

The ABCs of HELs

DAVID HEIKE AND AKHIL MAGO

DAVID HEIKE

is a senior vice president at Lehman Brothers in New York City.
dheike@lehman.com

AKHIL MAGO

is an associate at Lehman Brothers in New York City.
akmago@lehman.com

A home equity loan (HEL) is defined by industry custom as a subprime first-lien mortgage. Asset-backed security investors have equated HELs with first-lien mortgages made to borrowers with imperfect or limited credit history. This less-than-descriptive terminology grew from the original use of the term in the ABS market, when it generally referred to second-lien mortgages taken out by less credit-worthy borrowers to consolidate debt.

This classification is not universally accepted today. Some market participants, including many mortgage lenders, apply the term HEL to a broader universe of loans such as the types shown in Exhibit 1. Borrower characteristics, underwriting, and performance vary widely among these related loan types. Most of these sectors are relatively small; subprime first-lien mortgages still represent over 95% of loan originations in this broader set. While we do not discuss these related loan types here, we list them for completeness:

- **Closed-end second-liens:** Second-lien mortgage used by a borrower to cash out the equity in the house. This was the traditional definition of a home equity loan in the early 1990s. Simultaneous closed-end second liens issued at the time of purchase (piggyback seconds) have recently gained in popularity.
- **Home equity lines of credit (HELOCs):** Revolving lines of credit backed by bor-

rower equity typically made to a prime-quality borrower. These could either be first- or second-lien loans.

- **High loan-to-value loans (HLTV):** Mortgages with LTVs in excess of 100%, often up to 125%, taken to add to or improve a property. Home improvement loans (HIL) often have high LTVs and are classified in this category.
- **Specialty loans:** Loans exiting regular mortgage pools for various reasons. Nonperformers and reperformers are bought out of pools because of early or first-pay defaults or delinquencies. "Scratch and dent" loans do not qualify by the guidelines originally established for the pool (guideline exceptions).

Subprime mortgages fall in a credit continuum between prime/Alt-A mortgages and manufactured housing loans (*Exhibit 2*). An average subprime borrower pays a mortgage rate that is 150 to 200 basis points higher than the conventional prime mortgage rate because of poorer credit characteristics. The average borrower has a Fair Isaac & Co. (FICO) credit score of 630, whether for a limited credit history or having experienced credit problems in fulfilling previous consumer or mortgage debt obligations. The average loan size is around \$170,000, and typical LTVs range between 80% and 85%.

I. EVOLUTION OF THE HEL MARKET

The HEL sector has changed dramatically since its early days as market participants have changed over time. Borrower, loan, and structural characteristics seem to change on an annual basis. We describe the evolution of the HEL market in the four broad phases shown in Exhibit 3:

- Pre-1996—Nascent.
- 1996–1998—Initial growth.
- 1999–2001—Consolidation.
- 2002–2004—Expansion.

Pre-1996—Nascent

Home equity loans in the early 1990s were exclusively second-lien loans made to credit-impaired borrowers. The market was dominated by a limited number of specialized lenders, because mainstream banks (the main source of mortgage financing) did not actively participate in the subprime sector (*see Exhibit 4*). Activity was limited to portfolio lenders due to a lack of secondary market liquidity through the capital markets.

The absence of a proven credit grading system led to conservative loan programs that focused more on the

strength of the collateral than the borrower's credit quality. Thus, most loans made during this period carried small loan balances, low LTVs, and short amortization terms (under 15 years). Lending was concentrated in the lower-tier subprime market (referred to as *hard money* lending), with a high proportion of loans made to seriously credit-impaired borrowers (e.g., those in foreclosure bankruptcy bailouts).

1996–1998—Initial Growth

The HEL market grew rapidly between 1996 and 1998, almost tripling in yearly issuance. Three key factors facilitated this growth:

- A number of mainstream lenders entered the subprime market to boost volumes following the drop-off in the conventional mortgage market in the 1994–1995 rate backup. In addition, the subprime market offered attractive margins over conventional mortgages due to low competition among the limited number of players.
- The increasing use of securitization provided non-bank lenders an alternative source of funding, enabling them to enter the subprime sector.
- The evolution of credit scores helped lenders to

EXHIBIT 1

Historical Loan Originations (\$ billions)

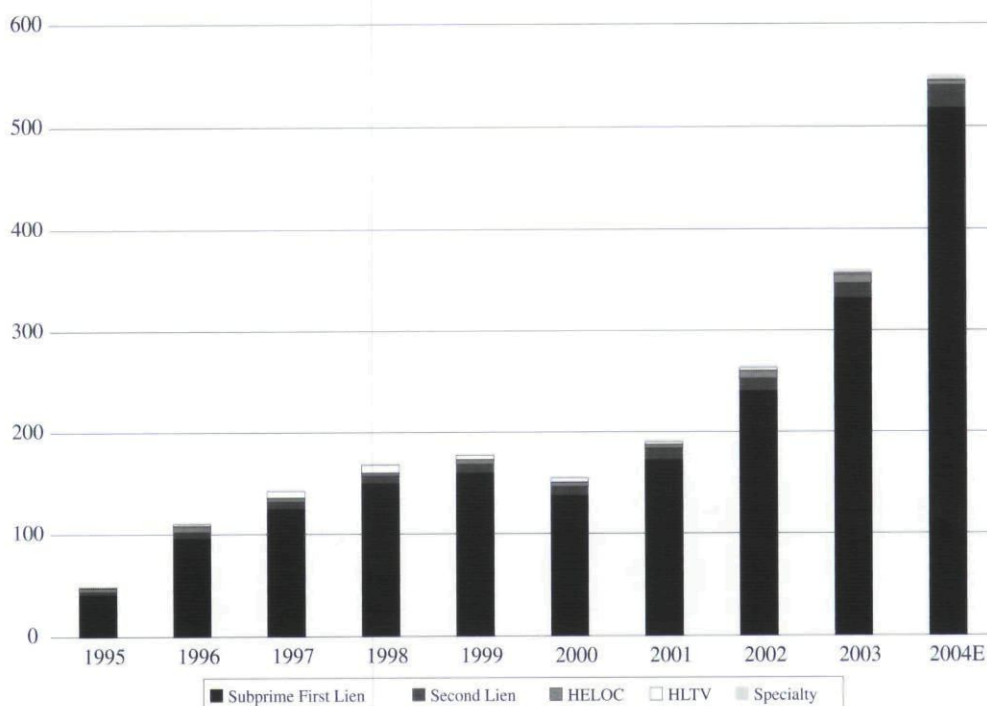


EXHIBIT 2

Comparison of Mortgage Products—Second Half 2004

Loan Type	Gross WAC %	Average Loan Size (\$)	Average LTV	Average FICO	DTI Cutoff	Full Doc %	Fixed %	Underwriting Comments
Prime Conforming	5.75	200,000	70	740	< 36	95	70	Most marketable properties, agency underwriting
Prime Jumbo	5.95	450,000	71	740	< 38	90	20	Similar to prime conforming loans except for loan size.
Alt-A Conforming	6.20	200,000	82	700	< 45	35	70	Higher LTV than prime conforming, less docs, less primary occupied, more multifamily, more cash out
FHA/VA	6.25	125,000	100	640	< 42	95	90	Government-insured, low- and moderate-income borrowers
Alt-A Jumbo	6.45	450,000	76	700	< 42	35	35	Similar to Alt-A conforming except for loan size
Home Equity Loans (Subprime Mortgages)	7.25	170,000	82	630	< 50	65	30	Moderate-income borrowers, limited credit history or credit issues
MH (Land-home)	7.50	90,000	80	600-720	< 50	90	95	Low-income borrowers, usually located on private property
Second-Lien	9.60	40,000	95	685	< 55	70	95	Same borrower leverage as HEL, superior borrower credit, higher documentation, more purchase
Mobile Home (Chattel)	9.75-12.00	45,000	90	600-720	< 50	95	95	Low-income borrowers, typically located in mobile home parks

Source: Lehman Brothers.

better understand and price borrower credit risk. This common benchmark gave lenders and investors the ability to analyze and compare credit performance across borrowers, which increased liquidity and facilitated the introduction of new loan types.

