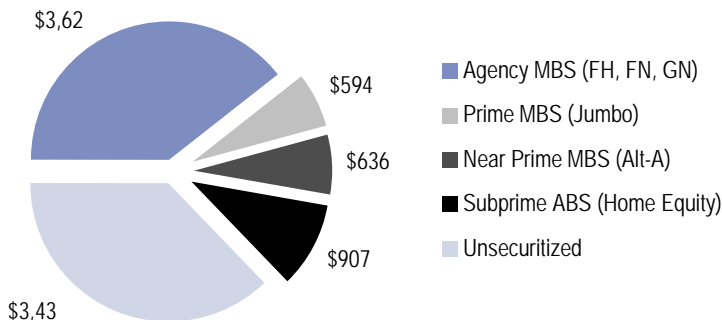
1. Source: Federal Reserve Flow of Funds.

mortgage rates, which affect both purchase originations and refinancings. Since the majority of U.S. homeowners have the right to prepay their loan at any time without penalty, periods of low mortgage rates result in high levels of mortgage originations as borrowers refinance into lower-rate loans. (When they apply, prepayment penalties slow, but do not completely stop, refinancing activity.) Thus, cyclical peaks in originations in 1993, 1998 and 2003 coincided with cyclical lows in mortgage rates, and reflected the widespread “recycling” of existing mortgages through refinancing.

Similarly, the rate of securitization (i.e. the percentage of mortgage originations that is used to back both agency and non-agency residential MBS) can vary from year to year. In 2004, approximately 64% of new mortgage product was securitized in the secondary mortgage market, a rate of securitization that was slightly above the long-term average.

Approximately 60% of outstanding U.S. mortgage debt is traded in mortgage-backed securities, making the U.S. secondary mortgage market the largest fixed-income market in the world. The bulk of this securitized universe is comprised of agency pass-through pools—those issued by Freddie Mac, Fannie Mae and Ginnie Mae—which totaled \$3,625 billion outstanding as of January 2006. These single-class pass-through securities can further be bundled and sold as multi-class securities that are known as agency collateralized mortgage obligations (“agency CMOs”). The remainder—approximately \$2,132 billion as of January 2006—has been securitized in non-agency securities (prime, near prime and subprime, terms that will be defined later in this Guide). While the non-agency MBS market is relatively small as a percentage of all U.S. mortgage debt, it is nevertheless large on an absolute dollar basis. In addition, as we will discuss in more detail later, it is a diverse sector that is distinct from the agency sector in several important respects. Figure 2 illustrates the estimated distribution of existing U.S. mortgage debt between the securitized and non-securitized markets, as of January 2006.

Figure 2. The U.S. Mortgage Market in 2006 (\$ Billions)



Source: Bear Stearns, LoanPerformance, Freddie Mac, Fannie Mae, Ginnie Mae, Inside Mortgage Finance

2. TYPES OF MORTGAGES

Borrowers in the U.S. can choose from a wide array of products in order to finance their homes. The first step in the decision process is to answer the following question: Do I want my payment to stay the same until maturity, or am I comfortable with allowing the payment to change periodically? Traditionally, most borrowers have chosen the first option, but that has been changing in recent years.

Fixed-Rate Mortgages (FRMs)

Approximately 66%² of all outstanding securitized mortgages in the U.S. are fixed-rate, fully amortizing loans that require a level payment each month until maturity. In the early years of amortization, most of this payment is interest, but as the loan seasons, an increasing amount of the payment goes to pay down principal. Most fixed-rate mortgages amortize over a 30-year term; the other principal type is the 15-year mortgage, which is a favorite of refinance borrowers. A small number of fixed-rate borrowers choose the 10-year, 20-year or 40-year variants, although volume in 40-year and longer maturities has been increasing since 2005.

Under normal circumstances (i.e. if the yield curve is upwardly sloping), a loan with a shorter final maturity tends to have a lower interest rate because it is priced off a shorter part of the curve. However, in deciding between fixed-rate loans with shorter or longer maturities, borrowers must balance

2. Source: Bear Stearns

the potential for a lower absolute interest rate with the higher monthly payment that is required by a shorter amortization period. For example, the monthly payment for a 5.5% 15-year mortgage is 36% higher than the payment for a 6.0% 30-year mortgage. (The spread between these two rates is normally around 50 bp, so this payment difference is indicative of the choice that might face borrowers under normal market conditions.) Since they have made an initial choice to take a higher monthly payment, 15-year borrowers are likely to be stronger credit risks, a fact that is acknowledged in the non-agency market by the credit rating agencies in the form of lower credit enhancement requirements for most 15-year deals.

Balloon loans normally amortize to a 30-year term, but require a balloon payment of outstanding principal at maturity (normally 5, 7, or 15 years). Their appeal to borrowers comes from the fact that they generally have lower rates than even 15-year loans, but they amortize to a 30-year schedule, thereby resulting in a lower monthly payment than most competing fixed-rate products. Balloons were popular through the mid-1990s, but are not common today, since their relative payment advantage has been overshadowed by products in the adjustable-rate sector.

Rounding out the fixed-rate menu are interest-only (IO) loans, a product that began to see significant origination volume beginning in 2004. These loans, which are also called “interest first” loans, typically require an interest-only payment for the first 10 years, and subsequently fully amortize in the final 20 years of a 30-year term. More recently, other variants of the IO loan have been created, including loans that have a 40-year final and a 10-year initial IO period, followed by a 30-year period of amortization. Since they are designed to reduce a borrower’s initial payment, interest-only loans are an example of the “affordability mortgages” that began to be offered in 2004.

Adjustable-Rate Mortgages (ARMs)

In recent years, adjustable-rate mortgages have risen to prominence in all non-agency mortgage sectors. In both 2004 and 2005, they comprised the substantial majority of originations for prime, near prime and subprime ABS/MBS³, garnering market shares in the range of 60% to 80%. On the simplest level, an ARM amortizes over a fixed term, but at a rate that may change based on predetermined contractual rules. The details of an ARM are defined by several key components, which are shown in the following section. We illustrate each metric with the most commonly found values, although the characteristics of individual deals may of course differ from these indicative levels.

3. These structures are almost always created as a REMIC (Real Estate Mortgage Investment Conduit).

- *Index*
 - Subprime: 6-month LIBOR
 - Near prime: 6-month LIBOR, 1-year LIBOR, MTA (Moving Treasury Average, a lagged index of the 1-year constant maturity Treasury or CMT)
 - Prime: 6-month LIBOR, 1-year LIBOR, 1-year Treasury, MTA
- *Margin*
 - Subprime: 600 bp
 - Near prime: 200 to 250 bp
 - Prime: 150 to 200 bp
- *Initial Reset Cap*
 - Subprime: 2% to 3%
 - Near prime: 5%
 - Prime: 5%
- *Periodic Reset Cap*
 - Subprime: 1% for 6-month adjustments, and 2% for 1-year adjustments
 - Near prime: Same as above
 - Prime: Same as above
- *Life Cap*
 - Subprime: 600 bp
 - Near prime: 500 to 600 bp
 - Prime: 500 to 600 bp
- *Reset Frequency*
 - Subprime: 6 or 12 months
 - Near prime: Same as above
 - Prime: Same as above
- *Neg Am Limit and Recast Frequency*
 - Near prime and prime: Option ARMs allow borrowers to choose one of several types of payment to make. Those payments may be fully amortizing, interest-only, or negatively amortizing. In the latter case, when the payment made is less than the interest-only amount, the interest shortfall is added to the unpaid principal. These loans also have provisions that

require the borrower to begin to make fully amortizing payments if a predetermined negative amortization limit is reached. In addition, this process of “recast” is typically required on a periodic basis through the life of the mortgage contract. The maximum allowable amount of negative amortization (called the “neg am limit”) can be 110%, 115% or 125% of the original UPB; the most common limit in current deals is 115%. Most Option ARM loans set the “recast interval” at 60 months, meaning the borrower will be required to make fully amortizing payments at regular five-year intervals.

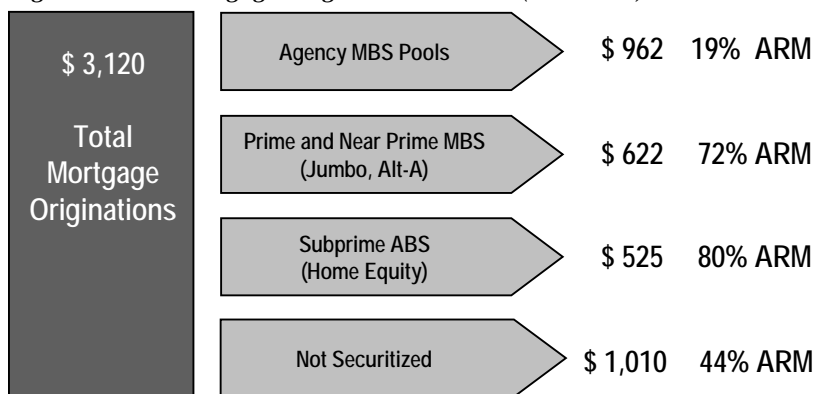
One further wrinkle in the ARM market has to do with the naming convention used to broadly designate the various products that are available. The dominant instrument in adjustable-rate lending is the hybrid ARM, so named because it gives the borrower a combination of fixed-rate and adjustable-rate loan characteristics. The rate in the initial period is fixed, and at some later date the rate begins to adjust based on rules specified in the mortgage contract. The various types of hybrid instruments carry a name with the form “X/Y ARM,” where “X” is the initial period in years, and “Y” refers to the adjustable rate tail. In practice, the “Y” may mean either the *reset frequency* or the *length of the reset period*. It all depends on the sector.

Here is an example. A prime 5-year hybrid is called a “5/1 ARM”: the rate is fixed for 5 years and adjusts annually thereafter...the *reset frequency*. In the near prime sector, the same loan would be called a “5/25 ARM.” The rate is still fixed for 5 years, and then adjusts for 25 years...the *length of the reset period*. The subprime sector follows the pattern of near prime; the most common subprime vehicle is the “2/28 ARM.”

These two naming conventions developed separately, because prime lending was traditionally dominated by loans indexed to the 1-year Treasury. For this sector, annual resets have been the norm, so the “5/1” name makes sense. The reset frequency for near prime and subprime ARMs is as likely to be semi-annual as annual, so the “5/25” convention makes more sense because it works with either choice. For that matter, the “5/25” naming style makes more sense for all sectors (since it encompasses any reset frequency), but the “5/1” style remains the convention for prime. As we will discuss in later chapters, the initial fixed-rate period is the critical determinant of collateral performance, not the reset frequency. Therefore, investors should know that the prime “5/1” is the most comparable instrument to the near prime “5/25.”

In recent years, adjustable-rate lending has increased in prominence in the U.S. mortgage market. The steepness of the yield curve in 2004 was instrumental in raising the percentage of new originations that were ARMs. Fixed mortgage rates, while still very low on an historical basis, were somewhat higher than they had been in 2003, and ARM lending in many cases provided borrowers with substantially lower initial payments for a given loan amount. However, even as the curve started to flatten in 2004, innovation in affordability products kept ARM demand high. And with the curve flat or inverted since mid-2005, ARM market share has not dramatically declined in the non-agency sector. Thus, it appears that ARM lending has gained a leadership position in the non-agency sector that may not appreciably change in response to possible future changes in the shape or level of the yield curve.

Figure 3. U.S. Mortgage Originations in 2005 (\$ Billions)



Source: Bear Stearns, LoanPerformance, Freddie Mac, Fannie Mae, Ginnie Mae, Inside Mortgage Finance

Within the broad categories of adjustable-rate and fixed-rate mortgages, there has been an active process of product innovation at work in the non-agency sector in recent years. Prominent among the results of this process has been the creation of “affordability products” that have lowered the initial cost of financing (i.e. the initial payment), but increased the potential for higher *future* payments due either to upward rate adjustments or to the beginning of amortization. On the subject of ARM rate resets, for example, we estimate that between \$850 and \$950 billion of ARMs will reach their reset in the 12 months beginning July 2006⁴. Assuming that the average rate resets up by 250 bp, this would imply an aggregate increase in annual

4. This estimate covers securitized (agency and non-agency) as well as non-securitized mortgages, and represents slightly less than 10% of all outstanding U.S. mortgage debt.

interest payments for these borrowers in the range of \$22 billion, or less than 20 bp of GDP. While it is true that certain borrowers in the ARM sector may face difficulties at the reset, interest increases of this magnitude do not appear to constitute a systematic risk to the economy, particularly given the fact that interest-bearing *income* also increases when rates rise.

Given this process of product innovation, we can broadly define both “traditional” and “non-traditional” types of mortgages, and observe changes in their popularity in the three principal non-agency mortgage sectors over the last few years. The result of this analysis is shown in Table 1, which illustrates the product market share (percentage of original balance in each product, based on loan-level data) for recent non-agency vintages in each sector. In this context, we define “traditional” financing vehicles as amortizing fixed-rate and ARM loans, and “non-traditional” types as those that either do not amortize for a period of time (IOs) or those that can negatively amortize. The most notable trend in the data shown in Table 1 has been the change from “traditional” to “non-traditional” financing in the prime and near prime sectors. For example, there has been a steep decline in the market share of fixed-rate 30-year loans in these sectors over the past five years. In contrast, while there has been some product evolution in the subprime space as well, the great majority of lending in that sector has stayed in the “traditional” product group, i.e., amortizing ARMs and FRMs. In other words, there has been a larger overall move toward “affordability products” in the prime and near prime sectors in recent years. As a result, borrowers in these sectors have been able to use product selection to lower the initial cost of financing, a fact that has aided home price appreciation.

Indeed, it can be argued that the increasing popularity of affordability products and risk-based pricing in the non-agency sector has played a critical role in the increase in homeownership rates since 1994. As most students of mortgage finance will recognize, the classical 30-year fixed rate loan has a real payment stream that tilts down over time in an environment of positive inflation rates. In addition, any inflation premium built into long-term rates also tends to raise the initial nominal payment burden for this type of loan, disadvantaging younger and less affluent borrowers. In one sense therefore, all “affordability” MBS products can be considered as solutions that attempt to correct for the downward tilt in real payments on a classical FRM, by allowing for higher future nominal payments under the expectation of rising borrower nominal income streams. Furthermore, the substitution of “piggy-back” mortgages to finance the down-payment requirement in lieu of mortgage insurance has also allowed homes to become more affordable in recent years due to the tax-deduction benefits and the efficient intermediation of second-lien MBS risk through the capital markets.

Table 1. Recent Non-Agency Product Mix, by Sector and Vintage

Prime Market Share by Vintage						
Vintage	Non-Traditional			Traditional		
	ARM IO	ARM NegAm	Fixed IO	ARM Amortizing	Fixed 15-Year	Fixed 30-Year
2001	6.5%	1.7%	0.0%	19.7%	11.7%	60.4%
2002	20.4%	1.6%	0.0%	21.4%	16.6%	40.0%
2003	27.2%	0.4%	0.2%	24.6%	17.0%	30.6%
2004	45.1%	13.7%	0.4%	18.2%	5.1%	17.5%
2005	43.5%	4.5%	8.8%	9.9%	3.8%	29.6%
Near Prime Market Share by Vintage						
Vintage	Non-Traditional			Traditional		
	ARM IO	ARM NegAm	Fixed IO	ARM Amortizing	Fixed 15-Year	Fixed 30-Year
2001	3.5%	0.0%	0.3%	17.0%	6.3%	72.9%
2002	8.2%	0.4%	0.5%	18.5%	7.2%	65.2%
2003	19.8%	1.8%	1.7%	14.6%	11.2%	50.9%
2004	43.7%	11.5%	3.3%	13.8%	3.4%	24.4%
2005	24.9%	38.3%	9.4%	6.1%	1.3%	19.9%
Subprime Market Share by Vintage						
Vintage	Non-Traditional			Traditional		
	ARM IO	ARM NegAm	Fixed IO	ARM Amortizing	Fixed 15-Year	Fixed 30-Year
2001	0.0%	0.0%	0.0%	60.7%	13.3%	26.0%
2002	1.2%	0.0%	0.0%	66.4%	8.4%	23.9%
2003	4.1%	0.0%	0.1%	61.1%	5.3%	29.4%
2004	14.7%	0.0%	0.4%	60.9%	3.4%	20.7%
2005	25.4%	0.0%	1.1%	54.1%	2.3%	17.1%

Source: Bear Stearns, LoanPerformance

3. THE AGENCY SECTOR

Agency mortgage-backed securities derive their name from the three “agencies” that create them: Fannie Mae, Freddie Mac and Ginnie Mae. Of these three entities, the first two are government sponsored enterprises (“GSEs”), and the pools they create have the implicit guarantee of the U.S. government with respect to timely payment of principal and interest. Ginnie Mae, which is a part of the U.S. Department of Housing and Urban Development, creates pools for which timely payment of principal and interest is explicitly backed by the full faith and credit of the U.S.

government. As of January 2006, the agency sector was divided as follows: 52.5% of outstanding pools were Fannie Mae mortgage-backed securities (“MBS”), 36.1% were Freddie Mac Participation Certificates (“PCs” or “Golds”), and 11.4% were Ginnie Mae MBS. Investors in these vehicles receive scheduled principal and interest (subject to the guarantees mentioned earlier), as well as unscheduled principal prepayments. Please see the *Bear Stearns Quick Guide to Agency Mortgage-Backed Securities* for a detailed discussion of the agency mortgage market.

4. THE NON-AGENCY SECTOR

The non-agency and agency sectors are different in several important respects:

- *Credit Guarantee.* Credit risk in the agency sector is mitigated by an implicit or explicit government guarantee, but non-agency deals have no such guarantee. Instead, credit enhancement for non-agency deals is in most cases provided internally by means of the deal structure. The vast majority of tranches in non-agency deals carry triple-A ratings, and credit risk (i.e., the risk that all principal will not be returned) is channeled to a small percentage of lower-rated tranches by cashflow rules that are designed to protect the senior bonds. Thus, in addition to “time-tranching” deal cashflows in structures with various cashflow windows, non-agency deals are also “credit-tranched.” As we will discuss in Chapters 24-26, there are several means of achieving this end.
- *Loan Size.* Late each year, Freddie Mac and Fannie Mae announce a “conforming loan size limit” that will be applied to pools they create during the following calendar year. Loans that are less than or equal to this amount, which is also known as the “agency limit,” are eligible to be included in agency pools, provided they also meet other underwriting criteria. Such loans, and the pools that are created from them, are called “agency-eligible” or “conforming.” The agency limit that is applicable to the majority of properties is the limit for a 1-family home: \$417,000 as of 2006. However, 2-, 3- and 4-family homes have larger limits, as seen in Table 2. In addition, conforming limits for the “high-cost” states of Alaska and Hawaii are 1.5 times higher for all property types. An attempt was recently made in Congress to increase the agency limit for high-cost areas in the lower 48 states (particularly California and the Northeast), but so far no legislative action has come of it. The FHA and VA limits in the table refer to the Federal Housing Administration and the Department of Veterans Affairs, respectively; loans underwritten to these standards are securitized in Ginnie Mae agency pools.

- Non-agency deals can be backed by loans of any size. However, the vast majority of loans in prime jumbo deals are larger than the agency limit, while most loans in subprime deals are under the agency limit. Deals in the near prime (Alt-A) sector take the middle ground, since individual deals can be dominated by loans that are mostly below the loan size limit, or mostly above the limit, or by a mixture of both. Thus, an indication of the predominant loan size found in a particular near prime deal is frequently included as part of the deal description, e.g. a “conforming balance Alt-A deal” or a “jumbo balance Alt-A deal.”

Table 2. Agency Loan Size Limits

Year	1 Family	2 Family	3 Family	4 Family	FHA Ceiling	VA Zero Down Payment
2006	\$ 417,000	\$ 533,850	\$ 645,300	\$ 801,950	\$ 362,790	\$ 240,000
2005	\$ 359,650	\$ 460,400	\$ 556,500	\$ 691,600	\$ 312,896	\$ 240,000
2004	\$ 333,700	\$ 427,150	\$ 516,300	\$ 641,650	\$ 290,319	\$ 240,000
2003	\$ 322,700	\$ 413,100	\$ 499,300	\$ 620,500	\$ 280,749	\$ 240,000
2002	\$ 300,700	\$ 384,900	\$ 465,200	\$ 578,150	\$ 261,609	\$ 240,000
2001	\$ 275,000	\$ 351,950	\$ 425,400	\$ 528,700	\$ 239,250	\$ 203,000
2000	\$ 252,700	\$ 323,400	\$ 390,900	\$ 485,800	\$ 219,849	\$ 203,000
1999	\$ 240,000	\$ 307,100	\$ 371,200	\$ 461,350	\$ 208,800	\$ 203,000
1998	\$ 227,150	\$ 290,650	\$ 351,300	\$ 436,600	\$ 170,362	\$ 203,000
1997	\$ 214,600	\$ 274,550	\$ 331,850	\$ 412,450	\$ 160,950	\$ 203,000
1996	\$ 207,000	\$ 264,750	\$ 320,050	\$ 397,800	\$ 155,250	\$ 203,000
1995	\$ 203,150	\$ 259,850	\$ 314,100	\$ 390,400	\$ 152,362	\$ 203,000
1994	\$ 203,150	\$ 259,850	\$ 314,100	\$ 390,400	\$ 151,725	\$ 184,000
1993	\$ 203,150	\$ 259,850	\$ 314,100	\$ 390,400	\$ 151,725	\$ 184,000
1992	\$ 202,300	\$ 258,800	\$ 312,800	\$ 388,800	\$ 124,875	\$ 184,000
1991	\$ 191,250	\$ 244,650	\$ 295,650	\$ 367,500	\$ 124,875	\$ 184,000
1990	\$ 187,450	\$ 239,750	\$ 289,750	\$ 360,150	\$ 124,875	\$ 184,000

Source: Freddie Mac, HUD, Department of Veterans Affairs

- *Underwriting Standards.* While most non-agency ABS/MBS are backed by loans which meet or exceed agency underwriting guidelines, some loans do not meet those standards. In general, such loans fall into the lower credit score regime, and may have additional features which, in combination with other attributes or with the credit score, prevent them from being securitized in an agency pool. Note that agency eligibility must be established on the basis of both loan size *and* underwriting standards. A loan that fails on either test cannot be included in an agency pool. Thus, the vast majority of loans in prime jumbo deals (discussed in more detail below) are

loans with excellent credit quality that fail the agency loan size test (i.e. they are too large to be included in an agency pool, but otherwise meet very high underwriting and credit quality standards).

Agency pools exist independently and are traded as single-class pass-through securities, regardless of whether or not they are later used to back an agency CMO. For a loan that is not agency-eligible, the only securitization option is a non-agency deal, since there is no available intermediate and independent single-class vehicle similar to the agency pool. This distinction is more than simply academic, since it means that, if they are to be securitized, all loans that are not agency-eligible must be funneled into non-agency ABS/MBS. The importance of this fact will be seen in the following brief history of the non-agency market.

Today's non-agency ABS/MBS market, which can be divided into three principal sectors based on broad convexity and credit characteristics, was initially an undifferentiated securitization alternative to the agency market. Its development can be divided into three phases, as discussed in the following paragraphs.