The entry of a number of new lenders had several effects on the HEL market. First, a number of new loan types with longer amortization terms up to 30 years were introduced (hybrid adjustable-rate mortgages are an example). As a result, the proportion of purchase borrowers increased and the market shifted from second liens toward subprime first liens. The proportion of seriously credit-impaired borrowers declined, as more mainstream subprime borrowers were extended credit.

Strong competitive pressures then led to the relaxing of underwriting standards and the introduction of higher LTV programs by new lenders to capture market share.

1999-2001—Consolidation

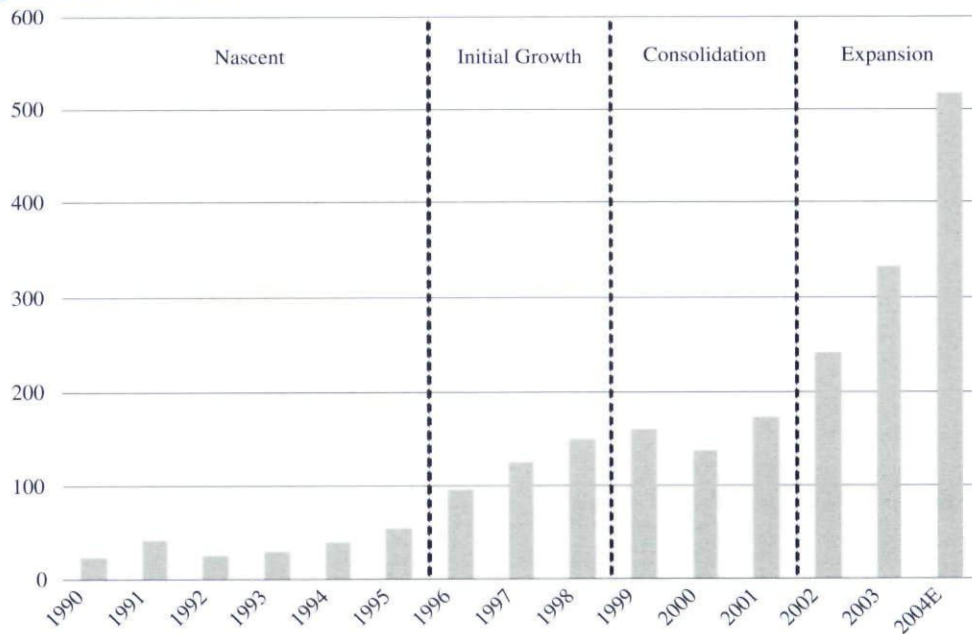
There was a major shakeup among subprime lenders between 1999 and 2001. Three-fourths of the active lenders either exited due to financial problems or merged with larger players. Some of the notable issuers to exit during this period were ContiMortgage, First Plus, Bank of America, and Superior Bank. Other lenders were acquired by larger players, such as The Money Store (by First Union), Green Tree (by Conseco), and Advanta (by J.P. Morgan).

The financial problems among lenders came about through a combination of lax underwriting standards, aggressive gain-on-sale income accounting, and unfavorable market conditions after the liquidity crisis in 1998. Most of the new non-bank lenders entering the market after 1996 were thinly capitalized. These lenders used gain-on-sale accounting with aggressive assumptions around residual valuations to gain favorable access to funding. Poor collateral performance due to lax underwriting caused them to take large non-cash write-downs against their residual asset valuations.

These financial problems were magnified during the

EXHIBIT 3

HEL Loan Originations (\$ billions)



Source: Lehman Brothers, *Inside B&C Lending*.

EXHIBIT 4

Major HEL Lenders in Various Market Phases

Pre-1996	1996-1998	1999-2001	2002-2004
Money Store	Associates First Capital	Household	Ameritrust
Beneficial	Household	CitiFinancial	New Century
Household	ContiMortgage	Bank of America	CitiFinancial
Guardian Savings and Loan	IMC	Washington Mutual	Household
LongBeach Savings	Money Store	Option One	Option One
	Green Tree	GMAC-RFC	First Franklin
	Advanta	Countrywide	Washington Mutual
	GMAC-RFC	First Franklin	Countrywide
		New Century	GMAC-RFC
		Ameritrust	Wells Fargo

Source: Lehman Brothers, *Inside Mortgage Finance*.

1998 liquidity crisis, when market execution became unfavorable with a widening in spreads. This led lenders to turn to whole loan sales (to bank portfolios), which in turn reduced whole loan prices. HEL issuance growth stalled during this period as we see in Exhibit 3.

Most lenders used mortgage warehousing lines of credit for inventory financing. Financing was then reduced following the liquidity crisis, as these warehouse facilities were either curtailed or eliminated.

2002-2004—Expansion

The HEL market has grown exponentially from 2002 through 2004. This surge in issuance is attributable to a number of factors.

- Historically low mortgage rates have driven the purchase markets to record-highs. The strength of the purchase market is evidenced by the growth in

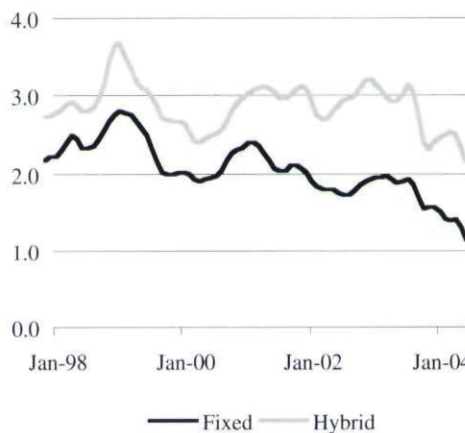
EXHIBIT 5

Issuance Growth Drivers

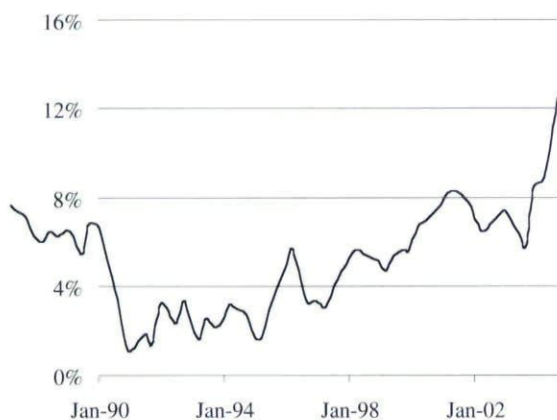
A. US Homeownership Rate



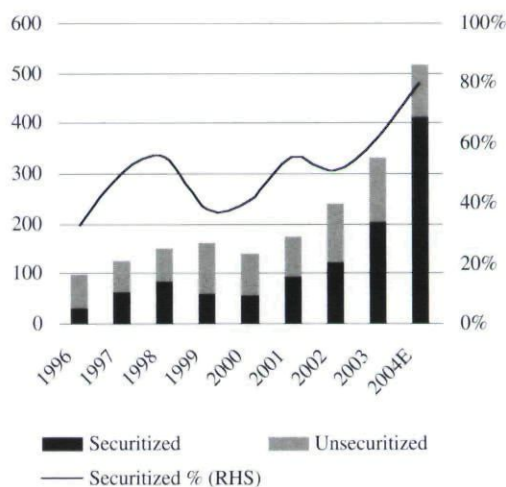
B. Spread of Subprime Mortgage Rates to Conventional Prime (%)



C. US Annual HPA



D. HEL Securitized Issuance versus Loan Originations (\$ billions)



Source: Lehman Brothers, Inside B&C Lending, Freddie Mac, Federal Reserve, Loan Performance.

homeownership trends (*Exhibit 5a, Panel A*). Homeownership trends, however, understate purchase demand in subprime, where overall market penetration has increased markedly more than the overall mortgage market.

- Refinancing volume remains high even in an environment of rising interest rates, due to tighter margins. The increase in competition among a number of large lenders has compressed subprime margins over the last year (*Exhibit 5, Panel B*). Subprime loan rates have been declining while conventional mortgage rates have risen modestly.
- Strong home price appreciation (HPA) has supported cash-out refinancing volumes (*Exhibit 5, Panel C*).

- The use of securitization as a funding mechanism has increased; approximately 80% of new loan originations are now securitized (*Exhibit 5, Panel D*). This has reduced capital constraints and facilitated the entry of smaller lenders.
- The subprime market has expanded to include borrowers traditionally covered by Alt-A lenders. This is evidenced by collateral trends in the 2002–2004 vintages. Average loan size has increased by around 30%, while limited documentation loans have increased from 27% to 38% from 2001 to 2004.

Servicing portfolio growth has mirrored the recent increase in issuance. Servicing portfolios have grown

EXHIBIT 6

Top Lenders and Servicers—First Half 2004

1H04 Rank	Subprime Lenders	Mkt. Share 1H04	Origination Volume (\$bn)		Primary Servicers	Mkt. Share 1H04	Servicing Portfolio (\$bn)	
			2003	1H04			2003	1H04
1	Ameriquest	15.10%	39.0	38.2	Ameriquest	8.70%	49.0	71.8
2	New Century	8.20%	27.4	20.7	CountryWide	7.10%	39.3	58.0
3	CountryWide	6.50%	19.8	16.4	Household	6.80%	51.4	56.2
4	Household	6.50%	20.3	16.3	Citifinancial	6.60%	50.4	54.0
5	First Franklin	5.70%	20.1	14.4	Option One	5.90%	41.4	48.3
6	Washington Mutual	5.50%	19.9	13.9	Homecomings	5.90%	44.2	48.2
7	Option One	4.70%	20.1	11.9	Chase	4.40%	27.9	36.4
8	Wells Fargo	4.50%	16.5	11.4	Ocwen	4.20%	37.5	34.8
9	CitiFinancial	4.40%	21.4	11.1	HomeEq	4.10%	24.0	33.9
10	Fremont	4.30%	13.0	11.0	Wells Fargo	3.20%	12.7	26.1
11	GMAC RFC	4.30%	14.0	10.9	Washington Mutual	2.90%	19.3	23.7
12	WMC	2.90%	8.2	7.3	National City	2.70%	18.4	22.2
13	Accredited	2.30%	8.0	5.7	Select Portfolio	2.60%	28.6	21.0
14	Aegis	2.20%	8.2	5.6	New Century	2.50%	11.6	20.9
15	BNC	2.00%	7.0	5.0	Litton Loan	2.20%	12.3	17.9

Source: Inside B&C Lending.

sharply for large originators that typically retain the servicing of their originations (e.g., Ameriquest, Countrywide). Exhibit 6 lists the top issuers and servicers of subprime mortgages in the first half of 2004.

The securitized market saw a major technological boost in 2001, when issuers began to monetize the senior component of the residual cash flow in the form of a net interest margin security. This enables ABS issuers to maximize deal issuance proceeds and reduce or eliminate their residual risk position. The rapid growth of NIM securitizations prompted a number of Wall Street dealer conduits to enter the securitized HEL market. Dealer presence has been increasing, to account for around 30% of the HEL market in 2004.

These dealer shelves aggregate collateral from originators through secondary market whole-loan purchases. This improved liquidity and efficiency in the secondary whole-loan market has prompted product standardization across issuers and greater third-party due diligence.

A growing number of mortgage originators have organized themselves as mortgage real estate investment trusts. Two key factors make REIT conversion a more compelling option:

Lenders are seeking to reduce gain-on-sale earnings

volatility accounting to boost equity market valuations. Lenders who retain mortgages on balance sheet effectively convert one-time gain-on-sale income to spread income that is recognized over the life of the mortgage. As a lender increases the on-balance sheet portfolio, the tax-advantaged status for the REIT-eligible spread income starts to look more attractive.

The equity market has received REIT IPOs very positively, as REIT stocks offer dividend yields of around 10%–12%.

II. LOAN CHARACTERISTICS

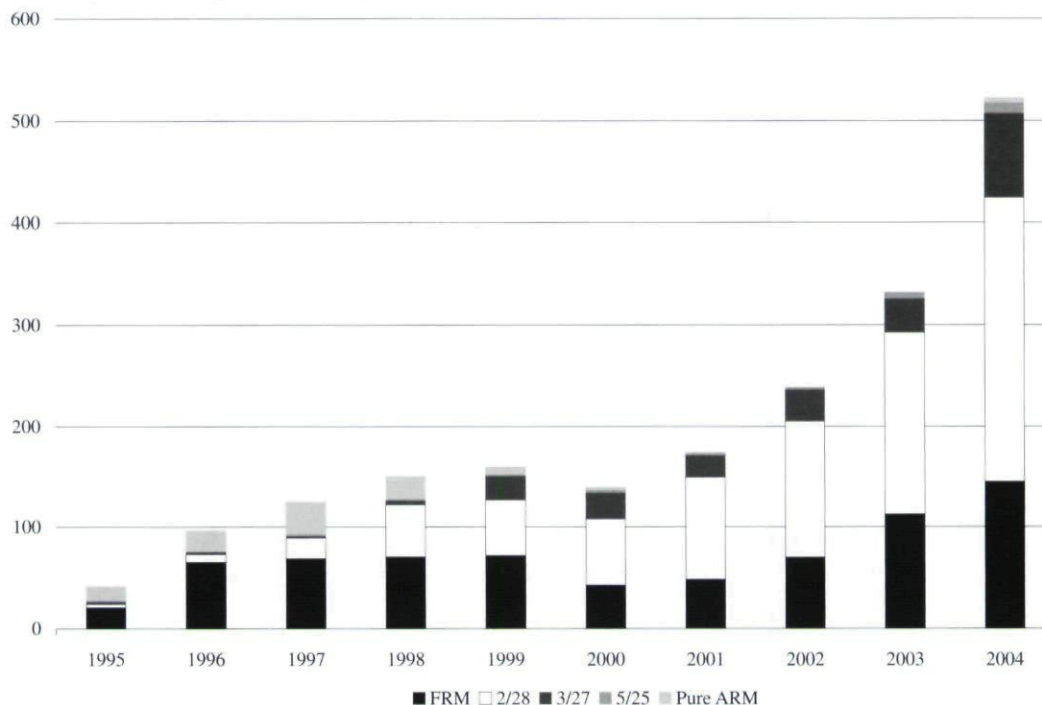
HEL borrowers can choose among different combinations of interest payment options, amortization types, and loan terms.

Interest Payment Types

Borrowers can choose to pay a traditional fixed interest rate over the life of the mortgage, which is typically 30 years. They can also choose a fixed-rate payment for an initial period, and reset into a floating rate over the remaining life of the mortgage.

EXHIBIT 7

Historical Loan Originations by Interest Payment Type (\$ billions)



Hybrid adjustable-rate mortgages (hybrid ARMs, 70% by issuance): Hybrid ARMs have a fixed coupon for an initial period and a floating-rate coupon after a specified reset date (typically indexed to six-month LIBOR and reset every six months). Most common is the 2/28 hybrid (60% by issuance), which has a 2-year fixed-rate period and a 28-year floating-rate period. In less popular variants, the length of the initial fixed-rate period is no years (pure ARM), three years (3/27 hybrid), or five years (5/25 hybrid). Hybrids are the dominant loan type for subprime mortgages. Borrowers typically have a short time horizon, hoping to refinance into a lower-rate prime mortgage with improvement in their credit records.

Fixed-rate (30% by issuance): FRMs are fixed-coupon, level-pay mortgages with typical loan terms of 30 years. They formed a large proportion of the market of the market before 1996 (see Exhibit 7).

Amortization Type

Borrowers can choose between two amortization schedules:

Level pay: These are fully amortizing mortgages with an amortization period as long as the term of the mortgage. Most fixed-rate and around 90% of hybrids are level-pay mortgages.

Interest-only (IO) loans: An IO borrower pays interest only for an initial period (typically ranging from two to ten years) with amortization of the principal over the remaining 20–28 years of the mortgage. For example, for a five-year IO loan, the borrower makes interest only payments for the first five years, with no principal amortization. At the end of five years, the borrower faces an increase in monthly payments when principal begins to amortize over a 25-year schedule. Since almost all recent IO loans are also hybrids, the borrower faces two payment resets over the life of the loan—the rate reset (interest payments), and the amortization reset (principal payments).