- *The Beginning of the Market.* In the 1980s and early 1990s, non-agency securitizations frequently contained a wide variety of collateral. At that early stage of the sector's development, there was an essentially binary division in the secondary mortgage market between agency pools/deals, and non-agency deals. Any loan that was not agency-eligible, if it was securitized, was put into a "non-agency deal." The gradations in credit quality and underwriting that later characterized the non-agency sector were, at that point, mostly absent. There were two principal reasons for this:
 - Uniform underwriting standards, i.e. those established by the agencies (Freddie Mac and Fannie Mae), were not widely followed in non-agency lending until the early 1990s.
 - Credit (i.e. FICO) scores were not used in mortgage lending until the late 1990s, meaning that until then the market lacked an important tool that could be used to objectively distinguish between levels of credit risk.
- *Differentiation and Segmentation.* The refinancing wave of 1992-1993 marked the beginning of two important changes in the non-agency sector. First, agency underwriting standards began to be imposed on a systematic basis in non-agency ABS/MBS, with the result that deals—particularly prime jumbo deals—began to be more uniform in credit quality. Second, during and after the 1992-1993 refinancing event, the non-agency market began to segment on the

basis of credit grade. Whereas before there had just been a generic “non-agency deal,” now there might be a “prime jumbo” deal, an “Alternative-A” deal, and a “subprime” deal (these terms will be more fully explained in Chapter 5). While the expanded lexicon used in the non-agency sector can be daunting to those unfamiliar with it, the trend toward greater segmentation is a net positive in that it allows investors to more accurately assess the risk/reward tradeoff, in terms of both prepayment and credit performance.

- *Product Innovation and Accelerated Growth.* Beginning in 2004, U.S. mortgage lending began to move away from its traditional roots in the 30-year fixed-rate product. Adjustable-rate mortgages (ARMs) captured a larger slice of the origination market, as did non-amortizing (i.e. interest-only) or negatively amortizing product. The non-agency market was at the vanguard of this product innovation, and as a result captured an increasing portion of market share from the agency sector beginning in 2004. While non-agency ABS/MBS had comprised only a 21% share of the securitized market between 1996 and 2003, that percentage rose to 44% in 2004 and reached 54% in 2005, the first time in history it had been higher than 50%. Through the first half of 2006, non-agency share has moved slightly higher, to 56%.

5. NON-AGENCY LEXICON

The segmentation of the non-agency mortgage sector has occurred mostly on the basis of credit quality and loan size. On the broadest level, non-agency credit quality can be seen to run the gamut from prime, to near prime, and finally to subprime. Each segment can be characterized as follows:

- Prime (Jumbo)
 - Most loans are over the agency limit (\$417,000 as of January 2006)
 - Excellent credit quality
 - 50% or more of the loans have full documentation
- Near Prime (Alternative-A or “Alt-A”)
 - Any loan size
 - Slightly lower credit quality (average FICO scores are roughly comparable to Fannie Mae and Freddie Mac pools)
 - Mostly limited documentation
 - May have 10% or more investor properties

- Subprime (Home Equity)
 - Mostly lower loan size
 - Lower credit quality
 - High percentage of equity extraction (cashout refinancing)

Traditionally, there has been a significant distinction between prime and near prime deals on the one hand, and subprime deals on the other. For one thing, the former are frequently referred to as “non-agency CMOs,” while the latter are likely to be called asset-backed securities or “ABS.” In many cases, Wall Street has further reinforced this distinction by separating the trading and/or research functions along the same lines. The result is a sometimes bewildering amount of specialized terminology, and many examples of different phrases that may mean nearly the same thing. Below, we consolidate and explain this lexicon; we will use the “prime / near prime / subprime” categorization scheme for the remainder of this Guide.

Prime and Near Prime

- The terms “non-agency,” “non-conforming” and “private label” are used interchangeably. All refer to multi-class securities that are backed by mortgages that were not first securitized in agency pools.
 - “Private label CMO”
 - “Non-agency deal”
 - “Non-agency MBS”
- As it is commonly used, the term “jumbo” may refer either to **loan size** or to **credit quality**, or to both. If the term is used with respect to loan size, it refers to loans that are above the agency limit, or to deals in which most loans are above the limit. Furthermore, if it is used to refer to loan size, it could be used in conjunction with a reference to sector, as in “jumbo Alt-A,” which is explained in the next bullet. With respect to credit quality alone, jumbo deals are “prime.”
 - “Jumbo loan”
 - “Jumbo deal”
- The term “Alternative-A” or “Alt-A” refers to loans of any size that typically have slightly lower credit quality than jumbo loans. Alt-A deals are “near prime” credit quality, i.e. slightly lower credit quality than prime, but in most cases substantially higher credit quality than subprime.

- “Alt-A deal” (loans are near prime credit, and could be of any loan size)
- “Conforming Alt-A deal” (most loans are under the agency limit)
- “Jumbo Alt-A deal” (most loans are above the agency limit)
- “Conforming Alt-A loan” (a conforming-size loan in an Alt-A deal)
- “Jumbo Alt-A loan” (a jumbo-size loan in an Alt-A deal)

Subprime

- The terms “Home Equity (HEL),” “B/C” and “subprime ABS” refer to mortgages taken out by borrowers with weaker than average credit standing, or to deals backed by such mortgages. These mortgages may be first lien or second lien, although in recent years the majority have been first lien.
- Subprime first lien deals have average borrower FICO (credit) scores that are generally below 660, with an average score around 620. This is the largest sector of the home equity market. Traditionally, loans are made primarily for equity extraction or debt consolidation, although the share of loans for purchase has been rising in recent years.
 - “Subprime deal”
 - “Home equity deal”
 - “Mortgage-related ABS”
- “HELOCs” (home equity lines of credit) allow borrowers to draw for a fixed period up to a maximum amount, after which a payment is calculated to amortize the loan. These are mostly floating rate loans indexed to *The Wall Street Journal* Prime Rate with margins in the 1% to 2% range. Average FICO scores are around 675.
- HLTV: High LTV loans have cumulative loan-to-value between 100% and 125%. Typical FICO scores are in the 690-700 range. Loans are primarily for debt consolidation and are almost entirely second lien.

Other Sectors

- Second lien: This sector has seen limited issuance in recent years, since rates for first lien subprime loans have been so low that it has generally made more sense to refinance the first lien and roll in any second lien at the same low rate. However, this is now changing for two reasons. First, rates are rising and borrowers who might want to extract equity may no longer find it advantageous to give up their first lien. Second, in response to higher home prices, many subprime borrowers have been taking simultaneous second liens (known as “Piggy-Back Loans”) at the time they purchase with a first lien, thereby decreasing their equity stake in the combined first and second liens. As a result, second lien issuance has been rising in the past year.

Second lien loans can be found in several types of non-agency securitizations. However, investors are most likely to encounter them in two types of transactions, as described below.

- Fixed-rate second lien subprime loans. These loans are interspersed in subprime deals, where the majority of loans are first lien 2/28 hybrid ARMs. Fixed-rate second lien subprime loans are mostly small balance, purchase loans (\$52,000 average loan size, 77% purchase in the 2005 book of business). The average FICO score was 654 for that vintage, with an average gross WAC of 10.3%, and combined LTV ratios between 98% and 99%.
 - Fixed-rate second lien loans. The principal differences between this category and the first are (1) these loans have much higher average FICO scores, and (2) these loans are segregated in their own “second lien” deals. In terms of average FICO, 2005 second lien deals had an average of 673 FICO, and so far in the 2006 vintage that average has risen to 696. Thus, these loans comprise a significantly different risk profile than that seen in the second lien subprime space. Other important attributes such as gross WAC, loan size, CLTV and purchase percentage are comparable to levels seen in the second lien subprime sector.
- Scratch and Dent (“S&D”): This sector is relatively difficult to define on an absolute basis, since the loans that comprise S&D deals typically have been rejected by another securitization program. In many cases, the reasons for this rejection have to do with the failure to meet certain underwriting criteria, either individually or in combination; those underwriting deficiencies may be either trivial or

significant. Loans in S&D deals also may have been pulled from previous deals due to a first payment default (missed payment). If they subsequently made timely contractual payments, they could be eligible for an S&D securitization. In general, S&D performance can vary widely across deals, and the deals frequently require a more detailed analysis than might be necessary in other sectors.

- **Reperforming:** The loans backing deals in this sector have been seriously delinquent in the past, and may currently be on payment plans and/or have arrearages in addition to their contractual UPB. Deals in this sector typically do not display a great deal of prepayment sensitivity, although they may have substantial credit risk.
- **FHA/VA:** This is a special case of “reperforming” deals, being comprised entirely of formerly delinquent loans that were bought out from Ginnie Mae pools and brought back to performing status.

6. MORTGAGE UNDERWRITING

Once the non-agency market began to systematically distinguish between the prime, near prime and subprime markets in the mid-1990s, distinct underwriting approaches began to emerge. These approaches, and their typical outcomes in terms of prepayment and credit behavior, can be summarized as follows:

- The prime (jumbo) market does not price for risk.
 - Standard borrower; excellent credit; standard documentation.
 - Most borrowers get the optimal rate with little or no adjustment for unusual loan or borrower characteristics.
 - Result: credit risk is low; prepayments are very rate sensitive.
- The subprime market prices for risk.
 - Credit-challenged borrower.
 - Underwriting customized to account for unique loan and borrower characteristics.
 - Borrower gets higher rate, depending on underwriter’s assessment of risk.
 - Result: credit risk is high; prepayments are not rate sensitive, but are largely dependent on the schedule of prepayment penalties and the possibility for home equity extraction.

- The near prime (Alternative-A) market exists in the middle ground.
 - Non-standard borrower may have relatively minor credit issues.
 - Prime lenders target lower-quality borrowers.
 - Subprime lenders target higher-quality borrowers.
 - Custom multi-dimensional underwriting approach uses a “pay-up matrix” to serve a wide range of borrowers.

Within each of these sectors, and subject to the specific underwriting criteria of each lender, the lending decision is typically based on an assessment of the mortgage collateral itself (property appraisal, loan-to-value ratio), the borrower’s ability to pay (monthly income, monthly expenses, amount of non-mortgage debt, debt-to-income ratios), and the borrower’s creditworthiness. The last point relies on an industry standard credit score known as the FICO score (an acronym of the company that creates it—Fair, Isaacs and Co.). FICO scoring began to be used in the mortgage market in 1997, and has been nearly universally available in non-agency transactions since 1999. Although it was initially created for use in consumer credit, it has been a good predictor of relative credit performance in the mortgage sector.

Low FICO scores indicate relatively high credit risk, while high scores indicate relatively low credit risk. Possible FICO score values range between 300 and 850, although the vast majority of loans fall well inside these extremes, and the median for all borrowers is 723⁵. Among the predictive factors for FICO scores are the number and use of credit lines, current level of debt, length of credit history, number of inquiries for credit, types of credit available, presence of derogatory items on the credit and/or public record, and incidence of bankruptcy. Average FICO scores, and the distribution of those scores, is a useful metric for correctly placing a deal or deals on the continuum of credit and prepayment risk/reward in the non-agency sector. In general, higher FICO deals indicate more prepayment risk and less credit risk, while lower FICO deals indicate the opposite. Other risk criteria such as LTV ratio are in many cases also correlated with FICO score, as can be seen in Table 3, which illustrates important collateral characteristics of 2005 originations.

5. Source: MyFico.com

Table 3. FICO Score and Sector: 2005 Originations

Sector	Orig. Bal. (\$MM)	Initial GWAC	Avg. Loan Size (\$K)	FICO	Comb. LTV	% CA	% Full Doc	% Cash-Out	% Investor	% IO	% Prepay Penalty	% Option ARM	Gross Margin
Prime ARM	\$123,575	4.25	\$453	732	73.9	54.0	44.3	26.4	4.5	55.1	15.4	24.4	256.2
Near Prime ARM	\$189,195	3.88	\$321	711	80.0	50.2	24.9	34.9	14.2	45.1	52.6	43.9	282.4
Subprime ARM	\$290,601	7.10	\$200	624	85.9	32.2	56.9	51.2	5.5	30.4	72.4	1.1	582.6
Prime Fixed	\$47,114	5.86	\$499	742	70.6	39.2	54.7	27.6	1.0	15.2	1.7	NA	NA
Near Prime Fixed	\$94,944	6.21	\$215	717	76.2	26.8	40.0	38.3	15.7	28.9	15.6	NA	NA
Subprime Fixed	\$66,446	7.48	\$128	636	81.2	26.9	70.2	68.4	4.0	5.5	76.6	NA	NA

Source: Bear Stearns, LoanPerformance

7. MAJOR NON-AGENCY ISSUERS

We close the sector overview with a summary of non-agency originations from major ABS/MBS issuers over the last eight years. The tables illustrate the relative volumes of the prime, near prime and subprime sectors, as well as the growing market share of adjustable-rate mortgages (ARMs) in recent years. Deal details for each row can be found by using the Bloomberg shelf code in the second column.

QUICK GUIDE TO NON-AGENCY MORTGAGE-BACKED SECURITIES

Table 4. Non-Agency ABS/MBS Issuers: Prime (Jumbo) Volume (\$ Billions)

Issuer (Fixed)	Bloom.	1998	1999	2000	2001	2002	2003	2004	2005	Total
Countrywide Home Loan Mortgage Pass-Through Trust	CWHL	\$7.6	\$4.2	\$4.0	\$9.3	\$14.8	\$18.7	\$7.7	\$11.7	\$78.0
Residential Funding Mortgage Security I	RFMSI	\$17.9	\$10.6	\$4.8	\$10.4	\$6.8	\$8.6	\$3.4	\$2.8	\$65.3
Wells Fargo Mortgage-Backed Securities Trust	WFMBMS			\$3.6	\$15.2	\$11.4	\$12.3	\$3.8	\$10.6	\$56.8
Banc of America Mortgage Securities	BOAMS		\$4.9	\$2.5	\$7.0	\$6.3	\$8.7	\$6.7	\$4.7	\$40.8
Citicorp Mortgage Securities Inc	CMSI	\$3.5	\$2.2	\$1.1	\$5.7	\$5.1	\$4.9	\$5.4	\$3.8	\$31.7
Chase Mortgage Finance Corp	CHASE	\$3.5	\$5.0	\$1.2	\$2.2	\$2.8	\$6.3	\$1.5	\$0.6	\$23.0
CS First Boston Mortgage Securities Corp	CSFB	\$0.1			\$1.2	\$5.1	\$7.4	\$3.1	\$2.7	\$19.7
First Horizon Asset Securities Inc	FHASI			\$1.0	\$2.6	\$4.3	\$4.5	\$1.7	\$2.2	\$16.2
GSR Mortgage Loan Trust	GSR					\$1.4	\$5.2	\$2.8	\$5.2	\$14.5
Banc of America Funding Corp	BAFC						\$1.7	\$1.6	\$1.0	\$4.2
Prime Mortgage Trust	PRIME						\$1.1	\$0.5	\$1.0	\$2.6

Issuer (ARM)	Bloom.	1998	1999	2000	2001	2002	2003	2004	2005	Total
Washington Mutual Inc	WAMU		\$7.0	\$2.0	\$5.6	\$24.9	\$16.3	\$12.8	\$17.6	\$86.2
Wells Fargo Mortgage-Backed Securities Trust	WFMBMS				\$1.2	\$3.0	\$9.5	\$22.2	\$21.7	\$57.6
Bear Stearns Adjustable Rate Mortgage Trust	BSARM			\$1.1	\$8.9	\$7.3	\$7.2	\$11.9	\$13.3	\$49.5
Countrywide Home Loan Mortgage Pass-Through Trust	CWHL				\$1.2	\$2.5	\$10.5	\$16.2	\$15.8	\$46.2
Banc of America Mortgage	BOAMS			\$0.2	\$5.0	\$4.6	\$10.5	\$10.5	\$6.5	\$37.2
Sequoia Mortgage Trust	SEMT	\$0.4			\$0.9	\$5.2	\$6.2	\$8.8	\$0.8	\$22.2
GSR Mortgage Loan Trust	GSR				\$0.4	\$3.0	\$2.7	\$5.2	\$8.9	\$20.1
Structured Asset Mortgage Investments Inc	SAMI					\$1.9	\$2.1	\$7.0	\$6.6	\$17.5
MLCC Mortgage Investors Inc	MLCC						\$8.8	\$8.0	\$0.5	\$17.3
JP Morgan Mortgage Trust	JPMMT						\$0.5	\$2.6	\$11.8	\$14.9
Thornburg Mortgage Securities Trust	TMST					\$1.9	\$5.0	\$4.5	\$1.3	\$12.6
Merrill Lynch Mortgage Investors Inc	MLMI			\$0.2	\$0.2	\$0.9	\$3.1	\$1.9	\$2.7	\$9.0

Source: Bear Stearns, LoanPerformance

QUICK GUIDE TO NON-AGENCY MORTGAGE-BACKED SECURITIES

Table 5. Non-Agency ABS/MBS Issuers: Near Prime (Alt-A) Volume (\$ Billions)

Issuer (Fixed)	Bloom.	1998	1999	2000	2001	2002	2003	2004	2005	Total
Countrywide Alternative Loan Trust	CWALT	\$1.1	\$0.8	\$0.3	\$4.6	\$8.2	\$11.4	\$17.6	\$37.4	\$81.4
Residential Accredited Loans Inc	RALI	\$5.7	\$4.1	\$3.3	\$4.9	\$6.7	\$8.5	\$4.4	\$6.1	\$43.7
Structured Asset Securities Corp	SASC	\$0.2	\$0.7	\$1.5	\$4.5	\$4.2	\$8.4	\$8.0	\$9.3	\$36.7
Residential Asset Securitization Trust	RAST	\$8.1	\$1.7	\$2.1		\$3.9	\$4.9	\$2.2	\$1.5	\$24.3
CS First Boston Mortgage Securities Corp	CSFB				\$1.9	\$4.3	\$2.3	\$1.1	\$6.2	\$15.9
Banc of America Alternative Loans Trust	BOAA						\$5.5	\$4.1	\$4.8	\$14.4
MASTR Alternative Loans Trust	MALT					\$1.4	\$5.0	\$6.1	\$1.6	\$14.1
Bear Stearns Asset Backed Securities Inc	BSABS				\$0.8	\$1.9	\$3.6	\$2.5	\$3.8	\$12.5
Residential Asset Mortgage Products Inc	RAMP			\$0.2		\$1.9	\$3.3	\$0.8	\$0.4	\$6.6
WAMU Alternative Mortgage Pass-Through Certs	WMALT								\$6.1	\$6.1
First Horizon Alternative Mortgage Securities	FHAMS							\$0.5	\$3.9	\$4.4
Impac CMB Trust	IMM					\$0.2	\$0.7	\$1.4	\$0.8	\$3.2

Issuer (ARM)	Bloom.	1998	1999	2000	2001	2002	2003	2004	2005	Total
Bear Stearns Alt-A Trust	BALTA					\$0.7	\$3.1	\$11.0	\$19.1	\$33.9
Structured Adjustable Rate Mortgage Loan Trust	SARM							\$18.3	\$18.9	\$37.1
Impac CMB Trust	IMM				\$1.1	\$3.3	\$5.1	\$16.0	\$10.5	\$36.0
Countrywide Alternative Loan Trust	CWALT							\$6.0	\$26.8	\$32.8
Harborview Mortgage Loan Trust	HVMLT							\$7.7	\$16.3	\$24.0
Washington Mutual Inc	WAMU								\$18.3	\$18.3
Structured Asset Securities Corp	SASC			\$0.3	\$2.4	\$5.3	\$7.8	\$0.5	\$0.5	\$16.8
Indymac Index Mortgage Loan Trust	INDX							\$10.2	\$6.3	\$16.4
Residential Accredited Loans Inc	RALI						\$0.2	\$2.2	\$6.3	\$8.7
Adjustable Rate Mortgage Trust	ARMT							\$4.4	\$10.9	\$15.3
MASTR Adjustable Rate Mortgages Trust	MARM						\$1.4	\$5.4	\$2.3	\$9.1
Downey Savings & Loan Association Mortgage Loan Trust	DSLTA							\$3.8	\$5.8	\$9.6

Source: Bear Stearns, LoanPerformance

QUICK GUIDE TO NON-AGENCY MORTGAGE-BACKED SECURITIES

Table 6. Non-Agency ABS/MBS Issuers: Subprime Volume (\$ Billions)

Issuer (Fixed)	Bloom.	1998	1999	2000	2001	2002	2003	2004	2005	Total
Countrywide Asset-Backed Certificates	CWL	\$0.3	\$0.7	\$0.9	\$1.2	\$1.8	\$4.6	\$9.7	\$10.1	\$29.3
Residential Asset Securities Corp	RASC	\$1.6	\$2.5	\$2.5	\$2.5	\$3.5	\$4.4	\$2.3	\$2.3	\$21.4
Ameriquest Mortgage Securities Inc	AMSI				\$0.1	\$2.3	\$6.7	\$4.3	\$4.0	\$17.3
Structured Asset Investment Loan Trust	SAIL						\$4.2	\$6.0	\$4.8	\$15.1
Morgan Stanley ABS Capital I	MASC					\$0.4	\$2.1	\$7.0	\$3.8	\$13.3
New Century Home Equity Loan Trust	NCHET		\$1.0	\$0.2	\$0.1		\$2.5	\$2.7	\$4.1	\$10.6
Argent Securities Inc	ARSI						\$3.4	\$3.0	\$2.6	\$9.0
Park Place Securities Inc	PPSI							\$4.3	\$3.8	\$8.1
Saxon Asset Securities Trust	SAST	\$1.0	\$1.3	\$1.3	\$0.8	\$0.8	\$0.9	\$1.0	\$0.6	\$7.6
Centex Home Equity Trust	CXHE	\$0.5	\$0.8	\$1.0	\$1.2	\$0.9	\$0.8	\$1.3	\$0.9	\$7.5
Option One Mortgage Loan Trust	OOMLT		\$0.9	\$0.7	\$1.2	\$1.2	\$2.2	\$0.7	\$0.4	\$7.4
Long Beach Mortgage Loan Trust	LBMLT				\$0.5	\$1.0	\$1.7	\$2.7	\$1.2	\$7.0
Bear Stearns Asset-Backed Securities Inc.	BSABS		\$0.3	\$0.2			\$0.5	\$2.6	\$2.4	\$5.9

Issuer (ARM)	Bloom.	1998	1999	2000	2001	2002	2003	2004	2005	Total
Countrywide Asset-Backed Certificates	CWL	\$0.6	\$1.7	\$3.0	\$1.8	\$3.1	\$0.3	\$29.4	\$29.6	\$69.6
Structured Asset Investment Loan Trust	SAIL						\$11.4	\$16.1	\$23.8	\$51.3
Residential Asset Securities Corp	RASC	\$1.8	\$2.5	\$3.9	\$3.8	\$8.1	\$9.9	\$7.8	\$11.3	\$48.9
Ameriquest Mortgage Securities Inc	AMSI			\$1.4	\$1.8	\$6.1	\$10.5	\$11.8	\$13.5	\$45.0
Morgan Stanley ABS Capital I	MSAC			\$0.3	\$0.2	\$1.0	\$5.5	\$19.2	\$15.5	\$41.7
Long Beach Mortgage Loan Trust	LBMLT			\$0.9	\$4.9	\$4.6	\$4.3	\$10.2	\$14.3	\$39.2
First Franklin Mortgage Loan Asset Backed Certificates	FFML			\$0.5	\$0.6	\$2.6	\$5.7	\$12.9	\$12.3	\$34.5
Park Place Securities Inc	PPSI							\$15.2	\$15.0	\$30.1
New Century Home Equity Loan Trust	NCHET			\$0.8	\$0.8		\$4.5	\$7.4	\$13.3	\$26.8
Option One Mortgage Loan Trust	OOMLT		\$1.9	\$3.2	\$6.8	\$4.8	\$5.0	\$2.1	\$1.9	\$25.7
Home Equity Asset Trust	HEAT					\$3.1	\$4.4	\$5.7	\$7.7	\$20.9
Bear Stearns Asset-Backed Securities Inc	BSABS		\$0.2	\$0.1			\$0.3	\$7.7	\$11.1	\$19.4

Source: Bear Stearns, LoanPerformance

MORTGAGE INDUSTRY STRUCTURE

8. ORIGINATION

The process of creating, financing, marketing and servicing a mortgage loan relies on the successful completion of several distinct business functions. First, there are the entities that interact directly with customers (potential homebuyers or borrowers wishing to refinance) to originate a loan. As discussed below, many types of businesses perform this function, and they can be broadly categorized as “retail” and “wholesale” entities.

Retail originations come primarily from two sources:

Direct Originators

These are typically banks, thrifts, savings & loans, or credit unions that interface directly with the borrower. The originated loans may be funded on the balance sheet of the originating entity or sold to secondary market investors on either a servicing retained or released basis. This origination channel is more prevalent in the prime mortgage space. Wells Fargo and Washington Mutual are examples of this type of lender. It should be noted that retail originators may also be active in one or more sectors of the wholesale market, meaning that deals brought under a bank shelf may contain loans from a variety of origination channels.

E-Lenders

In recent years, Web-based lending has been a growing outlet for mortgage originations. An estimated 27.2% of total volume came from online mortgage originators in 2005.⁶ Brokers, correspondents and direct retail lenders have all established Internet-based lending outlets. E-Trade and E-Loan are examples of this type of lender, although several other institutions include online originations as part of their total output.

Wholesale originations include broker and correspondent lending, and involve at least one intermediary between borrower and lender:

Mortgage Brokers

These are small independent entities that act as pure intermediaries by processing the loan application (this includes arranging for an appraisal and credit check) and securing funding from third-party lenders. Some mortgage brokers, at or about the time of settlement, transfer loans to lenders who simultaneously advance funds for the loans. This transaction is

6. Source: *Inside Mortgage Finance*

known in the lending industry as “table funding.” After the loan is closed, the mortgage broker delivers the loan package to the lender. Compensation for brokers comes in the form of yield-spread premiums paid by the lender and/or upfront fees and points paid directly by the borrower. Mortgage brokers are inherently local businesses, with limited national penetration.

Correspondents

These are medium-sized organizations that process the loan application and fund loans. Most correspondents have a flow arrangement to sell loans to other larger entities such as mortgage conduits, and loans are typically originated according to buyer guidelines. Correspondents function similarly to mortgage bankers, but they do not service loans.

Mortgage Bankers

Mortgage bankers typically purchase their loans from correspondents (either on a loan-by-loan or “flow” arrangement, or in “bulk” purchases of large blocks of loans), and fund those purchases by selling their loans in the secondary mortgage market. Although the loan is generally sold soon after funding, in some cases mortgage bankers do not sell the servicing on the loan. Historically, the primary difference between a correspondent and a mortgage banker was the possibility, in the latter case, of servicing being retained after the loan is sold to another investor. However, as a result of the consolidation of mortgage servicing in recent years, it has become increasingly likely that mortgage bankers will *not* retain servicing. Some large mortgage bankers directly access the securities markets for funding loan originations.

Aggregators / Conduits

These businesses acquire loans, either funding them directly through brokers or through a flow program with various correspondents for ultimate securitization exit. They also typically own the servicing rights to the purchased loans, either performing the servicing themselves or subcontracting it to third-party servicers. The “traditional” conduits include such names as Countrywide and Rescap (formerly GMAC-RFC), although, as noted earlier, conduits may also be active in retail originations. In recent years, Wall Street dealer shelves such as BSABS/BALTA (Bear Stearns), HEAT (CSFB), and SASC (Lehman) have become very active in this segment, as they have built a vertically integrated securitization business model.

REITs

Real Estate Investment Trusts (REITs) are entities that originate loans and/or invest in real estate, and are required to pay out all or nearly all of their earnings in order to receive certain tax advantages. REITs can be either publicly or privately held. There are two principal variants of this business model: active and passive REITs. Active REITs, such as New Century Mortgage Corporation (NYSE: NEW) and Thornburg Investment Management (privately held), originate their own loans and then securitize them. Passive REITs, such as Capstead Mortgage Corporation (NYSE: CMO), invest in real estate-related assets, but do not originate loans.

9. FINANCING

Once a loan is closed and funds are disbursed to the borrower, there is still an interim period, lasting from a few days to three months, before the loan is ultimately financed. That financing occurs when the loan is sold, either as a whole loan package, into a securitization, or to a bank, thrift or GSE portfolio. For correspondents and mortgage bankers who fund through warehouse lines, funding is typically defined in terms of preset advance rates, funding cost (e.g. LIBOR + 275 bp), and term (between three months and a year). During this period, the warehouse lender has full recourse to the loan holder. The warehouse line is secured by very marketable securities, and the closing documentation acts as collateral.

Standard warehouse lending facilities are generally arranged through “relationship” banks. These facilities can be used in order to assemble enough collateral to enable a securitization, which taps liquidity in the capital markets. Mortgage funding can also be obtained via an asset-backed commercial paper conduit, whereby originators utilize the liquidity of the CP market.

10. MARKETING

Marketing refers to the process of packaging and selling closed loans to investors, who ultimately provide financing for the loan origination process. Wall Street broker/dealers typically act as agents for this step in the process, and will choose one of the above exit strategies based on the best execution available at the time of the sale. For example, in recent years the choice between whole-loan sale and securitization in a non-agency deal has been strongly influenced by demand from large banks to purchase “raw” loans in whole-loan sales. With strong demand from that quarter, many whole-loan packages have traded directly to institutions in unsecuritized form.

11. SERVICING

The loan servicing process entails the collection and recording of mortgagors' monthly payments, the collection and disbursement of fees and expenses associated with the loan, the transfer of funds on the borrower's behalf to entities such as local tax authorities, the transfer of funds to mortgage investors via the trust (in the case of loans that have been securitized), the management of delinquent loans, and the disposition of properties owned as a result of the mortgage foreclosure process. For their efforts, servicers receive a portion of the borrower's monthly payment—typically in the range of 25 bp or more of the unpaid principal balance per annum, depending on the type of loan.

The amount of effort and expertise required to successfully service a loan portfolio can vary widely depending on the quality of the borrowers. For a prime quality group of borrowers with low rates of delinquency, relatively little work would be required beyond collecting and disbursing funds. For lower quality portfolios, on the other hand, there could be a considerable effort involved in persuading borrowers to make contractual payments, or in managing distressed properties. To the extent that these efforts can impact the performance of deals, for example by reducing losses on such properties, servicer performance can directly affect an investor's return, particularly for subordinate securities.

Mortgage servicing rights (MSRs) are an actively traded asset, especially for prime mortgage collateral. As a result, transfers of servicing in the mortgage world are fairly common and routine. The price of servicing is quoted as a "multiple," i.e. the PV is stated to be a multiple of—for example, 1.5x times—the annual servicing strip. Depending on the terms of a transaction, the sale of a package of loans may or may not also include the servicing. By convention, the sale or retention of servicing is described in relation to the *seller* of a loan package. For example, if a loan package is sold "servicing retained," the seller sells the loans but retains the servicing; if a package is sold "servicing released," the seller sells both the loans and the servicing.

Beyond the monthly servicing fee cashflow that servicers receive, owners of MSRs can also derive value from late fees, prepayment penalties (if they are not passed on to investors), and "cross-selling" opportunities for other products such as insurance. Given economies of scale, the long-term trend in mortgage servicing has been toward greater concentration, i.e. a small number of servicers controlling an ever larger share of the total market. For example, as of 2005, 42.3% of all outstanding servicing was held by the top

five servicers; in 2000, the top five servicers' total market share had been 31.5%⁷.

Prior to 2006, mortgage servicers were faced with an accounting disparity between their mortgage servicing rights and the hedges used to offset the fluctuations in the value of those rights. FAS 140 requires MSRMs to be accounted under a lower of cost or market (LOCOM) approach, while FAS 133 required all derivatives (swaps, swaptions, futures, etc.) to be marked to market through earnings. In a rising rate environment, mortgage servicers were faced with recognizing hedge losses without being able to recognize offsetting increases in fair value above the amortized cost of the servicing rights. If a mortgage servicer could prove the hedges were "effective" under the definition of FAS 133, then the MSR value could change in line with the hedging instruments. This accounting exercise was extremely onerous and expensive from a compliance standpoint.

Mortgage servicers using cash instruments (e.g. POs) to hedge mortgage servicing would normally elect to classify the POs as available for sale (AFS) under FAS 115. The PO classification as AFS meant decreases in value in the PO would be recognized through the equity section of the balance sheet (other comprehensive income) rather than through current period earnings. This enabled mortgage servicers to avoid recognizing the loss in the PO values in earnings, thereby offsetting the inability to write up the MSRMs to fair value in a rising rate environment.

After considerable lobbying from mortgage servicers and public accounting firms, FASB (the Financial Accounting Standards Board) adopted FAS 156 as an amendment to FAS 140, providing a fair value election for selected servicing assets through earnings. Many servicers elected to accelerate adoption of FAS 156 in their first quarter 2006 financials. While a servicer may continue using LOCOM if desired, this election allows mortgage servicers to account for MSRMs at fair value accounting through earnings. Now the MSRMs and their related hedges enjoy the same accounting treatment, thus eliminating accounting mismatches and costly FAS 133 hedge accounting requirements. Mortgage servicers also reclassified POs from AFS to trading (mark to market through earnings) to achieve similar accounting consistency with their derivative hedges.

7. Source: *Inside Mortgage Finance*

The rating agencies rate servicing ability for participants in this business. One rating agency, Fitch, distinguished between prime servicing (“PS” ratings) and special servicing (“SS” ratings). As mentioned earlier, this distinction is particularly relevant to the specialized capabilities needed to successfully service subprime and/or distressed portfolios.

Table 7. Moody’s Rating Definitions

SQ1	Strong combined servicing ability and servicing stability.
SQ2	Above average combined servicing ability and servicing stability.
SQ3	Average combined servicing ability and servicing stability.
SQ4	Below average combined servicing ability and servicing stability.
SQ5	Weak combined servicing ability and servicing stability.

Moody’s ratings of SQ2 to SQ4 may also receive a “+” or “-” modifier; an SQ1 rating may receive a “-” modifier. Source: Moody’s

Table 8. S&P Rating Definitions

Strong	Very high degree of ability, efficiency, and competence in servicing.
Above Average	High degree of ability, efficiency, and competence in servicing.
Average	Acceptable degree of ability, efficiency, and competence in servicing.
Below Average	Low degree of ability, efficiency, and/or competence in servicing.
Weak	Very low degree of ability, efficiency, and/or competence in servicing.

Source: S&P

Table 9. Fitch Rating Definitions

RPS1/RSS1	Full approval (with overall superior performance).
RPS2/RSS2	Full approval (with noted strengths).
RPS3/RSS3	Full approval.
RPS4/RSS4	Qualified approval.
RPS5/RSS5	Conditional approval.

Source: Fitch

Currently, major servicers in the non-agency market have ratings as indicated in Table 10.

Table 10. Servicer Ratings: As of 4/10/06

Servicer	Parent Company	Parent Co LT Rating Moody's/ S&P/Fitch	Moody's		S&P	
			Subprime Servicer	Special Servicer	Subprime Servicer	Special Servicer
Ames Investment Corp	Ames Investment Corp		SQ3			
Accredited Home Lenders, Inc.	Accredited Home Lenders Holding Co		SQ2			
Aegis Mortgage Corporation					Average	
AMC Mortgage Services					Strong	
Ameriquest Mortgage Co.	Ameriquest Capital Corp.					
Aurora Loan Services Inc.	Lehman Brothers	A1/A+/A+			Average	
Bayview Loan Servicing LLC	Bayview Financial, LP			SQ2		Strong
Centex Home Equity Co.	Centex Corp.	Baa2/ BBB/BBB+			Above Average	
Chase Home Finance LLC	JP Morgan Chase	Aa3/A+/ A+	SQ1		Strong	
CitiFinancial Mortgage Co.	Citigroup Inc	Aa1/AA- /AA+	SQ2		Above Average	
Countrywide Home Loans Inc.	Countrywide Financial Corp	A3/A/A	SQ1	SQ1	Strong	Strong
Crown Mortgage Management Ltd	Crown NorthCorp Inc.					
EMC Mortgage Corp.	Bear Stearns Cos.	A1/A/A+	SQ1	SQ2+	Above Average	Above Average
Equity One Inc.	Popular North America	Baa3/ BBB-/	SQ2-		Strong	
Fremont Investment & Loan	Fremont General Corp.	B2/B+/ B+			Average	
Frontier Servicer Co. Ltd.	UFJ					Above Average
GMAC Mortgage Corp.	GMAC-RFC	Baa2/BBB- /BBB-			Above Average	Above Average
GreenTree Servicing LLC	Green Tree				Above Average	Average
GRP Financial Services Corp.	GRP/AG Holdings					Above Average
Homecomings Financial	GMAC-RFC	Baa2/BBB- /BBB-	SQ2	SQ2	Strong	Above Average
HomeEq Servicing Corp.	Wachovia Corp.	Aa3/A+/ AA-			Strong	Strong
Homeloan Management Ltd.	Homeloans Limited					

QUICK GUIDE TO NON-AGENCY MORTGAGE-BACKED SECURITIES

Servicer	Parent Company	Parent Co LT Rating Moody's/ S&P/Fitch	Moody's		S&P	
			Subprime Servicer	Special Servicer	Subprime Servicer	Special Servicer
IndyMac Bank, FSB	IndyMac Bancorp	NR/BB+/BBB-	SQ2	SQ3	Above Average	Average
Liberty Financial Pty. Ltd.	Liberty Financial Pty. Ltd.			SQ2		
Litton Loan Servicing LP	C-Bass LLC		SQ1	SQ1	Strong	Strong
Master Financial Inc.	Master Financial Inc.					Average
Mortgage Lenders Network USA, Inc.	Mortgage Lenders Network				Average	
National City Home Loan Services	National City Corp	A1/A/AA-	SQ2+	SQ2-	Above Average	
New Century Mortgage Corp.	New Century Financial Corp.	B1/BB/NR	SQ3+		Above Average	
NovaStar Mortgage Inc.	NovaStar Financial Inc		SQ2		Strong	Average
OCWEN Federal Bank FSB	OCWEN Financial Corp	B2/B-/B	SQ2-	SQ2	Strong	Strong
Option One Mortgage Corp.	H&R Block Inc	NR/BBB+/NR	SQ1	SQ2	Strong	Average
PCFS Financial Services	Provident Financial Group					
Preferred Mortgages Limited	Preferred Mortgages Limited					
Regions Mortgage					Above Average	
Saxon Mortgage Services Inc.	Saxon Capital		SQ2		Above Average	Average
Select Portfolio Servicing, Inc.	Select Portfolio Servicing, Inc.		SQ2-	SQ2-	Average	Average
SN Servicing Corporation	Security National Master Holding Co.		SQ2	SQ3		
Southern Pacific Mortgage Limited	Lehman Brothers	A1/A+/A+				
Specialized Loan Servicing, LLC (CO)	Specialized Loan Servicing		SQ3-			
Washington Mutual Bank	Washington Mutual Inc	A3/A-/A	SQ2			
Wells Fargo Home Mortgage	Wells Fargo & Co	Aa1/AA-/AA	SQ1	SQ2	Strong	Above Average
Wilshire Credit Corp.	Wilshire Financial Servicers Group		SQ2+	SQ1-	Strong	Strong

Source: Bear Stearns

12. SECURITIZATION

If the optimal exit strategy is securitization, the mortgage assets are sold into a bankruptcy remote entity (“SPV,” or special purpose vehicle) and administered by a trustee. In order to complete the securitization, the broker-dealer will need to undertake a complex series of tasks, including the following:

- Decide whether the deal will be public or private (144a);
- Obtain an opinion from one or more rating agencies on the amount and type of credit subordination required;
- Determine the deal structure that will optimize proceeds, possibly based on reverse inquiry from investors;
- Produce marketing materials including the term sheet and preliminary prospectus;
- Produce the required regulatory materials, e.g. Regulation AB reports;
- Solicit interest from investors and determine final terms of sale of the individual tranches.

After the deal settles, a variety of entities have ongoing reporting responsibilities with respect to the deal.

- The trustee releases monthly remittance reports that detail the performance of the collateral and the bonds, and administers distribution of funds to investors.
- Depending on the type of deal and the terms of the prospectus, the servicer will generally be responsible for advancing principal and interest payments for delinquent borrowers, provided it believes that the advanced amounts are recoverable.
- The servicer or the master servicer will release loan-level detail on a monthly basis.
- Loan-level detail is also compiled by third-party vendors such as LoanPerformance and Intex, and made available to investors on a subscription basis.
- Deal-level performance data is also released by third-party vendors such as Bloomberg and CTSLink.
- Performance data can also be obtained from Wall Street firms, including such publications as the Bear Stearns *ABS/MBS Performance Summaries*, which is published on a quarterly basis.

13. ECONOMICS OF THE BUSINESS

The discrete loan cashflows that can be valued separately and for which a market exists are:

- Principal and par coupon;
- Excess interest or residual;
- Mortgage servicing rights (MSRs); and
- Prepayment penalties.

The acquisition cost of loans ranges from 2% to 3% of par. If the securitization is structured as a sale of assets, the accounting regulation FAS 140 requires that the present value of all excess interest income, mortgage servicing and prepayment penalty rights be recognized as an upfront gain-on-sale. While this requirement applies to many participants in the mortgage market, other originators such as REITs (Real Estate Investment Trusts) structure transactions as bankruptcy-remote secured financings. In that case, there is no gain-on-sale accounting treatment. Instead, income is recognized “as earned” based on each cashflow received, and the loans stay on the originator’s books as secured bond financings.

Mortgage originators can derive revenue from their operations in several ways. Loans may be sold (subject to market conditions) for a net premium of as much as 2% of par. If loans are held for sale, interest income can be collected between the time of origination and the time of sale; this income may be partially offset by financing costs during the holding period. Interest income may also be generated over time from loans deposited into structures that are set up as secured financings. In this case, interest income is partially reduced by the interest paid on the bonds issued to fund these loans. Finally, as discussed earlier, mortgage servicing rights can produce income net of servicing costs and amortization of the MSR, as well as income from late fees, P&I float, prepayment float, and ancillary income from cross-selling.

14. EVOLUTION OF THE BUSINESS

Over the long term, the mortgage lending business has undergone a process of consolidation that has generally resulted in better-capitalized entities controlling a larger share of the market. However, there have been occasional detours in this process, for example in the development of the subprime market. The early years of that sector (from 1992 to 1998) were dominated by specialty finance companies with high leverage and low ratings. The business model was entirely oriented towards securitizations structured as sales, using gain-on-sale accounting that assigned a PV to

retained residuals. As it turned out, the prepayment and loss assumptions used to derive these PVs were too optimistic. The disconnect between these assumptions and market reality reached a climax in the fall of 1998 during the Russia/LTCM crisis, at which point several issuing entities faced a liquidity crunch and were forced to dramatically mark down their positions. The ensuing bankruptcies and industry shakeout ultimately resulted in the strengthening of the sector, as more highly rated entities entered the “alternative” mortgage sector, and greater emphasis was placed on cash sales to avoid negative cashflow problems that had resulted from the gain-on-sale business model. Ultimately, this also set the stage for increased participation from Wall Street conduits.

Without question, mortgage finance remains a cyclical business. However, the industry today is generally more stable and better capitalized than it has been in the past. In addition, the extended period of low rates that prevailed from 2001 to 2005 allowed the industry to generate substantial retained earnings and thereby strengthen balance sheets. Fed tightening since the middle of 2004 has put pressure on net interest margins for all participants in the mortgage lending industry, and this pressure has been exacerbated by the desire to keep introductory rates low in order to retain market share, particularly in the subprime sector. Therefore, the challenges facing the industry today include sustaining profitability in an environment with higher cost of carry and declining origination volumes, as well as adjusting product offerings to meet changing borrower needs and regulatory scrutiny as mortgage lending becomes increasingly dominated by purchase loans.

Another recent development is the entry of investment banks into the mortgage origination arena through a vertically integrated business platform where the origination, servicing, structuring, distribution and trading of non-agency MBS are all housed within one institution. The increasing share of ARM product in the private-label market has played no small part in this evolution since it guarantees a certain minimum origination scale to these entrants due to the refinancing activity spurred by loan resets.

FUNDAMENTALS AND PERFORMANCE

15. NON-AGENCY PERFORMANCE METRICS

Beyond metrics such as CPR and PSA that are familiar to all agency mortgage investors, several other acronyms are commonly used in the non-agency sector to describe both prepayment and credit performance. In this section, we will discuss only those terms that are unique to the non-agency market. Definitions of SMM, CPR and PSA can be found in Chapter 11 of the *Bear Stearns Quick Guide to Agency Mortgage-Backed Securities*.

Prepayments

- *PPC (Prospectus Prepayment Curve)*: This is a prepayment ramp defined in the deal prospectus that fits the characteristics of and assumptions relating to the specific deal for which it is created; it is most often used in near prime deals. For example, 100 PPC might be defined as a linear prepayment ramp “starting at 4 CPR in month 1 and rising to 16 CPR in month 12, and remaining flat at 16 CPR thereafter.” Variants of the base are defined as they are in the PSA convention, so in this case, 50 PPC would be a ramp of 2 to 8 CPR in 12 months, and 8 CPR thereafter. The major drawback of this metric is that some adjustment might be necessary to compare PPC speed across deals. However, the “base ramp” convention for near prime is typically defined within a relatively narrow CPR band, and always with a 12-month ramp-up period, so conversion between two ramps is essentially a matter of establishing a ratio of one plateau CPR level to another.
- *HEP (Home Equity Prepayment)*: As the name implies, this is used only for home equity (subprime) deals, and is defined as a 10-month prepayment ramp that reaches the HEP speed in CPR at the tenth month. For example, 10 HEP means a ramp of 1 CPR in month 1, 2 CPR in month 2, and so on, reaching 10 CPR by month 10. The CPR remains constant after the tenth month.