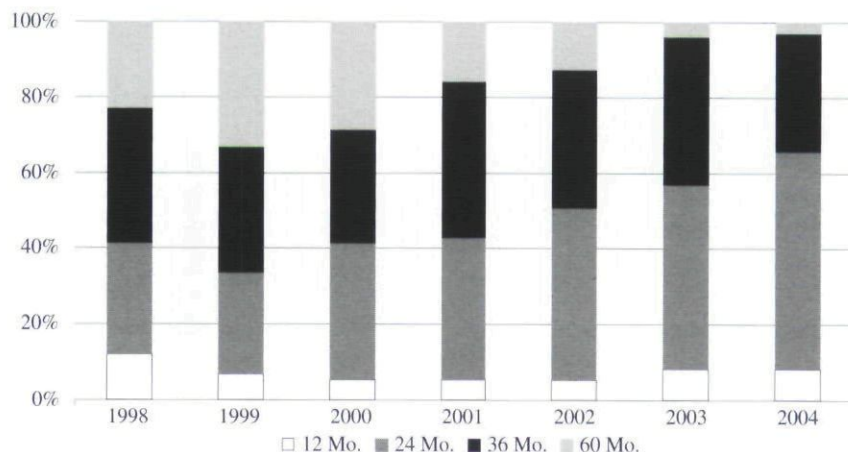
IO products were traditionally used in the prime market to produce tax advantages for borrowers. They have gained in popularity in the subprime market since 2004 (15%–20% of issuance).

Prepayment Penalties

Most subprime mortgages (80% of hybrids, 65% of fixed-rate mortgages) are originated with prepayment penalties during the first few years; these limit borrower prepayments and protect the lender's interests. The lender compensates the borrower by charging a lower rate (typically 50 to 75 bp lower). Fixed-rate mortgages typically specify a penalty period for the first three years, while the

EXHIBIT 8

Overall Prepayment Penalty Distribution



length of the hybrid penalty period usually coincides with the initial fixed-rate period (see Exhibit 8). The amount of the penalty is usually six months of interest payments on 80% of the prepaid balance (2.5 to 3.0 points).

Interest Rate Caps and Floors

To protect hybrid borrowers from large increases in interest rates during the floating-rate period, hybrid loans entail various interest rate caps. Hybrid loans typically specify three interest rate caps: initial caps, periodic caps, and lifetime caps.

- Initial caps limit the increase in coupon at the first reset date over the initial fixed rate (typically 1.5%-3%).
- Periodic caps limit the change in rate from the last period's coupon to a specified amount (typically 1%).

- Lifetime caps limit the absolute level of interest rates to a specified maximum over the life of the loan (typically 6% over the initial fixed rate).

Hybrid loans also typically are subject to an interest rate floor, which limits the minimum mortgage rate to the initial fixed rate.

Property Type and Loan Purpose

HEL collateral can be further segmented by loan purpose and property type (see Exhibit 9). The representation of single-family and rate-refinance mortgages has remained largely constant across time.

III. COLLATERAL TRENDS

The subprime market has shifted to higher-credit quality loans as evidenced by recent trends in collateral

EXHIBIT 9

2004 Issuance by Property Type and Loan Purpose

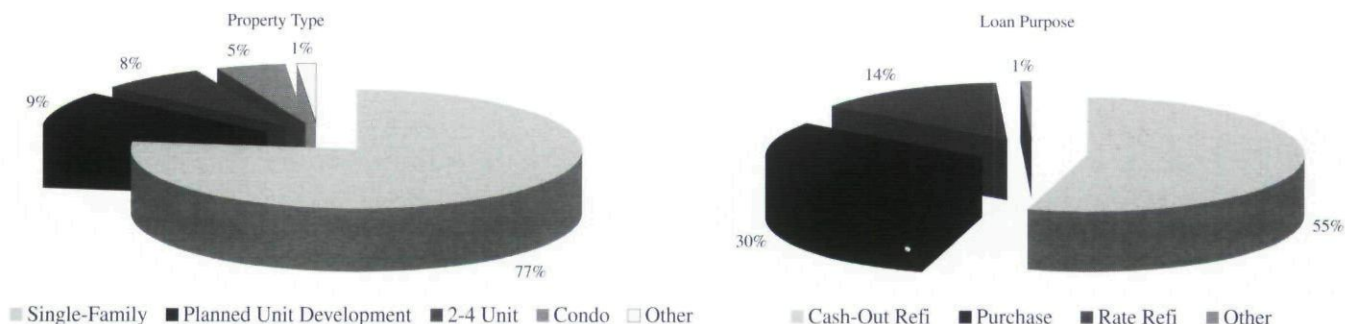
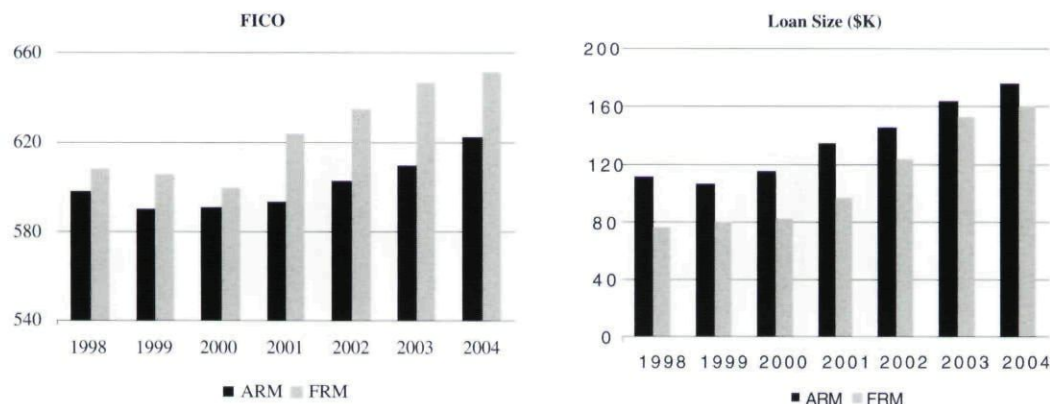


EXHIBIT 10

Historical FICO Scores and Loan Size



Source: Lehman Brothers, Loan Performance.

characteristics (*Exhibit 10*). Since credit bottomed out in 2000–2001, FICO scores (particularly for fixed-rate products) have risen by around 30 points.¹ Over the past three years, overall loan size has increased from \$120,000 to \$150,000. This shift away from the lower-tier subprime borrowers has been prompted by two factors. First, due to fixed costs of liquidation (such as legal fees, refurbishing), low-balance loans are associated with higher loss severities. Second, lenders have avoided the lower-tier subprime market due to growing concern as to predatory lending tactics with regard to high-cost loans to weak credit quality borrowers.

The recent improvement in borrower quality has been accompanied by an increase in borrower leverage (see *Exhibit 11*). This is evidenced by higher LTVs, falling loan documentation levels, and largely constant debt to income ratios (DTIs) (even in a declining interest rate environment). Thus, while subprime homeowner characteristics have evolved to show stronger credit quality, we also see a more levered borrower.

IV. COLLATERAL PERFORMANCE

Its blend of prepayment and credit characteristics positions the home equity loan industry as a unique cross-over sector between mortgage and asset-backed securities. We examine the historical performance of HEL collateral and highlight the key performance drivers. Analysis of HEL securities depends on assumptions as to three key performance variables—voluntary prepayments, involuntary prepayments (defaults and delinquencies), and severity rates.

Voluntary Prepayments

Voluntary prepayments can result from rate refinancing, cash-out refinancing, credit curing, and housing turnover. These components have different drivers:

- Rate refinancing: Borrowers prepay because of a decline in prevailing HEL rates.
- Cash-out refinancing: Borrowers tap the built-up equity in the house and take a larger loan.
- Credit curing: Homeowners with improved credit can refinance to a lower mortgage rate even as market rates remain constant.
- Turnover: Borrowers move and prepay their mortgages.