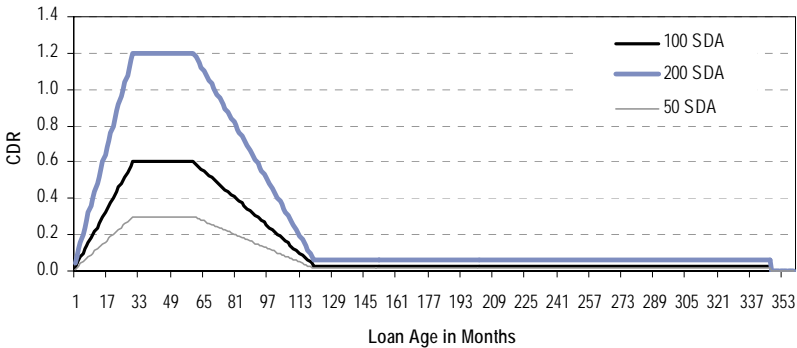
Credit

- *CDR (Conditional Default Rate)*: This is similar to CPR, except that it measures the *involuntary* prepayment rate, i.e. the rate at which loans in a deal default. The calculation differs slightly from the calculation of CPR, in that the SMM is computed off the loan’s beginning balance for the period, since it is assumed that the borrower will not make a payment of scheduled principal in the

month of default. Like CPR, CDR is the annualized monthly rate of prepayment. Depending on how it is viewed, the CDR event can be considered the incident when the loan is charged off (when the balance goes to zero), or the incident when the loan misses the first payment that leads to an eventual charge-off. Mathematically, it can be either of the above; as discussed below, investors can interpret it in either way.

- SDA (Standard Default Assumption):** This is a CDR ramp convention that is the analogue of the PSA convention for CPR. Like PSA, the SDA ramp was promulgated in the 1980s by the Public Securities Association (currently the Bond Market Association; as of November 1, 2006, the Securities Industry and Financial Markets Association (SIFMA)). The 100 SDA ramp rises from 0.02 CDR in month 1 to 0.6 CDR in month 30; remains at that level until month 60; declines by 0.0095 CDR each month in months 61 to 120 to reach 0.03 CDR; and stays at 0.03 CDR until 12 months before loan maturity, at which time it drops to zero (the SDA standard assumes a 12-month lag to charge-off). As with the PSA standard, lower (higher) values of the SDA ramp indicate proportionately lower (higher) levels of CDR.

Figure 4. SDA Ramp



Source: Bear Stearns

- Lag:** In the case of loans that prepay involuntarily, many months can pass between a borrower’s first missed payment and ultimate charge-off by the servicer. During that time, the loan progresses through the stages of delinquency (30 days, 60 days, etc.), to foreclosure and finally to REO (real estate owned). On average, 12 to 18 months elapse between the initial missed payment and charge-off, although this can vary widely depending on the type of loan, the state where it

is located, and market conditions. This elapsed time is called the lag. Note that both CDR and SDA vectors can be defined and used with or without a lag. If no lag is used, the vector is actually a charge-off vector, that is, the default and the charge-off are the same event. If a lag is used, it is a default vector, with “default” defined as the first missed payment that leads without cure to a charge-off. Investors should be careful to ensure that their assumptions about the timing of the charge-off vector are correctly expressed in the valuation system they are using.

- *Severity:* Once a loan is charged off, the servicer will report the amount of loss that was sustained, net of carrying and repair costs, legal fees, and marketing expenses. Given the lagged nature of some of these charges, a final reckoning of the costs may take several months after charge-off. The severity of loss is the net amount of loss expressed as a percent of the loan’s UPB at the time of charge-off.
- *Recovery:* The complement of the severity. For example, 25% severity means 75% recovery.
- *Interaction of Prepayments and Defaults:* The rates of voluntary and involuntary prepayments are closely related. A pool that experiences fast voluntary prepayments will naturally have less balance outstanding at a given point than one that prepays slowly. Since default vectors (either SDA or CDR) operate on the outstanding balance, this means that a given rate of default will result in lower lifetime cumulative defaults for a fast-paying pool than for a slow paying pool. This relationship can be seen for an example deal in Table 11. Note that this table shows the cumulative *default* percentage, not the cumulative *loss* percentage. Assuming 25% loss severity, the loss numbers would be 25% of the percentages shown in Table 11.

Table 11. Interaction of PSA and SDA on Lifetime Cumulative Defaults

Lifetime Cumulative Defaults (Percent)							
PSA	SDA						
	25	50	100	150	200	250	300
100	0.74	1.48	2.94	4.38	5.79	7.19	8.56
150	0.67	1.34	2.65	3.95	5.23	6.49	7.73
200	0.61	1.21	2.41	3.58	4.74	5.89	7.02
250	0.55	1.10	2.19	3.26	4.32	5.37	6.40
300	0.50	1.01	2.00	2.98	3.95	4.90	5.85
400	0.42	0.84	1.68	2.51	3.32	4.13	4.93
500	0.36	0.72	1.43	2.13	2.83	3.52	4.20
750	0.25	0.50	0.99	1.48	1.96	2.44	2.92
1000	0.18	0.36	0.72	1.07	1.43	1.78	2.13
1500	0.11	0.21	0.42	0.63	0.84	1.05	1.26

Assumptions: 30-yr jumbo collateral, 5.80% GWAC; 16-month lag

Source: Bear Stearns

- OTS and MBA Delinquency:** Two standards of measuring a borrower’s contractual delinquency are used in the non-agency market: the MBA (Mortgage Bankers Association) standard is the stricter of the two, while the OTS (Office of Thrift Supervision) standard is more lenient. The difference has to do with the presence or absence of a grace period on the receipt of the payment. In the MBA method, which is used in the prime market, there is no grace period. In the OTS method, which is used in the subprime market, there is a one-day grace period on the receipt of the payment that effectively lowers reported delinquency by one full month, as compared to the MBA method. Table 12 illustrates how the insertion of this one-day grace period at the end of the month results in a full one-month difference in reported delinquency between the two methods. Although near prime generally uses the OTS method, deals in that sector might be reported using either standard, and it is therefore important for credit investors to know their data sources in order to enable a meaningful comparison of credit performance across issuers and sectors.

Table 12. Measuring Mortgage Delinquency

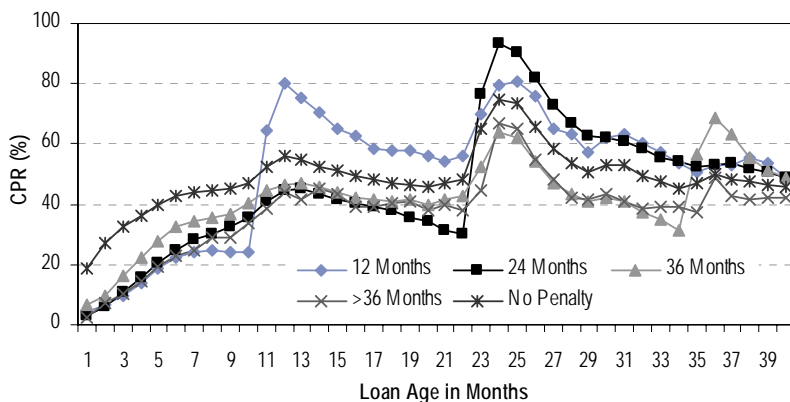
Days Contractually Late	MBA Method	OTS Method
0	Current	Current
30	30	Current
60	60	30
90	90	60

Source: Bear Stearns

16. PREPAYMENT PERFORMANCE

While a detailed examination of historical non-agency prepayments is beyond the scope of this Guide, we will include here several examples drawn from the empirical data that illustrate the relative performance of the major sectors using observations from 2003 to 2006. We start with the prepayment profile of subprime 2/28 ARMs. Prepayments in this sector, as shown in Figure 5, show a steep seasoning ramp in the first year after origination, and a very strong prepayment response at the 2-year point, when the initial fixed-rate period ends and the borrower’s rate adjusts for the first time. Also of great importance to prepayments are the terms of the prepayment penalty, if there is one. Most subprime 2/28 ARMs are subject to a prepayment penalty for the first two years⁸, and speeds for such loans spike very quickly after the penalty expires. Indeed, speeds for penalty loans, regardless of term, generally decline in the last few months before penalty expiration. Figure 5 also shows that there is a prepayment spike at the expiration of other penalty terms (1-year, 3-year, etc.), reflecting pent-up demand for a “penalty-free” prepayment. Finally, loans without a penalty pay about 10 CPR faster than the fastest penalty loans during the first two years of seasoning.

Figure 5. Subprime 2/28 ARM Seasoning by Prepayment Penalty



Source: LoanPerformance

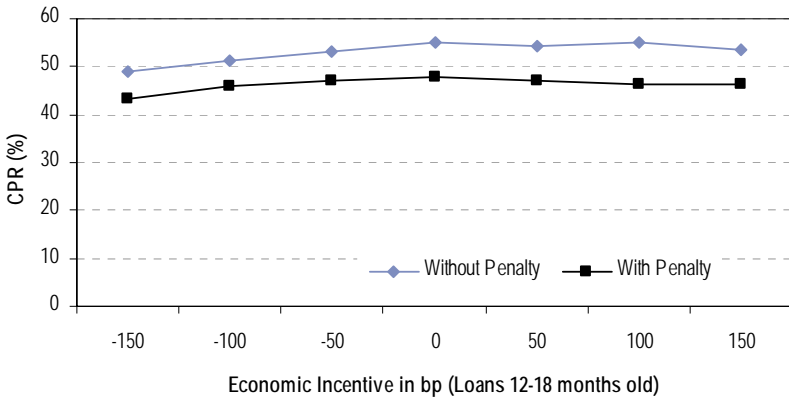
Aside from the length of the prepayment penalty, other attributes such as loan size and FICO score are also good predictors of speeds in the subprime sector. All other things equal, higher FICO loans generally prepay faster than lower FICO loans, and the same is true for higher balance loans

8. The most common type of penalty is 6 months of interest on 80% of the principal amount prepaid.

compared to lower balance loans. This prepayment gap is particularly wide around the first rate reset when the loans are two years old. In addition, higher levels of home price appreciation are generally associated with faster speeds, in subprime as well as the other non-agency sectors.

However, prepayment performance in the subprime sector is dominated by the effects shown in Figure 5, i.e. loan age and prepayment penalty. In comparison, the effect of a change in rates is relatively small. This can be seen in Figure 6, which shows the empirical refinancing function of 2/28 subprime ARMs for loans between 12 and 18 months old, conditional on prepayment penalty. (We limit this curve to loans less than two years old because we want to exclude the effect of the rate reset at year two, which is primarily dependent on age rather than change in rates. If we include observations around the reset, the *level* of the curve shifts upward, but its *slope* does not materially change, meaning that the prepayment spike shown in Figure 5 when the loans reset is independent of rates.) The “s-curve” shown in Figure 6 is flatter than similar curves in the near prime and prime sectors, and it is this relative lack of rate sensitivity that gives the subprime sector its superior convexity. It can therefore be seen that, although speeds in the subprime sector reach high absolute levels, the incremental impact of rate change on prepayment speed is relatively small.

Figure 6. Subprime 2/28 ARM Refinancing Function by Penalty



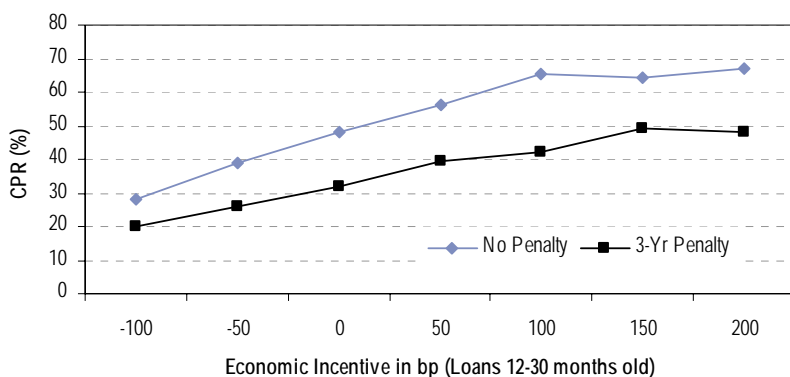
Source: LoanPerformance

Moving up the credit spectrum into near prime, the presence and term of the prepayment penalty remain important determinants of prepayment speed. However, in the higher credit sectors the refinancing function becomes more important as collateral performance is increasingly sensitive to

changes in the level of rates. As shown in Figure 7, the refinancing function for near prime 5/25 ARMs is considerably steeper than the subprime curve shown in Figure 6. At maximum incentive levels of 100 bp or more, speeds for seasoned loans with no penalty reach 65 CPR, while 3-year penalty loans at similar rate incentive prepay 15-25 CPR slower.

Of the other determinants of prepayments in the near prime sector, FICO score becomes somewhat less important, meaning the difference between speeds across the FICO spectrum is not as large as it is in the subprime sector. In addition, loan size becomes a more important factor in establishing the level of prepayments for near prime than it is for subprime.

Figure 7. Near Prime 5/25 ARM Refinancing Function by Penalty



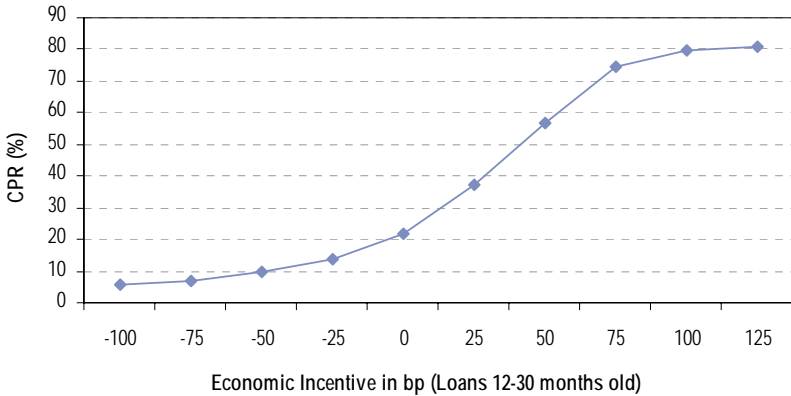
Source: LoanPerformance

Finally, prepayments in the prime sector are highly rate sensitive, both when they are refinancable (in-the-money) and when they are not refinancable (out-of-the-money). For prime fixed-rate collateral, the seasoning profile is highly dependent on the rate environment (i.e. the current level and recent history of rates). Prime vintages such as those from 1993 and 1998 prepaid very slowly during the first several years because rates were generally rising as the loans aged, and offered few if any opportunities for rate/term refinancing. In addition, the observed seasoning profile for the 1993 vintage was further depressed by the weak condition of the California housing market during the mid-1990s. Thus, for investors in prime deals, the level of mortgage rates can be much more important than the age of the collateral. If the deal is a premium, refinancing will dominate prepayments at all levels of seasoning. However, if a deal is a discount, the collateral age is generally more important since there are fewer refinancings, and the prepayment speed is more dependent on loan age. As

true discounts, prime deal speeds will generally increase until they are fully seasoned at around age 20.

Just how sensitive the prime sector is can be seen in Figures 8 and 9, which show respectively the refinancing functions for 30-year fixed-rate collateral and 5/1 hybrid ARM collateral from the prime sector. The steepest segments of these refinancing functions are in the region where the collateral is between 25 and 75 bp in-the-money; there is only an incremental increase in speed when the rate incentive is higher than 75 bp. At the other end of the spectrum, speeds on seasoned collateral are under 10 CPR at and below a rate incentive of -50 bp, illustrating prepayment lock-in when collateral is out-of-the-money.

Figure 8. Prime 30-Year Fixed Refinancing Function

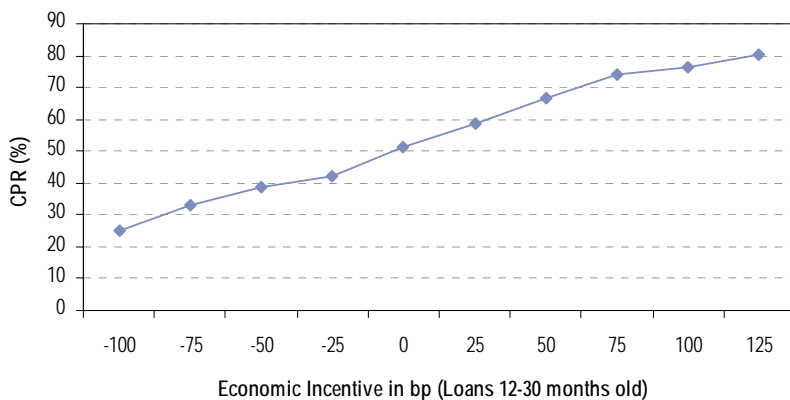


Source: LoanPerformance

In the prime ARM sector, the refinancing function is much flatter across its entire length, and much higher when the rate incentive is negative (see Figure 9). Although the curve approaches 80 CPR at 125 bp incentive, about the same level as the 30-year fixed-rate shown in Figure 8, 5/1 ARMs pay over twice as fast as fixed-rate at zero incentive, and about three times as fast at negative incentives. Why? The key to this behavior is the ability of borrowers to match their expected tenure in a home with the contractual features of a hybrid ARM loan. In the United States, the average person stays in a home between five and seven years. Thus, the growth in hybrid ARM market share in the late 1990s can be seen as a logical response to borrowers wishing to finance their homes with a product that best fits their expectations about how long they will remain in a particular home. An added attraction between 2001 and 2004 was a very steep yield curve,

which meant that borrowers also got an initial rate that was much lower than what would have been available with 30-year fixed financing. As a result, hybrid ARMs season faster than fixed-rate loans when they are current coupon or discount, and hybrids with shorter initial periods season faster than those with longer initial periods. For example, the seasoning profile on prime 3/1 hybrid ARMs is the fastest, while the profile of the 10/1 hybrid ARM is the slowest. The net result for hybrid ARMs is that in a rising rate environment they generally have less extension risk than fixed-rate collateral.

Figure 9. Prime 5/1 ARM Refinancing Function



Source: LoanPerformance

In an effort to present the most relevant illustrations available, all of the figures in this section have used prepayment data from recent experience, i.e. observations since 2003. The empirical history of this period necessarily incorporates the effects of the high levels of home price appreciation that have been seen in many parts of the country for the past several years. In addition, prepayment experience over this period has been impacted by the “affordability revolution,” which, largely since late 2003, has seen the widespread adoption of an array of innovative mortgage products that have generally lowered a borrower’s initial payment. These products include hybrid ARMs, interest-only ARMs, fixed-rate IOs, loans with a final maturity greater than 30 years, and option ARMs, which allow a borrower to make a minimum payment that may not fully amortize the unpaid principal.

As a result of both of these effects, recent prepayments have in many cases been faster than the historical norm. The rapid growth in available home equity has encouraged borrowers to refinance in order to tap that equity, or to trade up to a more expensive home. So has the lower initial cost of borrowed money. As of this writing, the U.S. housing market appears to be at a turning point, faced with a declining rate of home price growth and an increasing cost of mortgage borrowing. While the weight of evidence therefore suggests that some of the recent prepayment “froth” will dissipate in the future, the illustrations in this chapter should maintain their relevance as showing the *relative* level of prepayments across the non-agency sectors.

17. CREDIT PERFORMANCE

In terms of credit performance, the strongest non-agency sector is prime, and performance weakens as we move to near prime and subprime. Predicting credit performance needs to take into account many loan and borrower attributes, including FICO score, loan-to-value ratio (LTV), documentation type, occupancy type and property type. Of these, FICO score is arguably the single best relative predictor of credit performance in the mortgage sector, despite the fact that it was designed for use in consumer rather than mortgage finance. For example, there is a strong negative correlation between FICO score and cumulative losses in both the subprime and the near prime sectors. The same cannot be said of the prime sector because losses have been very low in the years since FICO score became widely used in mortgage lending (1997/1998), and as a result there have been no meaningful loss trends. With only a handful of prime loans from recent vintages actually registering a loss, assigning causality for those losses on the basis of FICO is a tenuous exercise at best. However, this is not to say that FICO might not also become a useful indicator of credit risk in the prime sector when housing market conditions are less benign than they have been recently.

Before we illustrate recent delinquency trends for the major non-agency sectors, we will attempt to put these numbers into historical context by assembling a broad overview of historical non-agency loss performance. This exercise necessarily involves searching through a variety of disparate data sources that do not necessarily link up directly to what we know today as “prime / near prime / subprime.” It is also complicated by the fact that loss coverage from third-party data vendors is very spotty for issues that came to market before the middle part of the 1990s. However, we are also acutely aware, based on numerous conversations with investors on this subject, how much interest there is in the performance of deals that settled in the late 1980s and early 1990s. Therefore, as we present this data, we would hasten to reiterate the points we raised about the early history of the non-agency sector in Chapter 4.

- There was no systematic differentiation in credit grade in non-agency transactions until the mid-1990s. Loans that were not securitized by the GSEs were simply put into “non-agency deals” that did not necessarily map to a specific credit segment such as prime, near prime or subprime;
- Uniform underwriting standards were not widely followed in the non-agency sector until the early 1990s;
- FICO scores were not widely used in the mortgage sector until the late 1990s.

Therefore, the existing data from that era is probably most useful when it is used to document the performance of a particular type of loan, or a particular origination program whose customer focus (in terms of credit) can be defined *ex post* even without FICO scores. With those caveats in mind, we will present three views of historical non-agency loss performance. Some of these illustrations are based in part on work we have done in the past but which are still relevant today because the vintages were nearly or fully paid off at the time the data was assembled; if they are not absolutely the final reported statistics, they are very close to it⁹. We also include (in Table 16) a snapshot of current loss performance across the three major sector categories that is taken directly from the 2nd Quarter 2006 edition of the Bear Stearns *ABS/MBS Performance Summaries*. This publication, which dissects the entire universe of non-agency collateral performance on a sector, vintage and shelf code level, includes both prepayment and credit statistics. Notably, it also includes a measure of credit performance that disassociates the impact of home prices on reported defaults. We call this statistic the “implied default” rate; the methodology is fully discussed in each edition of the *Summaries*, and we recommend that publication to any investor who is interested in non-agency performance.

Our first historical example concerns the performance of late 1980s and early 1990s deals that were backed by ARMs indexed to the 11th District Cost of Funds Index (COFI). Most of the loans backing these deals were located in California, and were underwritten near the peak of the California housing market (prior to the massive layoffs in the Southern California defense and aerospace industries, and the subsequent recession). In addition, these loans had annual payment adjustments but monthly rate adjustments, and therefore the possibility of negative amortization. COFI generally rose between 1987 and 1989, subjecting some borrowers in these

9. We recognize that credit risk generally rises in the “tail” of a securitization due to adverse selection. Therefore, to the extent that non-agency deals generally contain a cleanup call, the illustrations in this section probably understate the full extent of losses for all of the vintages.

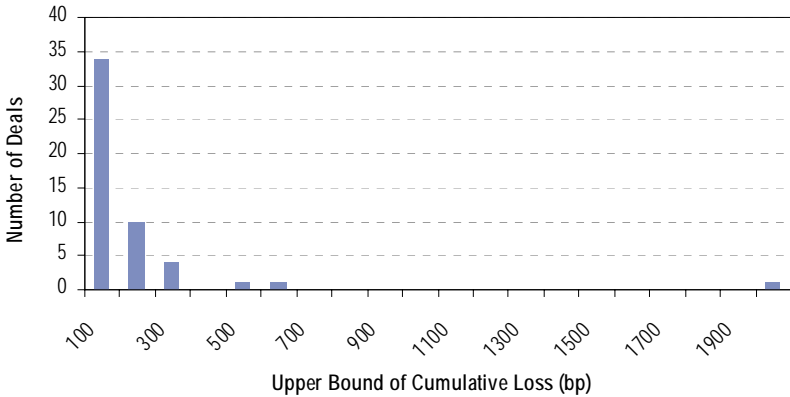
deals to the risk of negative amortization. In addition, the largest single year of deal issuance was 1988, when the index was still rising. Despite these potentially negative factors, average vintage-level cumulative losses were predominantly in the range of 150 bp, with deal-level loss dispersion and other statistics as indicated in Tables 13 and 14, and Figure 10.

Table 13. Cumulative Losses on COFI Negative Amortization Deals Issued Between 1987 and 1992

No. of deals	51
Average Loss (bp)	118
Std. Dev. (bp)	280
95th Percentile (bp)	365

Source: Bear Stearns

Figure 10. Distribution of Cumulative Losses in COFI Negative Amortization Deals Issued Between 1987 and 1992



Source: Bear Stearns

Table 14. Average Cumulative Loss by Vintages for COFI Negative Amortization Deals Issued Between 1987 and 1992

Vintage	Average Cumulative Loss (bp)	Number of Deals
1987	-	1
1988	143.2	22
1989	180.4	7
1990	59.0	3
1991	74.6	17
1992	177.0	1

Source: Bear Stearns

Another set of data can be found in Table 15. It shows cumulative losses on 30-year fixed-rate deals for vintages beginning in the mid-1980s, using data from two fixed-rate issuers in the sector who were major market participants during this entire period: Prudential Home / Norwest / Wells Fargo (PHMS/NSCOR/WFMBBS) and Residential Funding (RFMSI). The data shown in Table 15 were collected at two times. Statistics for the 1986 to 1992 vintages was captured in the spring of 2000, at which point most of the deals from those years had paid down close to or through their call percentage. Consequently, very little history remained to be reported from those vintages, and the results can be considered essentially complete. Results for the 1993 and later vintages were compiled in September 2006. These results are complete up to and including the 2001 vintage, since all deals through that year have already been called. To date, no losses at all have been reported after the 2003 vintage from these issuers.

Most non-agency deals issued by these entities between 1986 and 1992 were heavily concentrated in California and the Northeast (California concentrations were generally above 50%), the two sectors that experienced the worst of the 1990/91 recession. In addition, it is worth reiterating that underwriting from this period did not take into account credit (FICO) scores or necessarily follow consistent underwriting practices. As a result, while the loss numbers shown in Table 15 for 1993 and later vintages reflects the performance of prime collateral, it would be difficult to characterize the 1986 to 1992 vintages as entirely within the prime category as we understand it today.

Table 15. Cumulative Collateral Losses on 30-Year Fixed-Rate Deals¹⁰

Vintage	PHMS / NSCOR / WFMBBS Deals		RFMSI Deals	
	Loss (bp)	Original Balance (\$MM)	Loss (bp)	Original Balance (\$MM)
1986	-	\$ 2	27.9	\$ 1,484
1987	33.3	\$ 29	57.6	\$ 974
1988	670.3	\$ 225	75.2	\$ 260
1989	558.2	\$ 945	372.3	\$ 1,378
1990	283.6	\$ 1,904	234.5	\$ 2,197
1991	152.4	\$ 3,002	96.0	\$ 4,393
1992	60.9	\$ 7,404	53.6	\$ 8,409
1993	20.0	\$ 15,246	22.4	\$ 8,843
1994	20.3	\$ 3,304	11.4	\$ 2,070
1995	10.2	\$ 1,830	10.1	\$ 5,235
1996	3.7	\$ 3,629	8.4	\$ 4,679
1997	1.4	\$ 6,230	5.4	\$ 8,851
1998	1.3	\$ 14,720	3.1	\$ 15,035
1999	3.8	\$ 7,014	4.1	\$ 6,981
2000	1.5	\$ 6,469	4.7	\$ 3,851
2001	1.6	\$ 13,362	0.4	\$ 9,664
2002	0.7	\$ 5,874	0.4	\$ 3,932
2003	0.3	\$ 4,515	0.3	\$ 4,084

Source: Bear Stearns, LoanPerformance

Finally, we present cumulative loss data for recent vintages in Table 16, representing the current outstanding universe in the non-agency sector. The aggregate collateral factor for the non-agency 2002 vintage is about 14%, so further reported losses for these deals prior to the call may be limited, depending on how fast they prepay in the future. With much higher current collateral factors, the 2003 and later vintages in all sectors are likely to remain outstanding for several more years, meaning that their cumulative loss numbers will almost certainly grow.

10. Data for 1986 to 1992 vintages are as of April, 2000; data for 1993 and later vintages are as of September, 2006. All data are aggregated at the loan level.

Table 16. Cumulative Lifetime Losses (bp) as of June 2006

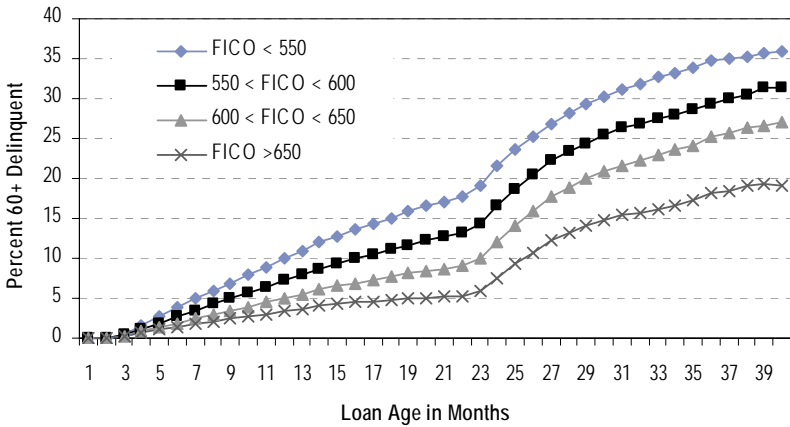
Prime				
Vintage	Prime ARM (All Types)	Prime Non-Option ARM	Prime Option ARM	Prime Fixed-Rate
1998	-	-		2.4
1999	-	-		2.9
2000	3.8	3.8	-	4.5
2001	2.7	2.7	0.0	2.0
2002	2.5	2.5	-	3.2
2003	1.6	1.6	2.6	1.2
2004	0.5	0.6	0.0	0.3
2005	0.1	0.0	0.3	0.0
Near Prime				
Vintage	Prime ARM (All Types)	Prime Non-Option ARM	Prime Option ARM	Prime Fixed-Rate
1998				17.2
1999				36.4
2000	-	-		62.1
2001	12.4	12.4		41.0
2002	4.5	4.5		34.6
2003	7.7	7.7	-	10.7
2004	2.0	2.2	-	3.4
2005	0.4	0.4	-	0.6
Subprime				
Vintage	Prime ARM (All Types)	Prime Fixed-Rate		
1998	436.3	576.7		
1999	448.7	615.2		
2000	407.4	562.9		
2001	287.7	391.2		
2002	165.3	193.0		
2003	78.6	60.7		
2004	27.7	26.9		
2005	4.0	11.9		

Dot means no deals reported loss; blank means no deals were issued in a sector/vintage

Source: Bear Stearns, LoanPerformance

Having put cumulative losses into historical context, we now consider delinquency history by sector, starting with subprime. In the following illustrations, we use the OTS delinquency method for the subprime and near prime sectors, and the MBA delinquency method for the prime sector. Figure 11 shows the strong negative correlation between FICO score and serious delinquency (60+ days, including foreclosure and REO, plus loans in bankruptcy). These figures do not illustrate the cross effect of LTV, documentation or other loan attributes, as that analysis is also beyond the scope of this Guide.

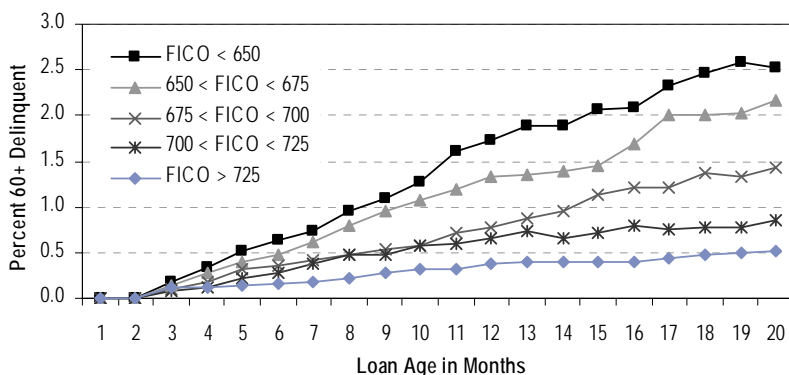
Figure 11. Subprime 2/28 ARM: 60+ Delinquency by FICO



Source: LoanPerformance

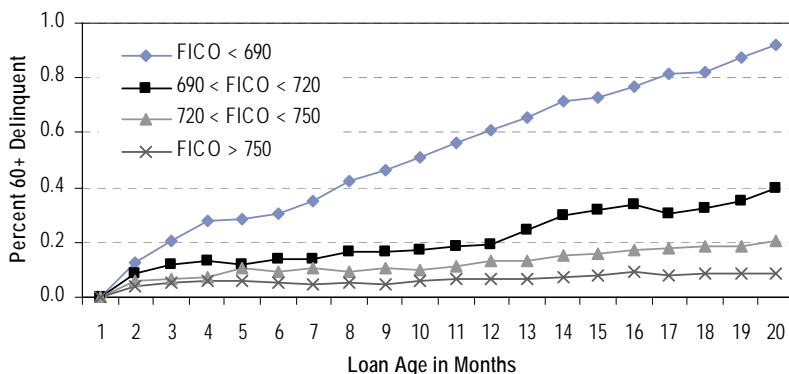
As shown in Figure 12, serious delinquencies for near prime 5/25 hybrid ARMs are also generally correlated with FICO score, although neither the correlation nor the separation between FICO bands is as strong as it is in subprime. In addition, the absolute delinquency levels themselves are 2-3 times lower in the near prime example shown in Figure 12, when controlled for the common FICO range around 650.

Figure 12. Near Prime 5/25 ARM: 60+ Delinquency by FICO



Source: LoanPerformance

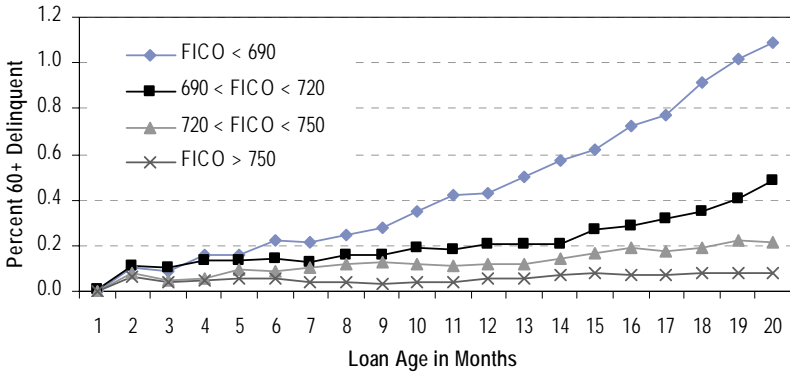
Figure 13. Prime 5/1 ARM: 60+ Delinquency by FICO



Source: LoanPerformance

In the prime sector, for both fixed and ARM collateral, we see considerably more “clumping” of delinquency performance in the higher FICO ranges (Figures 13 and 14). In this sector, where the general collateral profile is very strong with respect to FICO score, there is an asymmetric “tail” of weaker performance in the lowest FICO band. Note, however, that absolute delinquency levels are very low, and that the performance of these benchmark fixed and ARM product types is comparable in terms of delinquency.

Figure 14. Prime 30-Year Fixed: 60+ Delinquency by FICO



Source: LoanPerformance

18. THE CREDIT/CONVEXITY CONTINUUM

As the illustrations in the previous sections have shown, non-agency deals can differ widely with respect to collateral characteristics and performance. As a result, investors in the non-agency sector can match their risk appetite with the expected performance profile of a particular sector. One could think of these investment choices as occurring along a “credit/convexity continuum,” which is graphically represented in Table 17.

Table 17. The Credit/Convexity Continuum

Risk Factor	Sector		
	Subprime	Near Prime	Prime
Rate-Related Prepayment Sensitivity	Less <-----> More		
Prepayment Lock-in (Slow Discount Speeds)	Less <-----> More		
Credit Risk	More <-----> Less		
Convexity	More <-----> Less		

Source: Bear Stearns

In general, rate-related prepayment sensitivity is greatest in the prime sector, and diminishes as we move to the near prime and subprime sectors. It is important to note that we are referring to rate-related prepayment *sensitivity*, not the absolute level of prepayments. For example, speeds for subprime 2/28 ARMs that are not subject to a prepayment penalty can exceed 60 CPR when they reset, but that spike is primarily a function of the age of the loan (the dual impact of penalty expiration and rate reset), not the rate environment. In contrast, prepayments on prime jumbo loans are very

rate-sensitive; in recent years, speeds on refinanceable prime deals have in some cases exceeded 80 CPR, while new out-of-the-money deals are currently paying in the low single digits. Put another way, prime deals are more negatively convex than subprime deals; near prime deals are somewhere in between these two extremes.

As we move from the left to the right in Table 17, we move from relatively high convexity to relatively low convexity. Similarly, moving in the same direction we go from relatively high credit risk to relatively low credit risk. **The success and liquidity of the non-agency sector is due in large part to the fact that investors are able to choose the point or points on this continuum where they find the optimal balance of risk and reward, based on how the market prices those risks at any given time.**

19. COLLATERAL ATTRIBUTES

Non-agency investors have access to a wealth of data—all at the loan level—that agency investors can only dream of. While the agencies have greatly expanded their data disclosure in recent years, these improvements have been at the pool level. Thus, the non-agency investor has the potential to reach a much fuller understanding of the likely performance of a non-agency deal, whether through static data analysis, a study of cohort historical performance, a prepayment or default model, or a combination of the above.

In the performance illustrations shown in Chapters 16 and 17, collateral performance was controlled for prepayment penalty and FICO score. These are just two of many collateral attributes that may affect either prepayment or credit performance. Below, we discuss the data elements that are typically disclosed in non-agency deals.

- *FICO Score*: As discussed in Chapter 6, this is a widely used borrower credit score that has been used in mortgage underwriting since 1997. The minimum and maximum possible scores are 300 and 850, although most scores are far from those extreme values, and the median score for all users of credit in the United States is 723. In general, borrowers with higher FICO scores tend to be more rate-sensitive with respect to prepayments.
- *LTV (loan-to-value) ratio*: The dollar amount of the loan, expressed as a percentage of the value of the home. Traditionally, the “standard” LTV ratio for a purchase was 80% (e.g. a homeowner borrows \$160,000 and puts up \$40,000 to buy a \$200,000 home), although purchasers in many cases borrow more than 80%. In recent years, LTV has not been a very good predictor of prepayments, since

even highly leveraged borrowers have been able to do cashout or rate/term refinancings based on the increase in available home equity.

- *CLTV (combined loan-to-value) ratio:* In recent years, non-agency data disclosures have more frequently provided information about second lien debt that might exist behind the first lien loan in a deal. The CLTV, which may be reported in addition to the LTV, captures the effect of this second lien debt. For example, if the borrower in the previous example bought a \$200,000 home by borrowing \$160,000 on a first lien and an additional \$20,000 on a second lien, and only put up \$20,000 in equity, the first lien would be reported with an LTV of 80%, and a CLTV of 90%. Subject to the reporting caveats noted above, CLTV will likely prove to be a strong indicator of potential credit performance in a slowing housing market since it is a more accurate measure of total leverage.
- *DTI (debt-to-income) ratio:* The ratio of a borrower's monthly debt service payments to his income. The *front end DTI* refers to only the mortgage payment, while the *back end DTI* refers to the combination of the mortgage payment and all other credit obligations. The usefulness of DTI as a credit indicator is obviously dependent on the reliability of the numbers that go into it. As such, investors should consider this metric in conjunction with the documentation type, and the underwriting practices used by the originator of the loans. For example, if income is not verified, the denominator will be the underwriter's estimate of borrower income.
- *Documentation Type:* Documentation was once a fairly straightforward distinction between "full/alternative," "limited" and "no," but the variations have proliferated in recent years, particularly in the "limited" category. Indeed, in the near prime sector the majority of loans are underwritten using "limited" standards. "Full" doc loans, which used to comprise about 80% of prime and subprime originations, now represent only slightly over half of the loans underwritten in those sectors. In most cases, the documentation level is still mapped to one of the categories "full", "limited" or "no". Many of the "limited" variants have to do with verification of income and assets, and include the following:
 - *VIVA:* Verified income, verified assets ("Full Doc")
 - *NIVA:* No income, verified assets ("Limited Doc")
 - *SISA:* Stated income, stated assets ("Limited Doc")
 - *SIVA:* Stated income, verified assets ("Limited Doc")
 - *NINA:* No income, no assets ("No Doc").

- *Occupancy Type:* Most loans are for owner-occupied homes; the other major types of occupancy are investor properties and second/vacation homes. The latter types are most often found in the near prime sector, and may entail more credit risk than owner-occupied homes. However, investor properties in many cases have a better convexity profile.
- *Property Type:* The major category is single family detached. Other types include:
 - *PUD (public unit development):* Homes in planned communities that are frequently detached structures and that may have some common amenities.
 - *2-4 family:* duplex, triplex or quadplex structures in which the borrower sometimes lives in one of the units.
 - *Condo, co-op:* Typically found in urban areas.
- *Loan Purpose:* Purchase, rate/term refinance or cashout refinance. A refinanced loan is generally called a “cashout” if the borrower increases the loan amount by more than 4-5%. However, there is no standard industrywide definition of the two types of refinance transactions. For loans that are not for purchase, the implicit tenure of a borrower in the home is longer than for purchase loans, since by definition a purchase borrower is new to a home, while any type of refinancing borrower is not. Since housing turnover prepayments tend to rise as a loan seasons, this means that discount purchase loans may prepay slower than otherwise similar discount refinance loans.
- *Geography:* The state where the loan is located may expose the investor to one or more systematic risks associated with that state.
- *Amortization Type:* Broadly, ARM (adjustable-rate mortgage) or FRM (fixed-rate mortgage). More specifically, the contractual terms of the specific instrument, for example, if it is fully amortizing to term, or if it contains an interest-only period.
- *Loan Size:* This is a very strong determinant of relative prepayment risk, whether in the subprime, near prime or prime sector. Large loans nearly always prepay faster than comparable loans with a similar positive economic incentive and a smaller balance.
- *Home Price Appreciation (HPA):* The importance of loan-level data is never more apparent than in the case of home price trends, which can be tracked at the MSA (Metropolitan Statistical Area) or even the ZIP (postal) code level in the non-agency sector. High levels of HPA

tend to be associated with faster prepayments because borrowers are able to extract equity via a cashout refinance.

- *Mortgage Insurance (MI)*: Mortgage insurance comes in two principal variants: “borrower paid MI” and “lender paid MI.”
 - *Borrower paid MI* is imposed on loans with LTV above 80%, and insures a loan down to a specified LTV level (e.g. 75%). It is typically found in the prime sector.
 - *Lender paid MI* can take several forms.
 - *Pool insurance* protects a transaction against aggregate losses up to a specified limit.
 - *Lender paid bulk MI* covers some or all individual loans in a transaction down to a specified LTV level.
 - *Lender paid MI (LPMI)* is paid by the lender, but the premium is actually paid by the borrower in the form of a higher rate.

20. SUBORDINATION LEVELS AND DELEVERAGING

In most cases, the majority of bonds in a non-agency deal receive a triple-A credit rating from the rating agencies. This is true because the agencies’ approach to ABS/MBS collateral is statistical, or “actuarial,” in nature: the collateral backing non-agency deals is diverse and represents a broad cross-section of the borrower population. This contrasts to the rating approach to corporate debentures, which addresses specific event risk related to an individual company. ABS/MBS deals are designed to maintain their credit rating during periods of moderate economic stress, with no shortfall or interruption of cashflow. Credit enhancement levels are established to insulate investors from the reasonable risk of loss, consistent with a given rating. Deals that are backed by loans of high credit quality require less subordination than deals that are backed by loans of low credit quality. Broker-dealers structure deals to maximize the issuance of triple-A bonds, since this maximizes the total deal proceeds. Stress testing, according to each agency’s criteria, is part of the ratings process. For example, S&P requires that rated bonds at the following levels withstand a repeat of the following economic events:

- *Triple-A: The Great Depression of the 1930s*
- *Double-A: The 1980s Texas oil bust*
- *Single-A: Southern California in 1990*
- *Triple-B: New England in 1990.*

In general, the amount of credit enhancement required at each rating level has tended to decline over time. Part of this trend has been a response to the generally good (and generally improving) behavior of non-agency deals over the last 15 years. In addition, as non-agency “sectors” have become more homogeneous as a result of the use of FICO score and more consistent underwriting since the mid-1990s, the “risk premium” associated with each rating level has fallen as well. This declining level of initial subordination in the jumbo sector can be seen in Table 18, which shows the median *original* and *current* subordination levels at the triple-A and triple-B levels, for prime RFMSI 30-year deals *as of August 2003*. As of that date, seasoned and/or higher WAC vintages had seen the greatest increase in subordination levels due to fast prepayments and resulting deleveraging, with some vintages seeing more than a 10-times increase in subordination. For several of these vintages, all the remaining deals were called shortly after this data was collected. However, even the relatively modest prepayments that had been experienced over several months in the 2003 deals as of that date had already resulted in an increase in current subordination levels for that vintage. Table 18 illustrates the longer-term trend of declining subordination levels, as well as the effect of deleveraging.