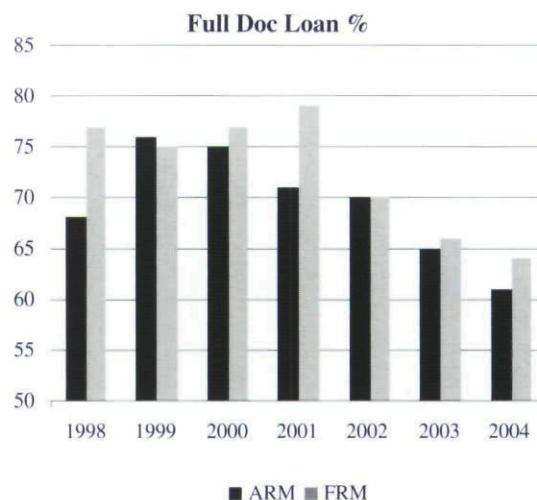
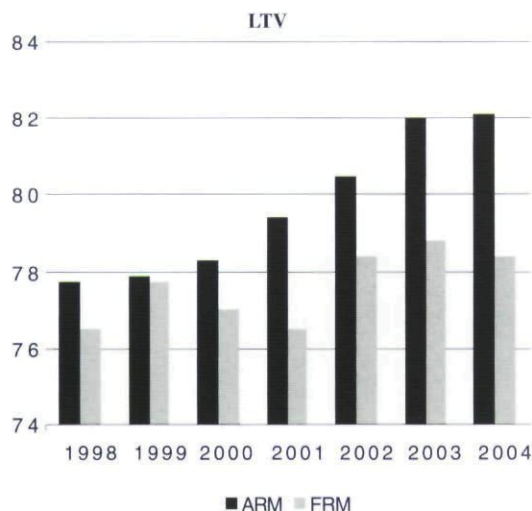
The shape of the voluntary prepayment curve depends largely on loan type. Prepayments for fixed-rate HEL have historically increased over the first two years to a 25%–35% constant prepayment rate (CPR) before stabilizing at those levels. Hybrid prepayments follow a pattern typically related to the length of the initial fixed-rate and prepayment penalty period (see *Exhibit 12*). Hybrid voluntary prepayments are faster than fixed-rate due to a self-selection bias; many borrowers with a shorter time horizon choose a hybrid over a 30-year fixed-rate product.

Voluntary prepayments are driven by factors as follows.

Borrower characteristics: Poorer credit quality borrowers are less sensitive to rate change refinancing opportunities than better-credit borrowers because they have fewer financing alternatives and are not as sophisticated financially. The different dimensions of borrower credit quality (e.g., FICO, LTV, DTI) can be

EXHIBIT 11

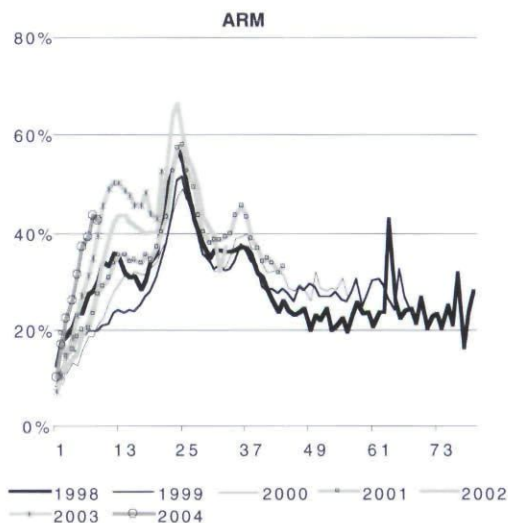
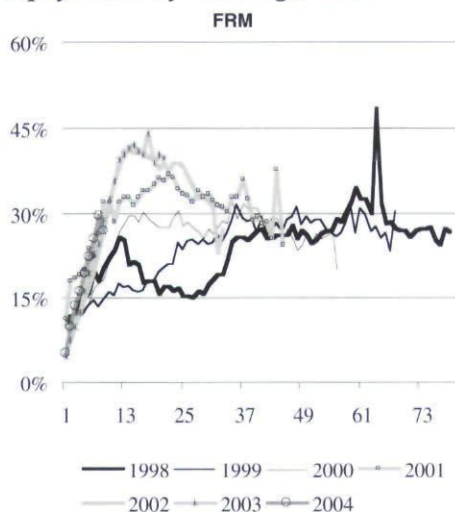
Historical LTV and Documentation Trends



Source: Lehman Brothers, Loan Performance.

EXHIBIT 12

Voluntary Prepayments by Deal Age, CRR



Source: Lehman Brothers, Loan Performance.

largely captured by a single variable: spread at origination (SATO). SATO measures the difference in the mortgage rate between the specified loan and a constant-quality subprime mortgage rate. Assuming that lenders price borrower risk efficiently, a higher SATO implies a poorer-credit borrower.²

Exhibit 13 graphs refinancing sensitivity across a high- and low-quality borrower pool distinguished by SATO.

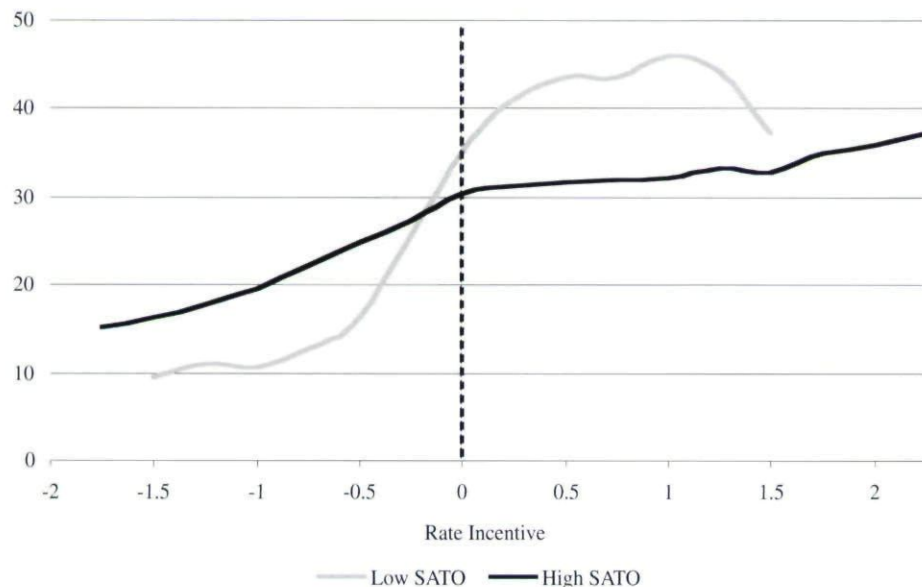
Prepayment penalty: Loans with prepayment penalties prepay more slowly; the 2.5 to 3.0 point penalty provides a significant disincentive during the penalty period.

Moreover, borrowers with a low propensity to prepay self-select these loans. Borrowers with penalty loans who postpone their prepayments typically prepay immediately after the end of the penalty period, thereby causing a transitory spike in prepayments.

Hybrid prepayments display a sharp spike after the prepayment penalty period (which usually coincides with the initial fixed-rate period), and CPRs typically reach as high as 70–80 CPR for a few months. Fixed-rate prepayments also demonstrate a prepayment spike after 36 months of loan age, which is the typical penalty period (Exhibit 12).

EXHIBIT 13

Rate Sensitivity by Borrower Credit Quality



FRM 3-year prepayment penalty, 15-30 WALA.
Source: Lehman Brothers, Loan Performance.

Loan size: Since the dollar refinancing incentive increases with loan size, there is greater prepayment sensitivity to interest rates for larger loans (see Exhibit 14).

Loan age/seasoning: Voluntary prepayments increase with loan age for three reasons. First, cash-out refinancing activity increases over time as borrowers build up equity due to accumulated home price appreciation. Second, credit curing becomes viable after the borrower establishes a history of good credit for two to three years. Third, turnover increases with loan age, as most homeowners do not shift within the first few years of taking a new mortgage.

Interest rates: Prepayments of premium mortgages are a function of the amount of rate incentive, defined as the difference between the origination and the current market rate. Subprime prepayments are less sensitive to a change in interest rates than conventional prime mortgages. This is largely explained by the lower loan balances (limiting the dollar incentive to refinance), higher fixed costs of refinancing (cost of origination), and minimal sophistication of these borrowers.

The typical relationship between voluntary prepayments and rate incentive is shown in Exhibit 15.