**Table 18. Historical Deleveraging by Vintage, as of August 2003:
RFMSI 30-Year Median Credit Enhancement Percentages, by Vintage**

RFC 30-Year	AAA Original	AAA (as of Aug 2003)	BBB Original	BBB (as of Aug 2003)
1993	6.25	16.15	1.50	4.61
1994	5.88	20.46	1.13	3.51
1995	6.25	97.57	1.25	25.59
1996	5.50	37.46	1.15	10.99
1997	4.75	83.04	1.00	16.99
1998	4.00	44.15	0.75	8.10
1999	4.00	31.04	0.70	5.80
2000	3.95	66.34	0.68	11.06
2001	3.25	35.08	0.60	6.51
2002	2.65	8.78	0.48	1.57
2003	2.50	3.12	0.40	0.50

Source: Bear Stearns

Table 19. Indicative Non-Agency Subordination Levels: Prime

Sector Type	Prime							
	Fixed 30-Year			Fixed 15-Year		Hybrids		
Deal Name	RFMSI 06-S4	RFMSI 05-S2	RFMSI 04-S1	RFMSI 05-S3	RFMSI 04-S3	BSARM 06-1	BSARM 05-2	BSARM 04-4
AAA	3.50	2.90	2.50	1.25	1.20	4.10	3.50	2.70
AA	1.60	1.40	1.20	0.65	0.60	1.80	1.45	1.65
A	1.00	0.80	0.75	0.45	0.40	1.20	0.75	0.95
BBB	0.60	0.50	0.45	0.30	0.25	0.75	0.50	0.50
BB	0.40	0.30	0.25	0.20	0.15	0.45	0.35	0.30
B	0.20	0.15	0.10	0.10	0.10	0.20	0.25	0.10

Source: Bear Stearns

Table 20. Indicative Non-Agency Subordination Levels: Near Prime

Sector Type	Near Prime					
	Fixed 30-Year			Hybrid ARM		
Deal Name	RALI 06-QS4	RALI 05-QS1	RALI 04-QS1	BALTA 06-3	BALTA 05-1	BALTA 04-1
AAA	6.75	4.75	5.30	10.35	8.35	7.15
AA	3.00	2.65	2.90	6.00	5.50	4.75
A	2.00	1.80	1.80	3.90	3.25	3.00
BBB	1.25	1.20	1.10	2.50	2.25	1.80
BBB-				2.00	1.30	
BB	0.75	0.70	0.75	1.40	0.55	0.75
B	0.35	0.30	0.35			0.30

Source: Bear Stearns

Table 21. Indicative Non-Agency Subordination Levels: Near Prime Option ARM

Sector Type	Near Prime Option ARM		
Deal Name	SAMI 06-AR6	SAMI 05-AR1	SAMI 04-AR2
AAA	10.90	6.95	4.65
AA+	8.20		
AA	6.30	4.60	3.15
AA-	5.65		
A+	4.00		
A	3.50	3.00	
BBB	2.20	1.80	1.30
BBB-	1.60		
BB		1.25	0.95
B		0.90	0.65

Source: Bear Stearns

Table 22. Indicative Non-Agency Subordination Levels: Subprime

Sector Type	Subprime		
Deal Name	BSABS 06-HE3	BSABS 05-HE1	BSABS 04-HE1
Aaa/AAA	25.30	20.70	20.75
Aa1/AA+	20.45		
Aa2/AA	16.65	14.10	14.00
Aa3/AA-	14.30		
A1/A+	12.25		
A2/A	10.35	8.75	8.60
A3/A-	8.65	6.95	6.85
Baa1/BBB+	7.00	5.70	5.55
Baa2/BBB	5.55	4.50	4.10
Baa3/BBB-	4.40	3.35	2.85
Ba2		1.90	

Source: Bear Stearns

As of 2006, the long-term decline in required initial subordination levels has stopped and in many cases is beginning to reverse. In addition, both home price appreciation and mortgage prepayments are slowing. Thus, it can be argued that current and future ABS/MBS structures will actually use more of the subordination required by the agencies, and that the deleveraging effect of the senior/subordinate structure (whereby principal

prepayments are paid to the senior bonds for several years while the subordinates are locked out) may not exert as positive an influence on current and future deals as it has in the past. While there can be significant differences among the subordination requirements for deals within and between sectors, Tables 19 to 22 show indicative levels of required subordination for recent deals in the major non-agency sectors.

21. RATINGS TRANSITIONS

Historically, ratings transitions for non-agency ABS/MBS have been biased in the upward direction, as can be seen in Table 23. The data behind Table 23 are based on deals from all non-agency sectors, including subprime, the sector which has historically comprised the majority of downgrades. However, these results were clearly helped by the fast prepayment experience during the 2001-2005 refinancing waves, given the impact of deleveraging. The heightened upgrade/downgrade ratios seen over those years appear likely to decline to more sustainable levels as prepayments and home price appreciation both slow. However, we note that historically the residential MBS upgrade/downgrade ratio has been better than that seen in the corporate sector, and second only to commercial MBS.

Table 23. S&P Combined Prime, Near Prime and Subprime Ratings Transitions

Year	Upgrade	Downgrade	Ratio (upgrade/downgrade)
1995	74	55	1.35
1996	43	39	1.10
1997	96	56	1.71
1998	88	67	1.31
1999	132	29	4.55
2000	552	164	3.37
2001	551	64	8.61
2002	634	106	5.98
2003	1192	96	12.42
2004	1427	69	20.68
2005	1417	150	9.45

Source: S&P

CAPITAL STRUCTURE

22. GOALS OF STRUCTURE

Structure in non-agency ABS/MBS performs two principal functions. First, it manages prepayment exposure, average life variability and the length and timing of the cashflow window. Second, it prioritizes losses on the underlying collateral in order to create highly-rated debt from assets of any credit quality.

The first of these goals is identical to that accomplished by structure in agency CMOs, and it is achieved through time-tranching the cashflows. For example, the front-end bonds of a structure would be exposed to the more volatile early cashflows from the underlying collateral, since unseasoned loans are generally more susceptible to prepayment whipsaw (a rapid acceleration or deceleration in prepayment speeds, in response to the level of rates). Conversely, back-end sequential bonds, or bonds that are locked out for some length of time, can benefit from the more predictable prepayment behavior of a well-seasoned pool of loans.

The second goal is the characteristic that makes non-agency ABS/MBS unique, since there is no credit “backstop” provided by a GSE or the U.S. government, and the structure must contain one or more mechanisms for credit enhancement in order to create triple-A rated securities. In current practice, this goal is nearly always achieved through credit-tranching, whereby mezzanine and subordinate credit classes are created to shield the senior (triple-A) bonds from losses on the underlying collateral.

Before launching into a discussion of the ways in which credit enhancement is achieved today, we will briefly mention a few others that have been used in the past but are rarely found now. These were used to some degree in the early days of the ABS/MBS market, but have not been common since the late 1990s.

- *Reserve fund: A cash reserve created to reimburse the trust for losses up to the amount of the reserve. This was often used in combination with other types of enhancement.*
- *Letter of Credit (LOC): A third party credit enhancer (normally a bank) agrees to reimburse the trust for chargeoffs up to a specified amount. This was infrequently used because any downgrade of the LOC provider would affect the deal rating.*

- *Guaranty*: Typically provided by a third party, e.g. a monoline insurer such as FGIC or FSA, who promises to reimburse the trust for losses up to a stated maximum amount. In addition, an issuer may also provide a limited guaranty that is *pari passu* with other senior obligations of the company.

In current practice, the vast majority of ABS/MBS structures use one or both of the following:

- Senior/subordinate shifting interest (“senior/sub”) structure, or
- Overcollateralization/excess spread (“OC”) structure.

The choice of what structure to use is primarily determined by the type of collateral in the transaction¹¹. As discussed in Chapter 6, prime borrowers receive the best rates in the market because they are generally very low credit risks. Most of the collateral coupon is paid to investors in the bond coupon (net of trust and servicing expenses), so credit support in the deal must rely entirely on redirecting losses to lower-rated tranches. This is the essence of the senior/sub structure. In the prime space, it is the mechanism that is used to provide internal credit enhancement in a deal.

At the other end of the credit spectrum, subprime collateral is underwritten using a risk-based pricing approach, meaning that subprime borrowers are charged a higher rate than that charged to prime borrowers. For subprime deals, the foundation of credit support is provided by the senior/sub structure, but an additional layer of support comes from the extra collateral coupon that the borrowers pay, i.e. the *excess spread*. The other key to subprime credit enhancement is *overcollateralization*, which means that there are more assets (collateral) than liabilities (bonds). Situated in the middle of the credit spectrum (depending on the collateral), a near prime deal may be credit-enhanced using either the senior/sub or the OC approach.

It is important to note that the fundamental differences between these two methods of credit enhancement have, in and of themselves, implications for investors wishing to value bonds in credit stress scenarios. In the case of a senior/sub deal, the total amount of credit enhancement that will ever be available for a deal is there when the deal settles. **As a result, running a fast default vector early in a senior/sub deal’s life is a conservative assumption.** If the default vector were assumed to rise more slowly, there would be less remaining balance to default because of prepayments, and

11. For the purposes of this discussion, we will refer to the straight senior/sub shifting interest structure as “senior/sub,” and the combination of the senior/sub and OC structures as “OC.”

lower total losses as a result. (The interaction between the PSA and SDA ramps, and its effect on cumulative defaults, was shown in Table 11.)

In contrast to the senior/sub structure, the credit enhancement mechanism of an OC deal relies in part on the injection of *additional* enhancement from the collateral itself. However, depending on the collateral's credit performance, some of that additional enhancement can be reduced as the deal seasons. (This process is described in detail in Chapter 25.) **Therefore, running a fast default vector early in an OC deal's life is not necessarily a conservative assumption**, since there may be more excess spread available to cover losses early in the deal, before the OC target is met. Once the OC target is reached, excess spread can be paid to the residuals, after which it would no longer be available to cover losses.

23. COMMON FEATURES IN ABS/MBS STRUCTURES

Several key features in ABS/MBS deal structure may be found in both the senior/sub and the OC variants. While details of these features may differ from deal to deal, the discussion below summarizes the salient concepts.

- *Lockout Period:* Mezzanine and subordinate bonds are locked out of receiving prepayments for a period of time after deal settlement. The duration of this period, as well as other details, may differ depending on the type of collateral in the deal.
- *Cross-Collateralization:* In some structures containing multiple loan groups, after interest payments are made to bonds in one group, available funds from that group can be used to pay interest to bonds from another group. Among other things, this feature can also affect the value of residuals. For example, a deal with two loan groups would generally have two residuals. If the Group 1 OC was fully funded and the triggers passed, funds would be available to be released to the Group 1 residual. However, if the subordinates were cross-collateralized, which is normally the case, and the Group 2 OC was *not* fully funded, those Group 1 funds would be diverted to the Group 2 OC. The details and implications of cross-collateralization can be complex, and differ from deal to deal.
- *Cleanup Call:* The cleanup call gives the owner of that call, who is generally the residual holder, the option to purchase the remaining bonds in a deal at a predetermined price when the collateral factor reaches a certain level. Normally the call is to purchase the bonds at par plus accrued interest, when the factor is at or below 10%. To increase the likelihood that the call will be exercised, there is usually a coupon step-up provision that becomes active at the same time.

- Compensating Interest:* On the day that a borrower prepays his loan, interest payments on that loan stop. The servicer in a non-agency deal is normally required to compensate investors for this foregone interest by using funds paid to it as a servicing fee. Historically, in periods of very fast prepayments, and depending on the size of the servicing fee, there have been times when investors have not received their full coupon. However, this risk has been mitigated by using a “mid-month” reporting cycle.

Over the long term, prepayments may be received on any day of the month. On each distribution date, servicers are required to remit full principal prepayments received in the applicable prepayment period. Today, most deals specify a “mid-month to mid-month” prepayment period (from the 16th of one month to the 15th of the following month). On each distribution date, accrued interest is paid for the preceding *calendar* month, while prepayments are paid on the mid-month cycle. As shown in Table 24, a full prepayment on September 20 would require a servicer using the mid-month system to pay compensating interest, but a full prepayment on October 10 would not. In the “calendar month” reporting system, the servicer would be required to pay compensating interest in both cases. This reporting convention reduces costs for servicers, and in periods of very fast prepayments, could raise the prepayment threshold above which investors’ coupon would be impaired.

Table 24. Compensating Interest Example

Reporting System	Mid-Month		Calendar Month	
Full Prepayments	Sept. 16 to Oct. 15		Sept. 1 to Sept. 30	
Scheduled P&I	Sept. 1 to Sept. 30		Sept. 1 to Sept. 30	
Date of Borrower's Full Prepayment	Payment of Prepaid Principal to Investor	Payment of Compensating Interest to Investor	Payment of Prepaid Principal to Investor	Payment of Compensating Interest to Investor
Sept. 20	Oct. 25	Sept. 21 to Sept. 30, due Oct. 25	Oct. 25	Sept. 21 to Sept. 30, due Oct. 25
Oct. 10	Oct. 25	None	Nov. 25	Oct. 11 to Oct. 31, due Nov. 25

Source: Bear Stearns

24. SENIOR/SUBORDINATE SHIFTING INTEREST STRUCTURE

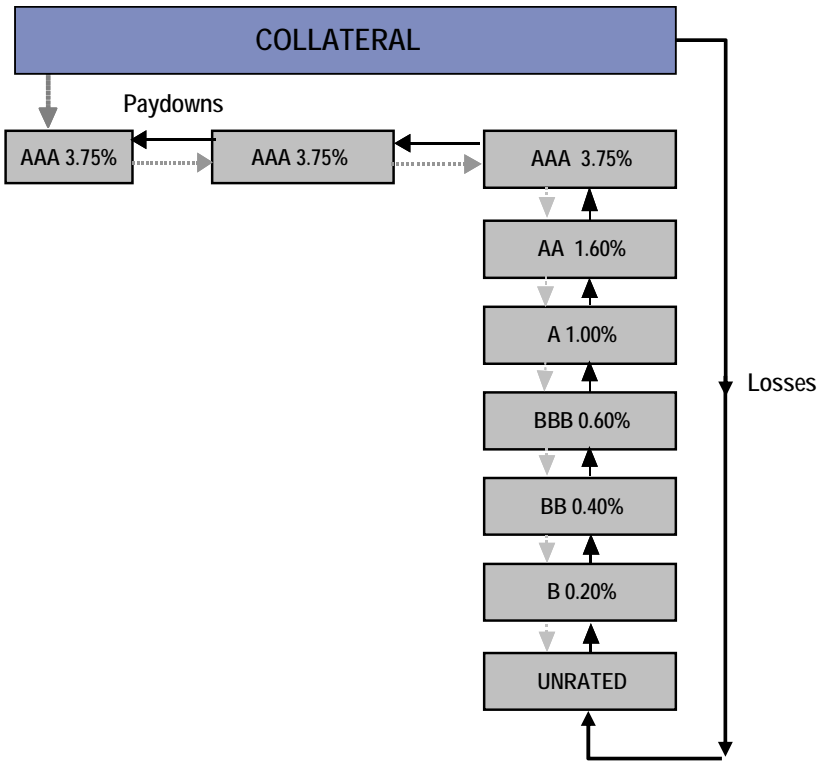
We begin our discussion of the specifics of structure with the most direct approach to internal credit enhancement: the senior/sub structure. In a senior/sub deal, the mezzanine and subordinate bonds are designed to absorb any collateral losses and thereby ensure that the senior bonds have a probability of loss sufficiently small so as to garner a triple-A rating. This is accomplished by reversing the cashflow priority of prepayments and losses in the structure:

- In the early years, prepaid principal is allocated from the top down, i.e. only to the senior bonds, while the mezzanine and subordinate classes are “locked out” from receiving prepaid principal; and
- Losses are allocated from the bottom up, i.e. the lowest-rated class outstanding at any time will absorb any principal loss.

By allocating all prepaid principal to the senior bonds in the first years after deal settlement, these classes pay down more quickly and increase the percentage of current balance that is available in the mezzanine and subordinate classes to cover losses, without the involvement of a third party credit enhancer. Note that while this loss coverage as a percent of current balance increases, the absolute dollar amount of loss coverage does not. (See Table 18 in Chapter 20 for an example of the historical impact of deleveraging in the prime sector.) The name “shifting interest” comes from the fact that the *ownership interest* in prepaid principal cashflows changes over the life of the deal. As a result, the lower-rated tranches that provide credit support to the senior bonds remain outstanding for a longer time, so that credit support will tend to increase over time, depending on the timing and magnitude of losses.

Figure 15 graphically illustrates the process whereby prepaid principal is allocated in the capital structure from the top down, while losses are allocated from the bottom up. In this case, the rating agency (Fitch) required that the triple-A bonds be supported by a total of 3.75% of mezzanine and subordinate bonds (those rated double-A and lower). Collectively, these six bonds are sometimes referred to as the “six-pack.” The three mezzanine bonds (double-A to triple-B), and the three subordinates (double-B to Unrated), are each sometimes called a “three-pack.” In this typical senior/sub structure, the “first loss” piece (the B3 class) is not rated; it absorbs the first dollar of loss in the collateral.

Figure 15. Allocation of Prepayments and Losses in a Prime Fixed-Rate Deal: RFMSI 2006-S7

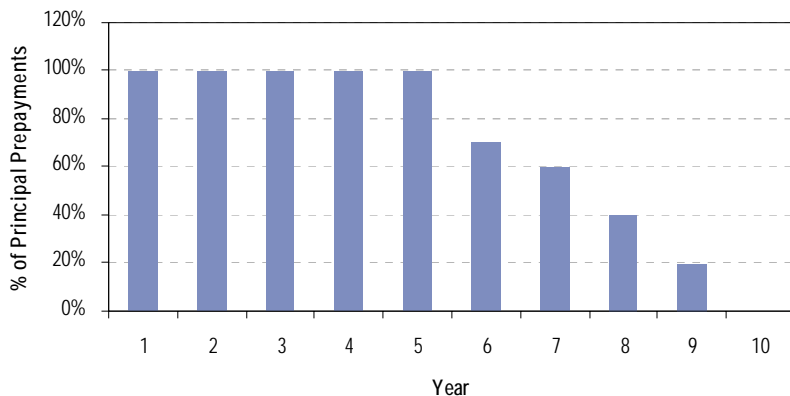


Source: Bear Stearns

The re-allocation of prepaid principal continues for the duration of the lockout period, which may be defined in various ways, depending on whether the deal is backed by fixed-rate or ARM collateral.

- Lockout Period for Fixed-Rate Deals:** The lockout period normally lasts for the first five years, and during that time the senior bonds get their *pro rata* share of prepaid principal, plus 100% of prepaid principal due to the mezzanine and subordinate classes. Between years 6 and 10, a decreasing percentage of mezzanine and subordinate prepaid principal is redirected to the seniors, and after year 10 prepaid principal is distributed *pro rata* to all the bonds. This process is shown graphically in Figure 16.

Figure 16. Shifting Interest: Schedule for the Reallocation of Prepaid Principal from the Mezzanine and Subordinates to the Senior Bonds (Prime Fixed-Rate Deal)



Source: Bear Stearns

- **Lockout Period for ARM Deals:** For prime ARM deals, the lockout period normally lasts for as much as 10 years; in the 5 years following the lockout, the percentage of mezz/sub prepaid principal that is reallocated to the senior bonds declines from 100% to 0% in a manner that is similar to what is shown on the right side of Figure 16. These structures may also contain provisions that allow for a reduction in the lockout period, provided deal performance is very good and certain delinquency and loss conditions are met. Depending on the age of the deal, these provisions are typically implemented on the basis of one of the following two tests:
 - **Stepdown Test:** For prime ARM deals, prepaid principal would be allocated *pro rata* to all outstanding classes after three years if certain conditions are met, for example if:
 - The senior credit enhancement is twice the original percentage; and
 - the average 60+ day delinquency percentage for the prior six months is under 50% of the current balance; and
 - cumulative losses are under a specified percentage of the original balance.
 - **Double-down Test:** For prime ARM deals, prior to the initial three-year period, 50% of prepaid principal can be allocated to the mezzanine and subordinate bonds if the above subordination, delinquency and loss triggers pass.

25. SENIOR/SUB STRUCTURE: DETAILED EXAMPLE

An example of the initial capital structure for a typical fixed-rate senior/sub deal (PRIME 2006-1) is shown in Table 25. The deal in Table 25 is backed by prime 30-year fixed-rate loans; the original gross WAC was 6.48%, with 42% IO loans.

The deal is backed by three collateral groups, which correspond to the Class I, II and III certificates. In this deal, the schedule for the reallocation of prepaid principal operates separately within each of the three collateral groups. In other words, prepaid principal with respect to the collateral in Group I is directed from the subordinate to the senior bonds in that same group. The scheduled reduction in the reallocation of principal (the general pattern of which is shown in Figure 16) can be modified if the collateral loss or delinquency performance is under a specified target.

While the underlying collateral is fixed, floating rate bonds can be created by combining an inverse IO tranche whose coupon is inversely correlated to the underlying index, e.g. the III-A-1 and III-A-2 tranches. While the floater has a hard cap associated with it, adding an interest rate cap corridor at a predetermined paydown rate lifts the effective cap on the bond and makes it saleable in the market. We do not go into the details of the structuring process, leaving it instead for an intermediate level publication.

Table 25. PRIME 2006-1 Capital Structure (Prime Fixed-Rate Senior/Sub)

Tranche	Orig. Amt. (\$MM)	Coupon	Floor/ Cap	Avg. Life (yrs.)	Stated Maturity	Orig. CE (%)	S&P/ Fitch	Designations
I-A-1	\$100.4	5.50%		4.99	6/25/2036	5.50	AAA/AAA	Senior/Fixed Rate
II-A-1	\$3.0	6.25%		17.89	6/25/2036	5.50	AAA/AAA	Senior/Fixed Rate
II-A-2	\$15.3	1-M LIBOR + 0.35%	7.50%/ 0.35%	4.06	6/25/2036	5.50	AAA/AAA	Senior/Floating Rate
II-A-3	Notional	7.15% - 1-M LIBOR	7.15%/ 0.00%		6/25/2036	5.50	AAA/AAA	Senior/Inverse Floating Rate
II-A-4	\$19.6	6.00%		2.3	6/25/2036	5.50	AAA/AAA	Senior/PAC/Fixed Rate
II-A-5	\$25.3	6.00%		6	6/25/2036	5.50	AAA/AAA	Senior/PAC/Fixed Rate
II-A-6	\$1.9	6.00%		10.2	6/25/2036	5.50	AAA/AAA	Senior/PAC/Fixed Rate
II-A-7	\$28.3	6.00%		2.65	6/25/2036	5.50	AAA/AAA	Senior/PAC/Accretion Directed/Fixed Rate
II-A-8	\$1.5	6.00%		11.49	6/25/2036	5.50	AAA/AAA	Senior/Accrual/ Fixed Rate
II-A-9	\$10.5	6.25%		11.13	6/25/2036	5.50	AAA/AAA	Senior/NAS/Fixed Rate
III-A-1	\$64.4	1-M LIBOR + 0.35%	7.50%/ 0.35%	5.54	6/25/2036	5.50	AAA/AAA	Senior/Floating Rate
III-A-2	Notional	7.15% - 1-M LIBOR	7.15%/ 0.00%		6/25/2036	5.50	AAA/AAA	Senior/Inverse Floating Rate
X	Notional	Variable ⁽¹⁾			6/25/2036		AAA/AAA	Senior/Interest Only/ Variable Rate
PO	\$0.6	0.00%		5.25	6/25/2036	5.50	AAA/AAA	Senior/Principal Only
B-1	\$5.3	Variable ⁽²⁾		10.69	6/25/2036	3.10	AA/AA	Subordinate/ Fixed Rate
B-2	\$3.7	Variable ⁽²⁾		10.69	6/25/2036	2.00	A/A	Subordinate/ Fixed Rate
B-3	\$2.1	Variable ⁽²⁾		10.69	6/25/2036	1.40	BBB/BBB	Subordinate/ Fixed Rate
B-4	\$2.1	Variable ⁽²⁾			6/25/2036	0.80	BB/BB	Subordinate/ Fixed Rate
B-5	\$1.3	Variable ⁽²⁾			6/25/2036	0.35	B/B	Subordinate/ Fixed Rate
B-6	\$1.0	Variable ⁽²⁾			6/25/2036	0.00	NR	Subordinate/ Fixed Rate

Source: Bear Stearns

- (1) The pass-through rate for the Class X Certificates is equal to the weighted average of the excess of (a) the net mortgage rate on each mortgage loan with a net mortgage rate greater than 7.50% per annum, over (b) 7.50% per annum.
- (2) The pass-through rate for the Class B Certificates is equal to a variable pass-through rate equal to the weighted average of 5.50%, 6.25%, and 7.50% per annum, weighted in proportion to the results of subtracting from the aggregate principal balance of the mortgage loans in subgroup I, subgroup II and subgroup III, respectively (other than the portion of the mortgage loans attributable to the Class PO Certificates), the aggregate certificate principal balance of the related class or classes of senior certificates, other than the Class PO Certificates.

In Table 26, we illustrate the capital structure for a recent prime hybrid ARM deal, BSARM 2006-2. The deal is backed by 100% ARM loans; the original gross WAC was 6.14%, with a gross margin of 2.27%. Again, the collateral is separated into multiple groups. In this case, the lockout period for the reallocation of prepaid principal to the senior bonds lasts for the first seven years, and declining over the next four years. As discussed earlier, this reallocation schedule is subject to change if subordination has increased above a certain limit, and if loss and delinquency performance tests are satisfied.

Table 26. BSARM 2006-2 Capital Structure (Prime ARM Senior/Sub)

Tranche	Orig. Amount (\$MM)	Coupon	Avg. Life (years)	Stated Maturity	Orig. Support (%)	S&P/ Fitch	Type
IA1	\$52.0	6.03	3.28	7/25/2036	4.72	AAA/AAA	Super Senior PT
IA2	\$2.6	6.03	3.28	7/25/2036	4.50	AAA/AAA	Senior Support PT
IIA1	\$556.5	5.65	3.31	7/25/2036	6.82	AAA/AAA	Super Senior PT
IIA2	\$27.5	5.89		7/25/2036	4.50	AAA/AAA	Senior Support PT
IIX	Notional	0.24	3.31	7/25/2036		AAA/AAA	Interest Only
IIIA1	\$75.0	6.06	3.32	7/25/2036	5.32	AAA/AAA	Super Senior PT
IIIA2	\$122.2	5.75	3.32	7/25/2036	5.32	AAA/AAA	Super Senior PT
IIIA3	\$9.8	6.06		7/25/2036	4.50	AAA/AAA	Senior Support PT
IIIX	Notional	0.31	3.32	7/25/2036		AAA/AAA	Interest Only
IVA1	\$274.4	6.06	3.34	7/25/2036	4.50	AAA/AAA	Super Senior PT
IVA2	\$13.6	6.06	3.34	7/25/2036	4.50	AAA/AAA	Senior Support PT
B1	\$30.3	5.97	6.07	7/25/2036	1.95	NA/AA	Cross Subordinated
B2	\$8.3	5.97	6.07	7/25/2036	1.25	NA/A	Cross Subordinated
B3	\$5.3	5.97	6.07	7/25/2036	0.80	NA/BBB	Cross Subordinated
B4	\$3.6	5.97		7/25/2036	0.50	NA/BB	Cross Subordinated
B5	\$3.0	5.97		7/25/2036	0.25	NA/B	Cross Subordinated
B6	\$3.0	5.97		7/25/2036	0.00	NA/NA	Cross Subordinated

Source: Bear Stearns

26. OVERCOLLATERALIZATION/EXCESS SPREAD STRUCTURE

The OC structure also uses mezzanine and subordinate bonds to provide credit support, but it adds additional support because the balance on the collateral backing a deal exceeds the balance on its bonds (“overcollateralization”). In addition, the OC structure is used for subprime and/or near prime deals in which the borrowers pay a higher rate for their loans than prime borrowers. In these deals, the weighted average coupon on the collateral is higher than the weighted average bond coupon. As a result, there is excess interest (“excess spread”) that does not need to be

paid to bondholders, and that can be used to cover losses on the underlying collateral.

OC deals are considerably more complex than straight senior/sub deals. Some of the key concepts are discussed in the following paragraphs. As was the case in the overview of the senior/subordinate structure, the numeric illustrations in this section may vary among OC deals.

- *Excess Spread:* The collateral WAC in OC deals is higher than the weighted average coupon paid to the bonds, and the resulting excess spread can be used to increase the OC amount until the OC target is reached. This is accomplished by using the excess spread to accelerate the paydown of principal on the senior bonds, a process that is called “turboing.” In addition to its use in building up OC, excess spread is also used as the first line of defense against collateral losses. Once the OC target has been reached, and subject to certain performance tests (see “Principal Distributions on and after the Stepdown Date” below), excess spread can be released for other purposes, including payment to the residual holder.
- *OC Target:* The OC target is set as a percent of the original balance, and is designed to be the second line of defense against collateral losses. At deal settlement, the actual OC amount may be anywhere between 0% and 100% of the OC target. If the initial OC amount is less than 100% of the OC target, it is increased from the excess spread until the OC target is reached. If the initial OC amount is 100% of the OC target, the OC is said to be “fully funded” as of deal settlement. Under those circumstances, the NIM (Net Interest Margin certificates) could begin to receive cashflows immediately. Subject to the successful completion of certain performance tests (see “Principal Distributions on and after the Stepdown Date” below), OC can be released to the residual holder.
- *Stepdown Date:* The stepdown date in an OC deal is the later to occur of a specified month (e.g. month 36) and the date at which the senior credit enhancement reaches a specified level (e.g. 51%), or two times the original enhancement level. Before this date, the senior bonds receive 100% of principal prepayments. If the senior bonds are completely paid down prior to this date, prepaid principal is paid sequentially to the outstanding subordinate bonds.
- *Step-up Coupon:* Most deals have an optional cleanup call (e.g. when the collateral factor reaches 10%). If the call is not exercised, the coupon margin will increase (e.g., 2.0x for senior bonds, and 1.5x

for mezz/subs). This provision makes it more likely that the issuer will exercise the optional call.

- *Performance Triggers:* Deals are credit-enhanced to levels that are consistent with the rating agencies' performance expectations at the time they are underwritten. If a deal performs worse than expected, then additional steps may be required to protect the rated cashflows. Deals are therefore structured with performance triggers that, under certain circumstances, will automatically initiate a reallocation of principal to protect or increase subordination levels.
- There are two types of triggers: delinquency triggers and loss triggers. A trigger is said to "pass" if the collateral does not hit or breach the specified conditions, and to "fail" if those conditions are hit or breached. If a trigger fails, principal payments to the mezzanine and subordinate bonds are delayed or stopped, thereby preventing reduction of credit enhancement for the senior bonds.
 - *Delinquency Triggers:* Delinquency triggers can be either "soft" or "hard," and they fail if serious delinquencies (defined as 60+ days, foreclosure and REO) are at or above a certain limit.
 - With a **soft trigger**, the delinquency limit is defined relative to the current amount of senior credit enhancement¹² (e.g. serious delinquencies are above 50.0% of the senior credit enhancement).
 - With a **hard trigger**, the delinquency limit is defined as a specific percentage of the current collateral balance (e.g. if serious delinquencies are over 12.0% of current balance).
 - *Loss Triggers:* Loss triggers are target levels of cumulative loss as of specific dates after deal settlement. For example, the loss trigger in months 1-48 after deal settlement might be 3.50%, rise to 5.25% in months 49-60, 6.75% in months 61-72, and stay flat at 7.75% in months 73 and later. If cumulative losses as of any distribution date exceed these levels, the loss trigger would fail.
- *Available Funds Cap (AFC):* In most cases, the bonds in OC deals pay a floating rate of interest; as a result, interest payments in OC deals may be subject to an available funds cap. Investors receive interest based on the lesser of [Index (e.g. 1-month LIBOR) +

12. The balance of the mezzanine and subordinate classes, plus OC, expressed as a percent of the balance of the collateral.

Margin] or [Weighted Average Available Funds Cap]. This creates the risk that, under certain circumstances, investors would not receive the full coupon indicated by the level of the index. One way this basis risk can be reduced is for the trust to purchase a cap or a swap. Normally, the former would be paid for at the start of the deal, while the latter would be paid for from the cashflow. Since 2005, most subprime deals have mitigated AFC risk with a swap rather than a cap.

- In some subprime transactions, the AFC is limited to the net life cap on the underlying collateral, even though there may be an interest rate hedge in the transaction.
 - In other subprime transactions, cashflows from the interest rate hedge may be used to effectively raise the AFC to a level that could be above the net life cap on the collateral.
 - The coupon on the senior bonds is frequently capped at the weighted average rate of interest received from borrowers in the collateral group by which the bond is backed, plus or minus their group's *pro rata* share of any hedge gains or losses on the swap in the deal.
 - The coupon on the subordinate bonds is frequently capped by the weighted average rate of interest received from all borrowers, plus or minus the hedge gains or losses on the swap in the deal. Since subordinate bonds always pay a higher coupon than the seniors, the subordinates would be affected first if the available funds cap is hit.
- *Factors Affecting AFC:* The risk that the AFC will limit the coupon payable on a bond can be influenced by many factors, including the following:
- Large movements in the index, which increase the chance that the AFC will be exceeded if there is a significant lag in the resets of the collateral.
 - Collateral composition, including the length of time before the first ARM reset, the level of the teaser rate, and periodic and lifetime caps, as well as the mix of ARM and fixed-rate loans backing the deal. The closer the collateral comes to resembling a pool of uncapped floating rate loans, the lower the AFC risk in the deal. The collateral composition can also negatively affect the buildup of OC.
 - The prepayment behavior of the collateral, which could result in higher margin loans prepaying more quickly than lower margin loans.

- Rules for paying any interest shortfalls (“available funds carry forwards”), which may or may not require that interest not paid in one period be paid if available in the future.
- The amount of OC; if the OC target has already been met, excess spread may be used to help make interest payments even if the effective coupon (index + margin) is above the AFC.

27. OC STRUCTURE: DETAILED EXAMPLE

Given the complexity of the factors affecting the cashflows of OC deals, we illustrate how these concepts are applied in an actual structure—BSABS 2006-HE3. Table 27 shows the deal’s capital structure as of the settlement date (March 30, 2006). The deal is backed by 87.3% subprime hybrid ARMs and the remainder is fixed-rate loans; the original gross WAC was 7.94%, with a 6.01% gross margin.

Table 27. BSABS 2006-HE3 Capital Structure (Subprime OC)

Tranche	Orig. Amount (1000s)	Coupon	Floor/Cap	Avg. Life (years)	Stated Maturity	Orig. CE (%)	Moody's/ S&P
A1	\$ 396,254	1-Month LIBOR + 8	0.08% / Available Funds Cap	1	12/25/29	25.30	Aaa/AAA
A2	\$ 171,485	1-Month LIBOR + 18	0.18% / Available Funds Cap	3	8/25/35	25.30	Aaa/AAA
A3	\$ 24,954	1-Month LIBOR + 28	0.28% / Available Funds Cap	5.9	4/25/36	25.30	Aaa/AAA
M1	\$ 38,481	1-Month LIBOR + 36	0.36% / Available Funds Cap	4.97	4/25/36	20.45	Aa1/AA+
M2	\$ 30,150	1-Month LIBOR + 38	0.38% / Available Funds Cap	4.58	4/25/36	16.65	Aa2/AA
M3	\$ 18,646	1-Month LIBOR + 39	0.39% / Available Funds Cap	4.23	4/25/36	14.30	Aa3/AA-
M4	\$ 16,265	1-Month LIBOR + 51	0.51% / Available Funds Cap	4.35	4/25/36	12.25	A1/A+
M5	\$ 1,575	1-Month LIBOR + 55	0.55% / Available Funds Cap	4.29	4/25/36	10.35	A2/A
M6	\$ 13,488	1-Month LIBOR + 62	0.62% / Available Funds Cap	4.25	4/25/36	8.65	A3/A-
M7	\$ 1,392	1-Month LIBOR + 115	1.15% / Available Funds Cap	4.22	4/25/36	7.00	Baa1/BBB+
M8	\$ 11,505	1-Month LIBOR + 140	1.4% / Available Funds Cap	4.19	4/25/36	5.55	Baa2/BBB
M9	\$ 9,124	1-Month LIBOR + 240	2.4% / Available Funds Cap	4.16	4/25/36	4.40	Baa3/BBB-

Source: Bear Stearns

The cashflow rules for BSABS 2006-HE3, which are typical of an OC deal, include the following details:

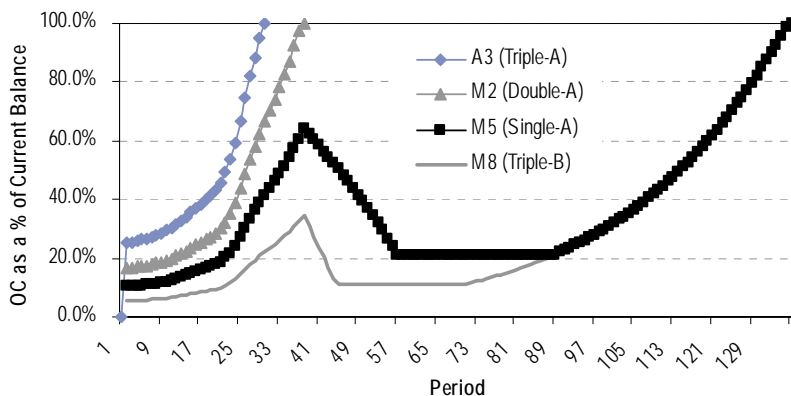
- *Interest Distributions:* Senior classes receive current interest and then interest carry forward amounts (interest that was not available to be paid in prior periods) *pro rata* according to the amount of accrued interest due to each class. After all senior classes have received current interest and all interest carry forward repayments, subordinate current interest is paid sequentially.
- *Principal Distributions before the Stepdown Date:* The senior bonds receive principal sequentially. After the seniors are completely paid down, any remaining principal is paid to the subordinates sequentially.
- *Principal Distributions on and after the Stepdown Date:* The priority of principal distribution depends on the results of the trigger tests. These tests are performed at each distribution date. As a result, principal payments after the Stepdown Date are subject to volatility. For example, in one month the senior bonds might be ahead of the subs in the priority of receiving principal, and in the next month that priority could reverse.
 - *If Triggers Pass:* Credit enhancement levels, which would have increased as a result of prepayments, are allowed to decline or “step down” to the level that meets the current specified credit enhancement percentage. This is accomplished by the release of OC. The required credit enhancement percentage at the Stepdown Date is the lesser of (1) two times the original OC target amount expressed as a percentage of current balance, and (2) the original OC target percentage of the original balance. Senior and subordinate bonds are allocated Principal Distribution Amounts (PDAs) sequentially from the highest-rated class to the lowest one that will maintain the specified level of credit enhancement. In essence, the reduction in credit enhancement for the subordinate bonds is achieved by accelerating the paydown of principal in the *lowest*-rated classes. Thus, the most senior subordinate bonds may be the last to receive principal.
 - *If Triggers Fail:* No adjustment is made to the OC amount, and the bonds receive principal sequentially.

- *Release of Excess Spread and OC:* Once the OC target has been reached, excess spread and any OC available for release may be used to make other payments.
 - Seniors receive any remaining interest carry forwards, *pro rata*.
 - Seniors receive any unpaid realized loss amounts, *pro rata*.
 - Subordinates receive any interest carry forwards, sequentially.
 - Seniors receive any basis risk shortfall carry forward, *pro rata*.
 - Subordinates receive any basis risk shortfall carry forward, sequentially.
 - Seniors receive any shortfalls related to application of the Relief Act¹³, *pro rata*.
 - Subordinates receive any shortfalls related to application of the Relief Act, sequentially.
 - Any remaining unpaid swap termination payment resulting from a swap provider trigger event is paid to the swap provider.
 - Excess is paid to the residual.

The effect of the above cashflow rules can be seen graphically in the following illustrations. Figure 17 shows the buildup in subordination prior to the Stepdown Date, and the release of OC after the Stepdown Date. For example, subordination for the single-A M5 bond rises to over 64% prior to the Stepdown Date, after which time it gradually falls back to 20.7%. (This illustration is run using the Bear Stearns Econometric Prepayment and Default Models as of the deal pricing date, and assumes that all triggers pass.) Figure 18 shows the buildup and subsequent release of OC in the deal, using the same model and trigger assumptions as were used in Figure 17. The OC target for the deal, as a percent of original balance, is 3.1%; the amount required at the Stepdown Date, as a percent of current balance, is 6.2%.

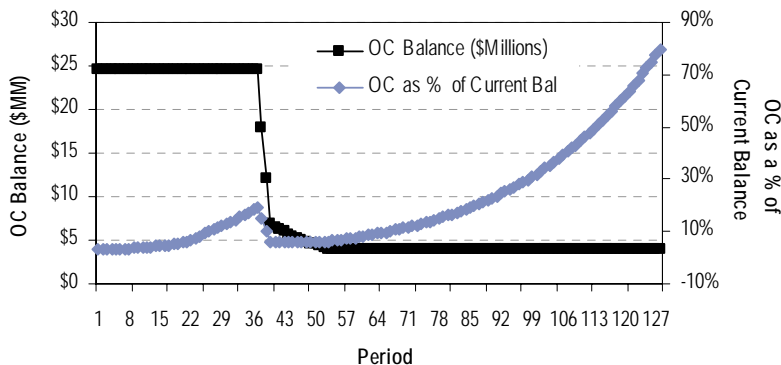
13. *The Servicemembers Civil Relief Act (2003), an update of the Soldiers and Sailors Civil Relief Act (1940). The Act allows, among other things, the suspension of mortgage payments from active duty military personnel.*

Figure 17. Subordination in the OC Structure: BSABS 2006-HE3



Source: Bear Stearns

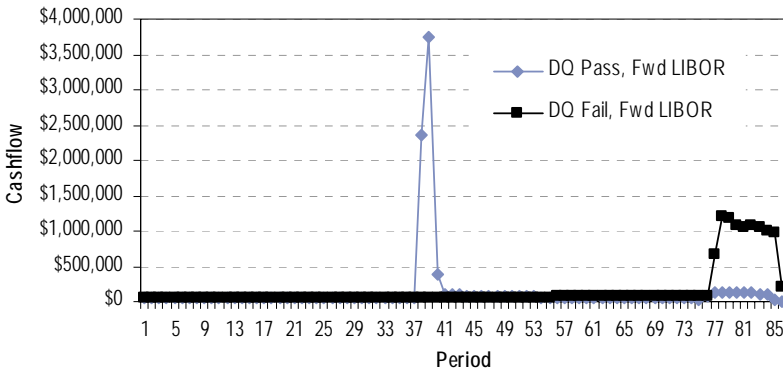
Figure 18. OC Balance in \$ Millions and as a Percent of Current Balance: BSABS 2006-HE3



Source: Bear Stearns

In Figures 19 and 20, we illustrate the cashflows in each period for the triple-B minus tranche (M9). Figure 19 runs the bond using the EPM and EDM models (base case), and shows the difference in the timing of the cashflows if the delinquency triggers pass or fail. Due to the accelerated paydown of the lower-rated subordinates (and the residuals, which are not shown) in the event that the triggers pass, the bond receives a large amount of principal in very “chunky” cashflows after the Stepdown Date. In the event that the delinquency triggers fail, that cashflow does not occur, and the bond receives much more back-loaded cashflows. However, in both cases, the M9 bond receives its last cashflow in period 86.

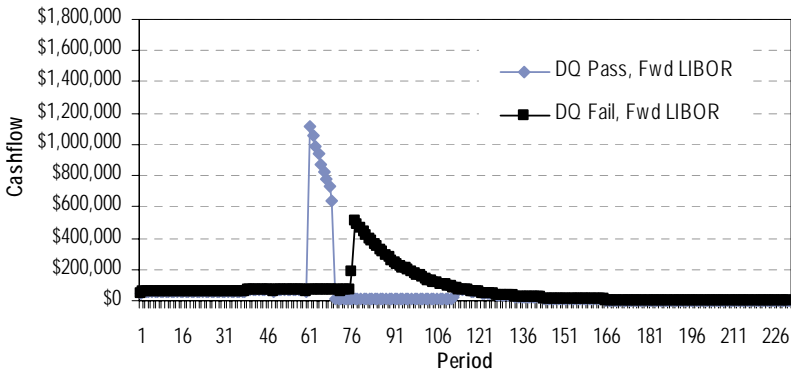
Figure 19. BSABS 2006-HE3 M9 Tranche: Cashflows in Base Case



Source: Bear Stearns

In Figure 20, we examine the cashflows of the same bond under the higher default “break CDR” assumption. In this case, we run the EDM vector at the multiple of the base case that results in the first dollar of loss to this tranche. Note that the M9 cashflows are delayed whether or not the delinquency triggers pass. While passing the delinquency triggers is still a net positive for this bond in that it allows principal to be paid earlier than the “trigger fail” case, all cashflows are delayed as compared to the “base case” assumption shown in Figure 19.

Figure 20. BSABS 2006-HE3 M9 Tranche: Cashflows at Break CDR



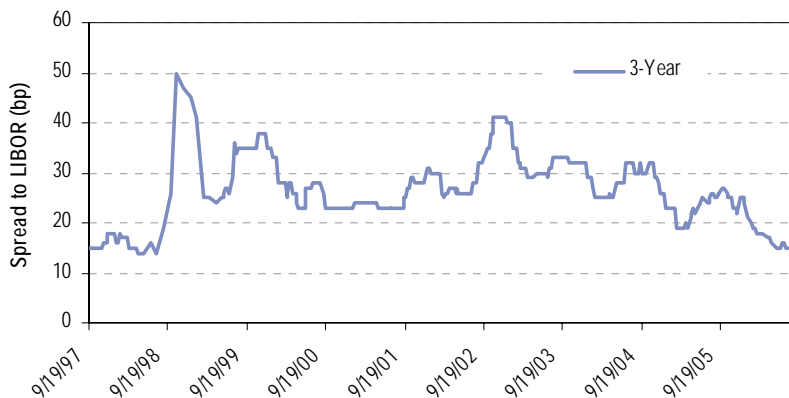
Source: Bear Stearns

INVESTING IN THE NON-AGENCY SECTOR

28. SPREADS, PRICING AND LIQUIDITY

Over the past several years, two of the most persistent trends in the non-agency sector have been the move toward tighter spreads, and the move toward less volatility in spreads. For example, Figure 21 illustrates the spread history of the benchmark triple-A bond in the floating-rate subprime space: the 3-year floater. For this highly liquid instrument, spreads are close to the tightest levels that have been seen in the market since the Russia/LTCM crisis of 1998. After the most recent bout of widening in spread product last fall, the sector came back in rather quickly. Currently, the tightening trend is probably also being aided by the prospects for lower levels of originations after an extremely long period of high volumes.

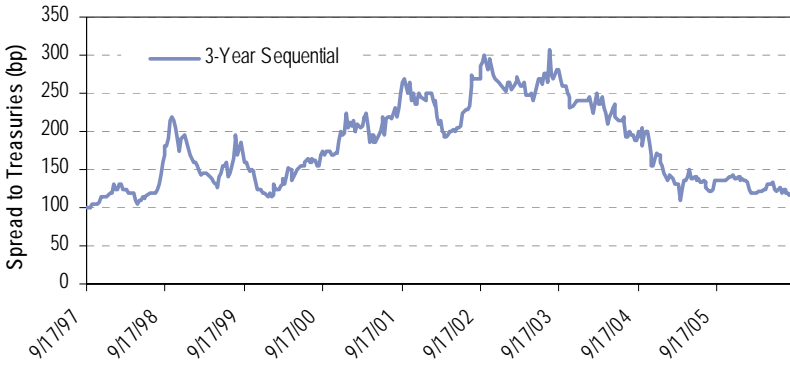
Figure 21. Subprime Floating-Rate Triple-A Spread to LIBOR



Source: Bear Stearns

In the prime space, we have seen a similar effect, although the trend in spreads has been to even less volatility than that seen in subprime. In this sector, where prepayment sensitivity is a paramount investor concern, nominal short sequential spreads widened into the beginning of the long 2001-2005 refinancing wave. Thereafter, they began to slowly tighten toward the end of 2003 after the fixed 30-year rate had reached record lows (June 2003), and after the violent rate whipsaws in July 2003 and early 2004. In addition, an important technical factor began to exert its influence on prime fixed-rate spreads beginning in 2004, as the cyclical decline in prime fixed-rate non-agency market share began to take shape. The nominal spread history of this short prime fixed-rate sequential is shown in Figure 22.