Home price appreciation: Cash-out refinancings increase during periods of strong home price appreciation, as borrowers tap the built-up equity in their property to retire more expensive debt or to meet big ticket expenses. In addition, strong home price appreciation

(HPA) allows borrowers to reduce mortgage rates even when market rates are unchanged by lowering the LTV (Exhibit 16, Panel A).

The impact of HPA varies with the interest rate environment since borrowers are more likely to be able to afford a larger mortgage and cash out if rates have declined. Thus, the impact of HPA on prepayments is more pronounced for in-the-money mortgages and relatively muted for out-of-the-money ones (Exhibit 16, Panel B).

Other economic variables:

Other economic variables such as unemployment and income growth also impact voluntary prepayments. An improving credit environment with low unemployment and strong income growth would boost turnover due to higher economic activity and an increased ability to trade up to bigger houses.

Involuntary Prepayments—Defaults and Delinquencies

Forecasting involuntary prepayments (defaults) is critical for the credit analysis of subordinate and mezzanine HEL securities. Delinquency levels are particularly important in HELs, since delinquency triggers are a key determinant of the deal principal paydown.

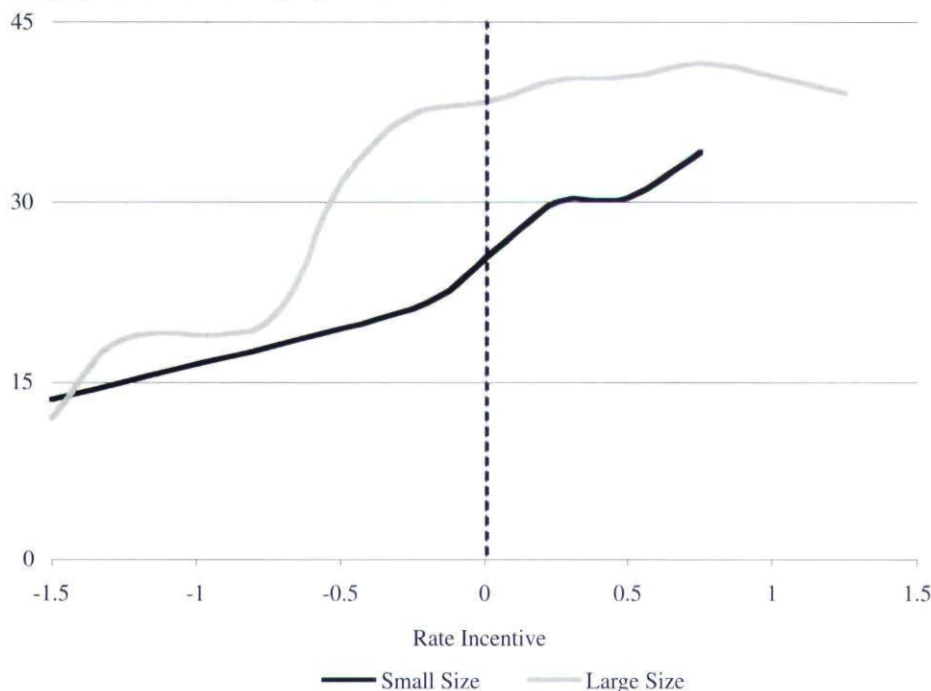
Historical default and delinquency performance by vintage is displayed in Exhibits 17 and 18.

Definitions: The two most common definitions of defaults are 1) loan terminations with losses, or 2) loans terminating from the 60+ delinquency bucket. The definition of defaults is not standardized across issuers and servicers and varies by REIT. Moreover, a number of trusts do not report defaults and severities individually, but instead state final loss rates.

It is important we specify a standard definition for defaults to compare performance across different trusts and loan characteristics. Since accurate loss information is often not available at the loan level, we define defaults as loan terminations from the 60+ delinquency bucket. This definition includes loan terminations that are resolved with no losses (due to adequate home equity or mortgage insurance), and thus result in less severe loss.

EXHIBIT 14

Prepayment Sensitivity by Loan Size



FRM 3-year prepayment penalty, 15-30 WALA.
Source: Lehman Brothers, Loan Performance.

Defaults and delinquencies are driven by several factors:

Borrower characteristics: Indicators of borrower credit quality such as length of employment, credit history, and debt-to-income ratio provide an indication of expected default rates. Borrowers with major derogatory information on their credit reports (i.e., at least one 90-day delinquency) are more likely to default. First-time homeowners also default at higher rates than those who have owned homes before. These dimensions of borrower credit quality can be largely captured by SATO.

Defaults and delinquencies for a high- and low-quality borrower pool (distinguished by SATO) are shown in Exhibit 19. The assumption that lenders price borrower risk efficiently is reasonable, since SATO adequately distinguishes credit quality across loans.

Loan age/seasoning: Defaults are relatively rare during the first year of a loan. Total delinquencies rise over time and stabilize at around three years of deal age, with 60+ delinquencies settling in at 25%-30% (percent of current balance) for the overall deal.

This high percentage is explained by a gradual shift in the pool toward terminally delinquent borrowers. The borrowers who remain in the pool are typically of average

credit quality, since the good-quality borrowers usually prepay and the poor-quality borrowers typically default as the mortgage seasons.

Home price appreciation: Home price appreciation is an important driver of defaults and delinquencies since it determines the current loan-to-value ratio. At higher current LTVs, borrowers have less equity in the home, and the incentive to default becomes greater.

On average, according to a cross-sectional metropolitan statistical area study, a decline in HPA by 3 percentage points (a difference of around 10% in a loan's current LTV at deal age 36) increases default rates by around 20%.

Economic conditions: Economic variables such as employment growth have a significant impact on credit performance. A 2 percentage point reduction in local employment growth is estimated to

increase defaults and delinquencies by 3% to 4% (see Exhibit 20).

Severity Rates

Loss severity rates, which measure the percentage loss on liquidations, are driven by three key components: 1) liquidation expenses (e.g., legal fees, foreclosure fees); 2) delinquent principal and interest (P&I) advanced by the servicer; and 3) property market value decline (if any). The length of the foreclosure process affects liquidation expenses and the P&I advanced, while accumulated home price appreciation determines the equity cushion available to cover market value declines.

Exhibit 21 graphs historical severity rates by loan type. Severity rates are driven by several factors.

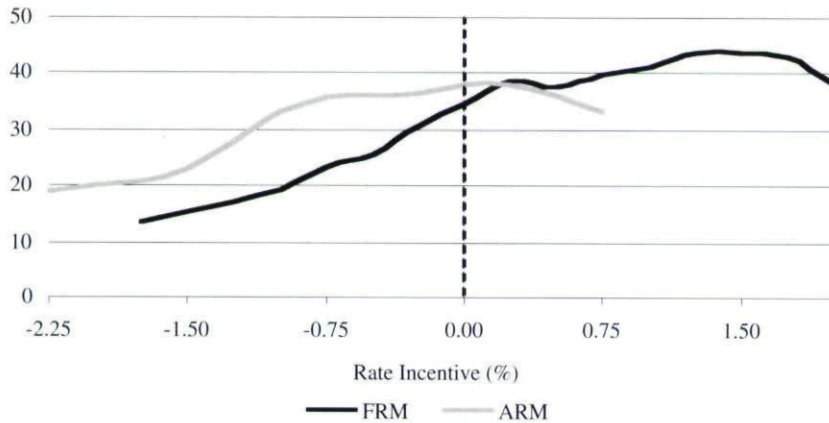
Loan size: Because of fixed costs such as legal fees and refurbishing in liquidating units, severities are greater on smaller loans on a percentage basis.

Amortization type: Loans with an initial interest-only period have more average principal outstanding at the time of default. This amortization gap can make IO loss severities 2%-3% higher.

Mortgage insurance: Certain HEL deals use mort-

EXHIBIT 15

Total Prepayments (CPR) by Rate Incentive (%)



FRM: 15-30 month weighted average loan age (WALA), ARM: 15-20 WALA, prepayment penalty loans.
Source: Lehman Brothers, Loan Performance.

gage insurance policies to limit the amount of loss (specified by the policy) in the event of default. The presence of mortgage insurance results in lower effective severity rates due to insurance reimbursements by the mortgage insurer.

Loan age/seasoning: Severity rates tend to rise with loan age and stabilize at around 30% by 30 months. There are a higher proportion of long foreclosure timeline loans among defaulting loans later in the life of the deal. Longer liquidation timelines entail higher P&I advancing, liquidation fees, and a possible lack of upkeep by the defaulting borrower.

Accumulated home price appreciation: Accumulated HPA reduces severity rates by providing an equity cushion

to cover liquidation expenses and P&I advancing. In addition, loans with strong HPA typically have shorter liquidation timelines, since short sales are often used as the liquidation mechanism. This further reduces the liquidation cost.

Originator/Servicer Effects

Variation in underwriting and verification practices across originators is an important determinant of collateral performance that is often not evident from a loan tape. Subprime lenders use a variety of ways to determine the accuracy and completeness of information while making a loan. The two key processes during underwriting are property appraisal and income verification.

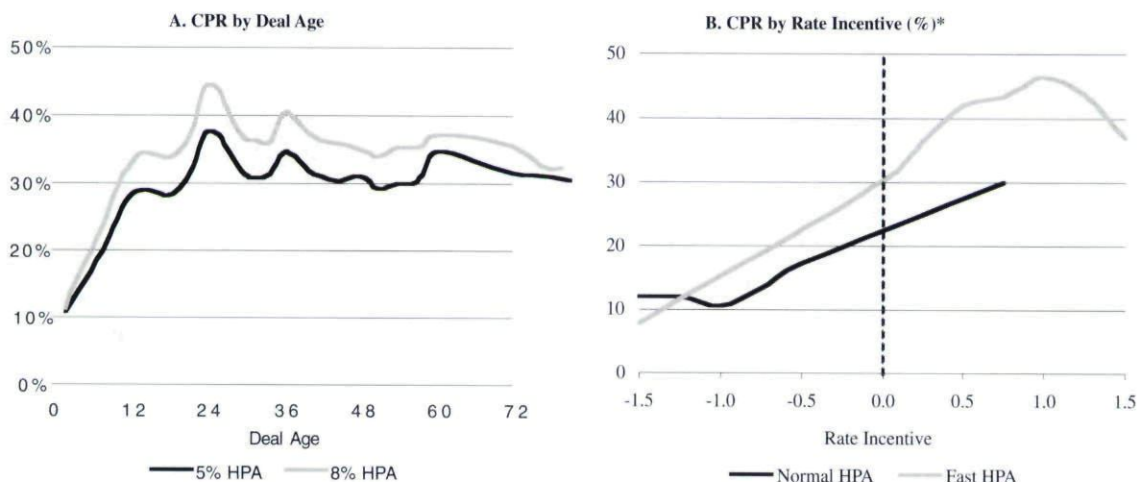
These are gaining increasing importance due to the prevalence of limited/ stated documentation and high LTV loans. The effectiveness of underwriting exceptions for fringe borrowers is another key determinant of credit performance.

The relatively high delinquencies and defaults of subprime loans underscore the importance of strong servicing capabilities for loss mitigation and recovery (see Exhibit 22). A servicer working on a delinquent loan wants to maximize the present value of the loan's future cash flows to the trust. This is typically achieved through two parallel strategies.

First, the servicer tries to get the borrower back on

EXHIBIT 16

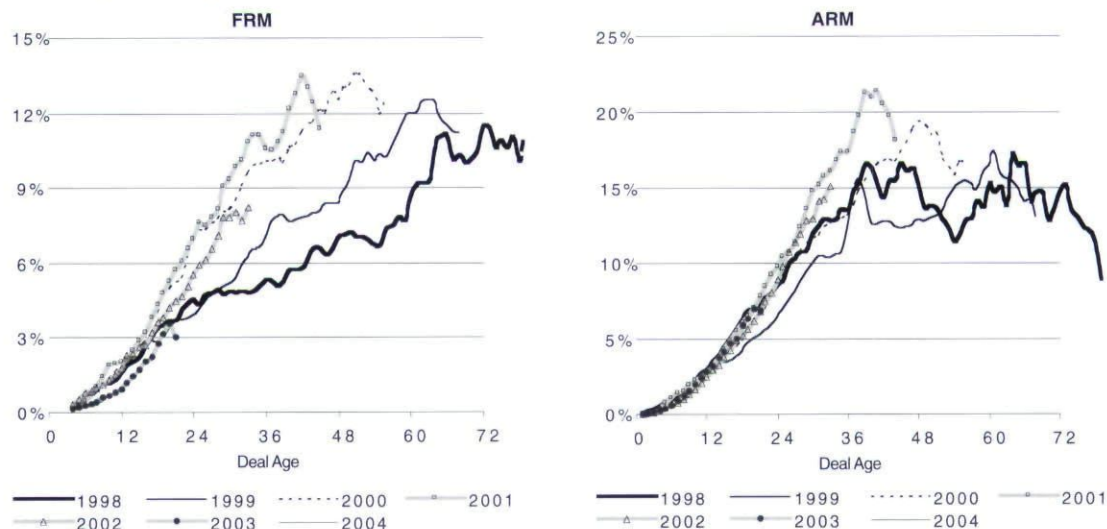
Total Prepayments (CPR) by HPA



* FRM 3-year prepayment penalty, 15-30 WALA.
Source: Lehman Brothers, Loan Performance.

EXHIBIT 17

Defaults (CDR) by Deal Age



Source: Lehman Brothers, Loan Performance.

track. This could require some help in the form of a forbearance plan or a loan modification. Then, if the borrower cannot cure the delinquency, the servicer must follow the necessary legal steps to liquidate the collateral to satisfy the borrower's obligations. A balanced execution of both these strategies is critical to maximize trust cash flow.

These originator/servicer effects can lead to significant differences in performance across loans that would appear similar on paper, give their characteristics.

V. STRUCTURAL FEATURES OF HEL SECURITIES

HEL securities are the most structurally complex of the core ABS sectors. The interaction of prepayments, defaults, and delinquencies with the structure creates unique paydown mechanics for HEL securities.

Before 1997, most HEL ABS transactions used bond insurance from AAA-rated monoline insurers as a form of credit enhancement. The growing liquidity in the ABS market after 1997 led to a gradual shift toward senior/subordinate structures. The 1998 liquidity crisis temporarily halted this shift, but senior-subordinated structures grew in popularity following the restructuring among lenders in 1999-2001.

The recent shift toward senior-subordinate structures has been fueled in part by strong demand from government-sponsored entities, foreign investors, and structured finance collateralized debt obligations. The securi-

tized market has also developed from mostly pass-through tranches at an AAA level, to time-tranching the senior AAA-rated sequential securities.

The typical capital structure of a new issue HEL deal is shown in Exhibit 23.

Most current home equity deals (around 90%) issue floating-rate securities (indexed to one-month LIBOR) backed by a combination of fixed and hybrid collateral. Deals use senior/subordinate structures, overcollateralization, excess spread, performance triggers, mortgage insurance (MI), and external insurance (monoline wraps, letters of credit) as different forms of credit enhancement. We describe each of these in detail below.