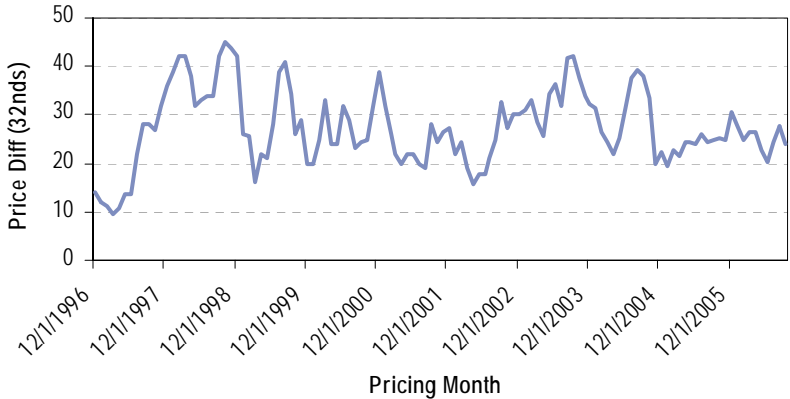
Figure 22. Prime (Jumbo) 30-Year Fixed Triple-A Spread to Treasuries



Source: Bear Stearns

A similar trend in prime fixed-rate pricing can be seen in Figure 23, which illustrates another common benchmark in the prime sector: the price concession to FNMA 30-year TBA collateral. Prime (“jumbo”) triple-A loan packages trade at a concession to FNMA TBA prices for the same coupon (or to the price of the interpolated coupon if the package does not pay an even or half coupon). For example, as of the middle of September, 2006, a triple-A package with a 6.25% coupon would trade 0:24 behind the interpolated FNMA TBA with the same coupon. As seen in Figure 23, the history of this price concession over the past several years echoes the “low volatility” theme of the spread histories shown in Figures 21 and 22.

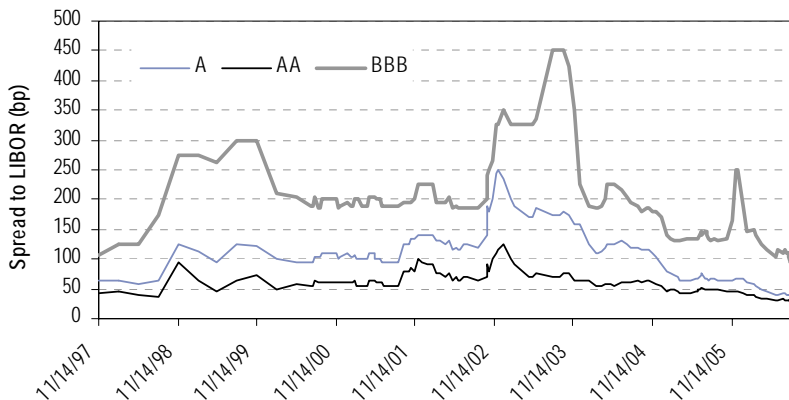
Figure 23. Prime (Jumbo) 30-Year Fixed Triple-A Price Concession to FNMA TBA



Source: Bear Stearns

In the subprime subordinate sector, spread trends have been pointing in a similar direction in recent years: a general decline in spreads since the upheavals of 2003, and a similar reduction in volatility. This is illustrated in Figure 24. Here, the tightening has also been aided by the solid credit performance of the residential mortgage sector in the past few years, and by strong demand from CDOs for subprime credit. Given the focus of CDO managers on filling the triple-B bucket with assets capable of producing above-market yields, that subprime credit tier has arguably shown the most dramatic tightening, with spreads currently inside of 100 bp. However, the intense interest from CDO managers also meant that the triple-B tier was the only one that experienced an appreciable reaction to the brief bout of credit concerns that afflicted all spread markets in the fall of 2005. Meanwhile, spreads for higher-rated subordinate tranches have for the most part moved in one direction only: tighter.

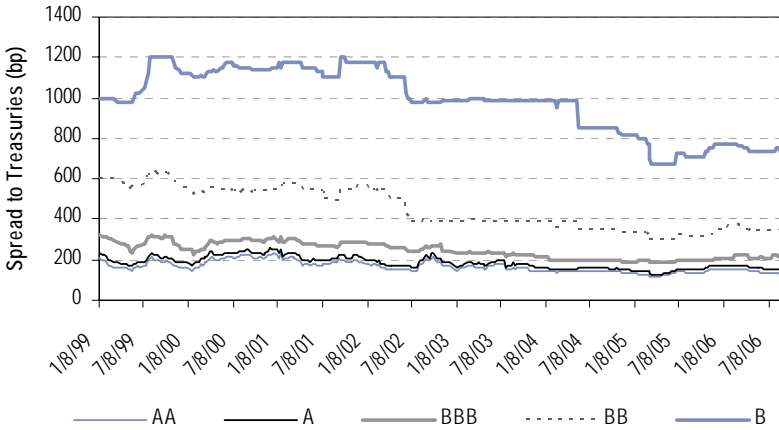
Figure 24. Subprime Floating-Rate Subordinate Spread to LIBOR



Source: Bear Stearns

As shown in Figure 25, a slightly different pattern emerges in the prime fixed-rate space, where history shows that current spreads are close to their all-time tightests over the last eight years, but not currently at their tightests except in the highest credit tiers. The most change since 2003 has been the single-B tranche, which has come in from 1,000 bp over Treasuries to its current level of 750 bp. However, we also note that spreads over the past year have been both wider and tighter than they are today at and below the triple-B level. Despite the fact that the prime fixed-rate sector probably represents the gold standard of credit in the non-agency sector, recent spread history suggests that the sector has not had the nearly unwavering sponsorship from the investor community that has been enjoyed by subprime credit.

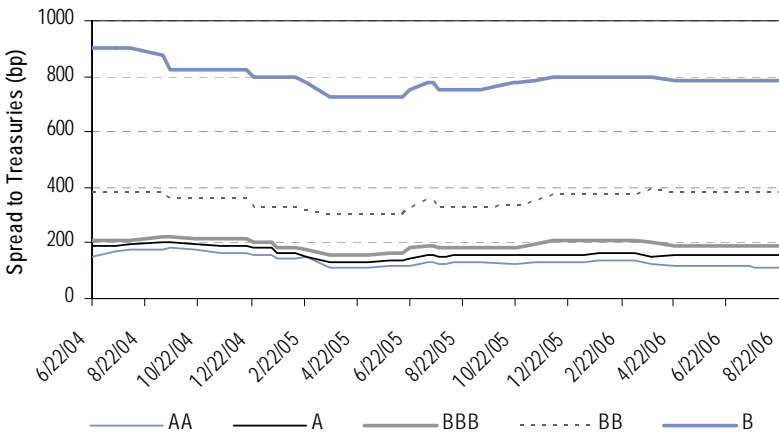
Figure 25. Prime 30-Year Fixed-Rate Subordinate Spread to Treasuries



Source: Bear Stearns

Finally, the relatively short spread history of prime 5/1 ARM credit largely follows the pattern shown by the prime fixed-rate world in Figure 25. As seen in Figure 26, subordinate spreads on prime ARM deals are generally tight relative to the last two years at the double-A level, but somewhat wider relative to recent history at and below the single-A level.

Figure 26. Prime 5/1 ARM Subordinate Spread to Treasuries



Source: Bear Stearns

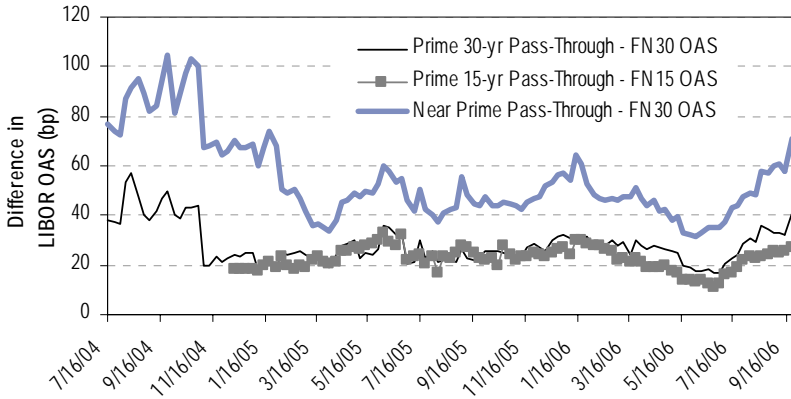
As the non-agency market has come to dominate originations in the mortgage sector, it has attracted an increasingly wide investor base. In the case of international investors, for example, the floating-rate nature of the bonds has increased the appeal of the sector at the same time that liquidity, particularly in the subprime space, has grown as well. The sector offers an exceptionally wide variety of projected cashflows and collateral types, which allow investors to fine-tune their investment objectives.

Depending on the type of bond, the bid/offer spread can range from 1 to 10 bp. At present, between 10 and 15 dealers make markets in the non-agency sector, and the top dealers typically carry positions ranging from \$3.0 to \$5.0 billion.

29. MEASURES OF RELATIVE VALUE

Like their counterparts in the agency sector, non-agency investors at all levels of the capital structure are likely to pay attention to those valuation metrics that are most relevant to their particular investment goals. Some investors enter the sector as a straight yield play, while others look to position bonds that offer higher OAS, relying on models to estimate the value of the prepayment option and/or any embedded caps. While the prepayment option in particular may be assigned a higher value in the prime sector than in agency MBS, investors are typically compensated for taking on the additional risks that are inherent in the non-agency sector. One example of this can be seen in Figure 27, which shows the history of one measure of non-agency relative value: the difference between the OAS on various benchmark non-agency pass-throughs, and the OAS on the FNMA TBA with the same net coupon. The three benchmark instruments are the 30-year and 15-year prime jumbo pass-through, and the near prime (Alt-A) 30-year pass-through. In recent years, with increased origination volume and a broader investor base, these three instruments have achieved a substantial level of liquidity. In particular, this increase in liquidity has been driven by bank demand for prime fixed-rate pass-throughs. While the level of the OAS pickup, like all spread measures, can be a cyclical phenomenon, it has been consistently positive according to our models. Moreover, the relative value advantage of the near prime fixed-rate sector, which offers an incremental OAS pickup that is typically in the range of 20 bp, is clearly evident in Figure 27, and is consistent with the attractive convexity profile that was discussed in Chapter 18.

Figure 27. Benchmark 30-Year Fixed-Rate OAS Pickup to TBA



Source: Bear Stearns

Table 28. Benchmark Floating Sequential/Floating Subordinate Subprime Deal: OAS Analysis¹⁴

Tran.	Rating	Cpn	Price	Avg. Life	DM	OAS	Dur.	Z- Sprd	Opt. Cost	Conv	Init. CE	A/L @ Speed ¹⁵	DM @ Speed	Mrgn
A1	Aaa	5.38	\$100.00	0.89	5	5	0.07	5	0	0.012	24.30%	1.00	5	5
A2	Aaa	5.48	\$100.00	1.84	15	15	0.07	15	0	0.047	24.30%	3.05	15	15
A3	Aaa	5.58	\$100.00	2.40	25	25	0.07	25	0	0.092	24.30%	5.99	25	25
M1	Aa2	5.64	\$100.00	4.41	31	31	0.07	32	0	0.230	17.05%	4.45	31	30
M2	A2	5.74	\$100.00	4.02	41	42	0.07	42	0	0.200	12.40%	4.30	41	39
M3	A3	5.80	\$100.00	3.66	47	48	0.07	48	0	0.177	9.25%	4.25	47	47
M4	Baa1	6.18	\$100.00	3.54	85	87	0.06	87	0	0.175	7.45%	4.23	85	85
M5	Baa2	6.33	\$100.00	3.48	100	102	0.06	102	0	0.173	5.65%	4.22	100	100
M6	Baa3	7.33	\$100.00	3.43	200	205	0.05	205	0	0.182	4.15%	4.20	200	200
B	Ba1	7.83	\$87.14	3.39	715	729	0.01	730	1	0.156	3.00%	4.07	588	250

Principal O/C Target 3.0%; CE doubles on/after stepdown date
 Fixed Ramp: Run 4-23% CPR in 12 months, 23% CPR to Call;
 ARM Ramp: Run 4-35% CPR in 12 months, 35% CPR to Call

14. Pricing date: September 15, 2006; Run to 10% Call; using EPM and EDM.

15. Fixed Ramp: Run 4-23% CPR in 12 months, 23% CPR to Call; ARM Ramp: Run 4-35% CPR in 12 months, 35% CPR to Call

A second example of OAS analysis can be seen in Table 28, which shows model output for the benchmark subprime deal with floating sequential senior bonds, and floating sequential subordinates. OAS analysis attempts to encapsulate prepayment and curve-related risks, and their interaction within the structure, into a single statistic, the “option cost.” As such, it is a very useful relative value statistic that allows investors to compare offerings across the capital structure, within sectors, and across sectors. For example, floating rate investors can select from a menu of securities ranging from credit card ABS to floating rate HEL securities. These offerings, current levels of which are shown in Table 29, span a range of sub-LIBOR to as much as LIBOR + 30 basis points in spread but also have very different average life variability and cap risk profiles. As shown in Table 28, the OAS (or the zero volatility spread minus the option cost) on ABS/MBS can allow investors to compare these different instruments on a level playing field and help in making fundamental judgments about relative value across sectors. For example, the zero option cost of the par floaters shown in Table 28 indicates that the available funds cap, which the bond investor is short, has negligible value under current market conditions. A comparison of spreads across the credit card, student loan and ABS/MBS sectors is provided in Table 29.

Table 29. Indicative ABS/MBS Spreads as of September 19, 2006

Instrument	2-Year	3-Year
Agency Hybrid ARM (OAS to LIBOR)	15*	9**
Prime Hybrid ARM (OAS to LIBOR)	23*	16**
Subprime - Floating (OAS to LIBOR)	10	15
Credit Cards - Floating (Spread to 1M LIBOR)	-2	-2
Student Loans - Floating (Spread to 3M LIBOR)	-2	0

* 3/1 Hybrid ARM; ** 5/1 Hybrid ARM; Prime ARM run to maturity
 Source: Bear Stearns

The credit angle clearly adds another important dimension for those investors willing and able to venture down the credit curve. For them, a comprehensive analysis of risk/reward would include a look at collateral characteristics, and the performance of similar instruments, in order to create reasonable stress scenarios for credit performance. That last step might also involve the inclusion of some margin of error (either additive or multiplicative) to the credit “base case” assumption.

In rough terms, this process describes one relatively straightforward test that investors can run using no more than an analytics system that has a cashflow engine: subordinate stress or “break CDR” analysis. Rather than running a “black box” model, this method of assessing relative value simply

combines a CPR vector (either supplied by the user or by a prepayment model) with a severity, in order to solve for the constant CDR level that results in the first dollar of principal loss to each subordinate tranche. While this approach clearly simplifies the process by which loans default, it allows investors to make an “apples to apples” comparison of credit protection across the subordinate capital structure within and between deals.

An example of the output of such an analysis is shown in Tables 30 to 33. In this case, we used the Bear Stearns Econometric Prepayment Model (EPM) for the prepayment projections, and assumed a loss severity of 40%. The cumulative loss numbers in Tables 30 to 33 can be compared to historical experience for similar collateral, in order to create a framework for evaluating the “solidity” of the tranche’s rating.

Table 30. Break CDR Analysis: BSABS 2006-HE3 (Spot LIBOR, Triggers Pass)

Tranche	Moody's/S&P	Maturity		Call	
		Break CDR	Cum Loss in %	Break CDR	Cum Loss in %
A3	Aaa/AAA	45.7	27.74	50.5	29.52
M1	Aa1/AA+	35.3	23.48	38.7	24.97
M2	Aa2/AA	28.3	20.15	30.9	21.43
M3	Aa3/AA-	24.5	18.10	26.6	19.23
M4	A1/A+	21.3	16.31	23.0	17.28
M5	A2/A	18.5	14.65	19.8	15.46
M6	A3/A-	16.2	13.16	17.2	13.86
M7	Baa1/BBB+	13.9	11.00	14.8	12.25
M8	Baa2/BBB	12.0	10.32	12.7	10.82
M9	Baa3/BBB-	10.5	9.20	11.1	9.70

Source: Bear Stearns

**Table 31. Break CDR Analysis: BSABS 2006-HE3
(Spot LIBOR, Triggers Fail)**

Tranche	Moody's/S&P	Maturity		Call	
		Break CDR	Cum Loss in %	Break CDR	Cum Loss in %
A3	Aaa/AAA	45.7	27.77	50.6	29.58
M1	Aa1/AA+	35.3	23.51	38.8	25.02
M2	Aa2/AA	28.4	20.18	31.0	21.48
M3	Aa3/AA-	24.4	18.12	26.6	19.26
M4	A1/A+	21.3	16.33	23.0	17.31
M5	A2/A	18.5	14.68	19.9	15.50
M6	A3/A-	16.1	13.18	17.3	13.89
M7	Baa1/BBB+	13.9	11.67	14.8	12.28
M8	Baa2/BBB	12.0	10.34	12.7	10.85
M9	Baa3/BBB-	10.5	9.21	11.2	9.72

Source: Bear Stearns

A similar analysis can also be done using forward LIBOR, as shown in Tables 32 and 33. Since the slope of both the spot and forward LIBOR curves today is essentially flat, there are only minimal differences in the output of these two analyses. At all levels of the capital structure, bonds can withstand higher break CDRs when run to call because they do not have the loss exposure from the collateral after the call date. However, it may not be economically justifiable to call a deal with a high percentage of seriously delinquent collateral because such collateral trades at a discount.

**Table 32. Break CDR Analysis: BSABS 2006-HE3
(Forward LIBOR, Triggers Pass)**

Tranche	Moody's/S&P	Maturity		Call	
		Break CDR	Cum Loss in %	Break CDR	Cum Loss in %
A3	Aaa/AAA	46.0	27.86	50.8	29.61
M1	Aa1/AA+	35.5	23.54	39.2	25.15
M2	Aa2/AA	28.4	20.17	31.0	21.47
M3	Aa3/AA-	24.5	18.10	26.6	19.24
M4	A1/A+	21.3	16.28	23.0	17.27
M5	A2/A	18.5	14.61	19.8	15.44
M6	A3/A-	16.1	13.09	17.2	13.82
M7	Baa1/BBB+	13.8	11.57	14.7	12.19
M8	Baa2/BBB	11.9	10.21	12.6	10.76
M9	Baa3/BBB-	10.3	9.08	11.1	9.62

Source: Bear Stearns

**Table 33. Break CDR Analysis: BSABS 2006-HE3
(Forward LIBOR, Triggers Fail)**

Tranche	Moody's/S&P	Maturity		Call	
		Break CDR	Cum Loss in %	Break CDR	Cum Loss in %
A3	Aaa/AAA	46.0	27.88	50.9	29.66
M1	Aa1/AA+	35.6	23.57	39.3	25.19
M2	Aa2/AA	28.5	20.20	31.1	21.50
M3	Aa3/AA-	24.5	18.12	26.7	19.26
M4	A1/A+	21.3	16.31	23.0	17.30
M5	A2/A	18.5	14.63	19.9	15.46
M6	A3/A-	16.1	13.12	17.2	13.84
M7	Baa1/BBB+	13.8	11.59	14.8	12.22
M8	Baa2/BBB	11.9	10.23	12.7	10.78
M9	Baa3/BBB-	10.4	9.10	11.1	9.64

Source: Bear Stearns

The impact of a trigger event on the average life is shown in Table 34. While the trigger event has no effect on bonds higher up in the capital structure due to their shorter average life, it has varied effects on subordinate bonds. When the trigger is passed, OC is released allowing for principal reduction to bonds from bottom up within the capital structure. Hence the M8 tranche receives a large cashflow at step-down, which reduces its average life, but the additional cashflow from the OC release does not reach up to the M5 tranche, thus extending this bond. In a scenario where the trigger fails, OC is not released and the M8 bond extends. On the other hand, the M5 tranche has a shorter average life when the trigger fails because the occurrence of such an event will lead to the sequential payment of principal down the waterfall.

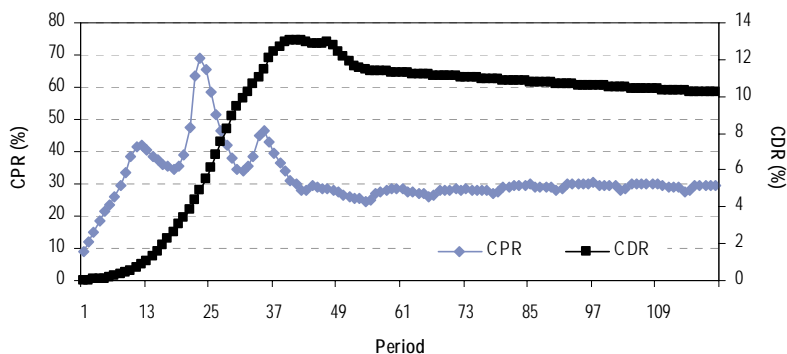
Table 34. Effect of Triggers on Average Life of Senior and Subordinate Bonds: BSABS 2006-HE3

Tranche	Moody's/S&P	Average Life, Triggers Pass	Average Life, Triggers Fail	Average Life Difference
A3	Aaa/AAA	2.08	2.08	0.00
M2	Aa2/AA	2.50	2.50	0.00
M5	A2/A	7.13	3.23	-3.90
M8	Baa2/BBB	4.23	4.46	0.24

Source: Bear Stearns

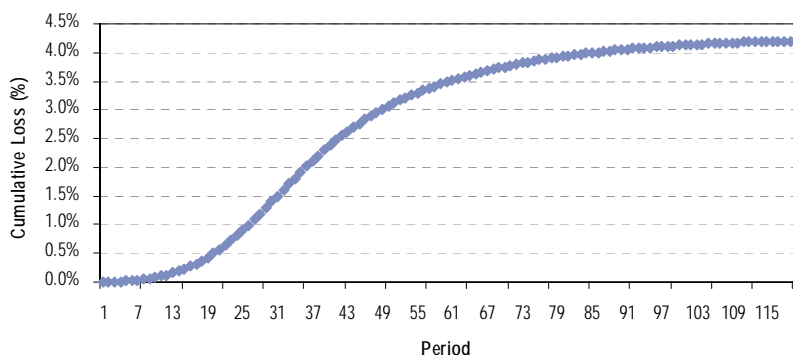
The break CDR results shown in Tables 30 to 33 can be viewed in two ways: first, by comparison to comparable historical results, and second, by comparison to model projections. Projected CPR and CDR vectors from the Bear Stearns Econometric Prepayment Model (EPM) and Econometric Default Model (EDM) are shown in Figure 28, run on the same deal as was used in the break analysis. In Figure 29, we show the projected cumulative loss vector from the EDM and EPM models. Investors can combine a break analysis with model results of this type, or with actual historical loss levels, to form an opinion about the likelihood that a given subordinate tranche will actually experience a loss in principal.

Figure 28. Projected CPR and CDR Vectors: Current Subprime Deal



Source: Bear Stearns

Figure 29. Projected Cumulative Loss Vector: Current Subprime Deal



Source: Bear Stearns

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