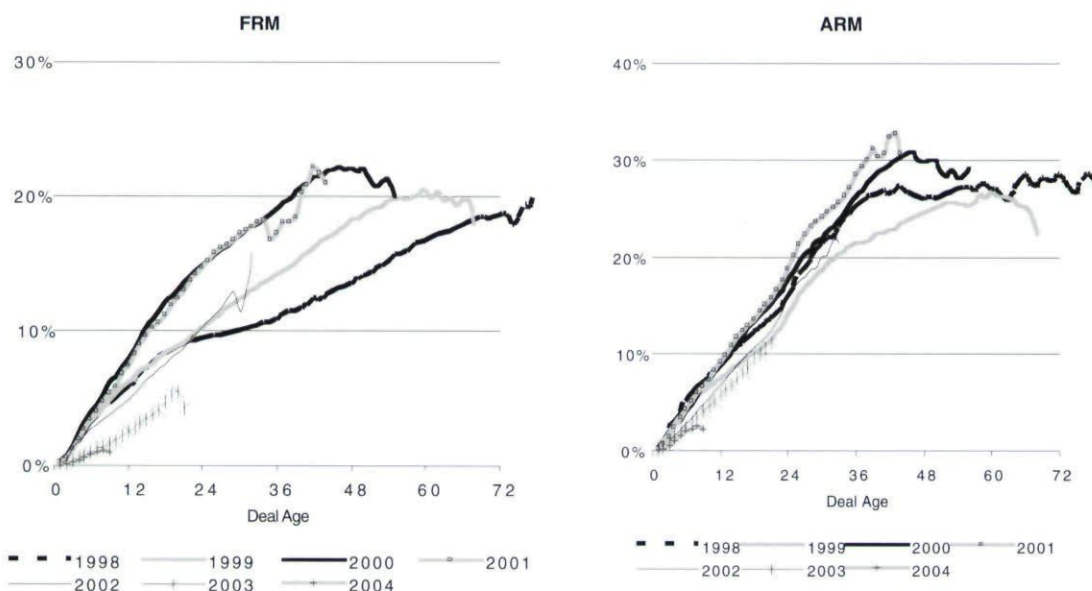
The collateral backing a deal is usually divided into different groups, with senior bonds linked to the cash flow from a particular group. Subordinates are paid the remaining cash flow from all groups. Cash flow is allocated to securities through three different allocation waterfalls: interest, principal, and excess cash flow. Exhibit 24 describes these payment mechanics for a typical HEL deal structure.

Interest Waterfall

Available proceeds in the interest waterfall include the gross weighted-average coupon (gross WAC) collected from the loans plus servicing advances for delinquent interest, and interest recovery from liquidations. Servicing fees, servicer interest advances, MI insurance premiums (if any), and other fees (e.g., bond insurance)

EXHIBIT 18

60+ Delinquencies (% cur bal) by Deal Age



Source: Lehman Brothers, Loan Performance.

are paid at the top of the waterfall. The servicing fee is typically set at 50 basis points per year.

Most servicers provide liquidity to the trust by advancing principal and interest (P&I) for delinquent loans as long as the advanced amount is considered recoverable. The servicer recovers this P&I advancing either through the monthly collections account when a loan becomes current, or from the liquidation proceeds following a default.

The amount remaining after meeting these payments (net WAC) flows into the interest waterfall. Interest is typically paid to the bonds sequentially in order of priority up to the stated bond coupon. Floating-rate bonds are typically promised a coupon (1MoLIB + discount margin) that is limited to the net WAC of the collateral. This discount margin typically steps up after the cleanup call distribution date if the option holder does not call the deal. The limit of the bond coupon to the net WAC of the collateral is also called the *available funds cap* (AFC) on these deals.

The net interest collected from the collateral typically exceeds the coupon payment to the bonds early in the life of the deal. For example, if the collateral net WAC is 6.5% and the weighted-average DM of the bonds is 50 bp, the excess spread at origination (assuming 2.5% 1MoLIB) is 3.5% [$6.5\% - (2.5\% + 0.5\%)$]. The difference between the collateral net WAC and the interest paid to the bonds (excess spread) flows into the excess spread waterfall.

Principal Waterfall

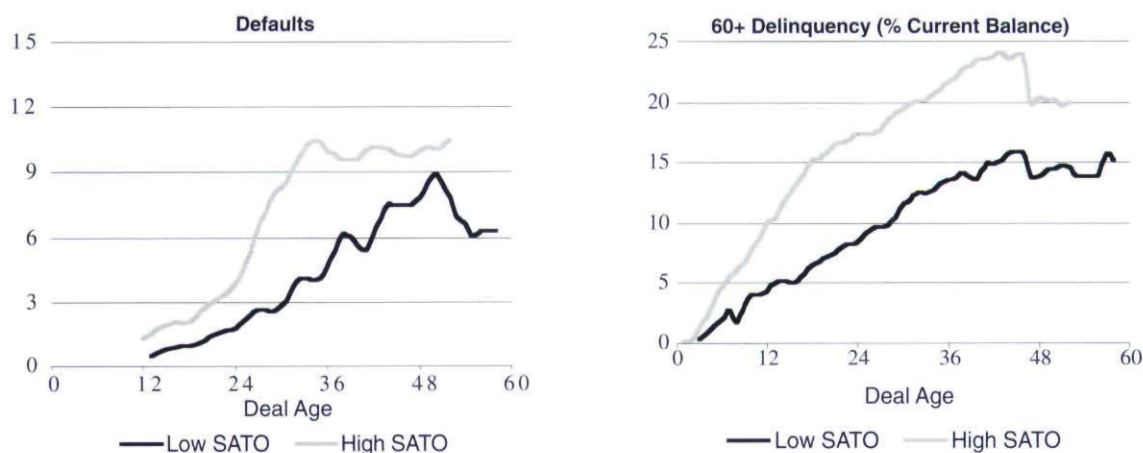
The scheduled principal, prepaid principal, and principal recovery from liquidations flows into the principal waterfall. The principal payment mechanism varies across the life of the deal. During the first 36 months (the lockout period), senior bonds are paid principal sequentially in the order of credit priority, and the mezzanine and subordinate bonds are locked out. After the stepdown date, conditional on the meeting of performance triggers, principal is allocated to maintain a target current credit enhancement for the senior and subordinate bonds (typically twice the initial credit enhancement). If triggers are failed in any month, the deal switches back to paying sequentially.

Bonds start to take losses from the bottom of the capital structure upward, in reverse credit priority, when the collateral balance is reduced below the total outstanding bond balance.

The collateral balance backing the deal is typically higher than the total principal balance of the bonds outstanding. This overcollateralization (OC) serves as a form of credit enhancement as it provides a first cushion to absorb collateral losses. The OC might either be funded initially, or it may build up over time by applying excess spread to the payment of bond principal (referred to as the *turbo* feature). Any collateral principal remaining after paying down all the securities (ending OC) is paid to the residual holder.

EXHIBIT 19

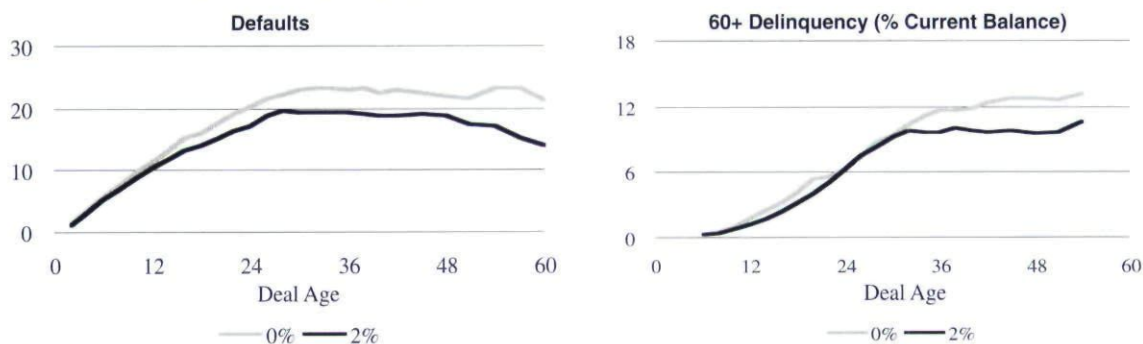
Defaults and Delinquencies by Borrower Credit Quality



FRM, 2000 vintage, no prepayment penalty.
Source: Lehman Brothers, Loan Performance.

EXHIBIT 20

Default and 60+ Delinquencies by Employment Growth (%)—HPA-Adjusted



Source: Lehman Brothers, Loan Performance.

The deal paydown attempts to maintain the OC at a specified overcollateralization target percentage. The OC target is typically specified as a percentage of the original collateral balance before the stepdown date. After the stepdown date, conditional on passing triggers, the OC target is specified as a percentage of the current collateral balance. If the target OC after the stepdown date is lower than the initial target OC, the OC steps down to the new target, causing a release of principal to the residual/NIM holder. Deals typically specify a minimum OC floor at 0.5% of the original balance.

The process is described in Exhibit 25.

Excess Cash Flow Waterfall

The net collateral interest (net WAC) in excess of the amount required to pay bond interest flows into the excess

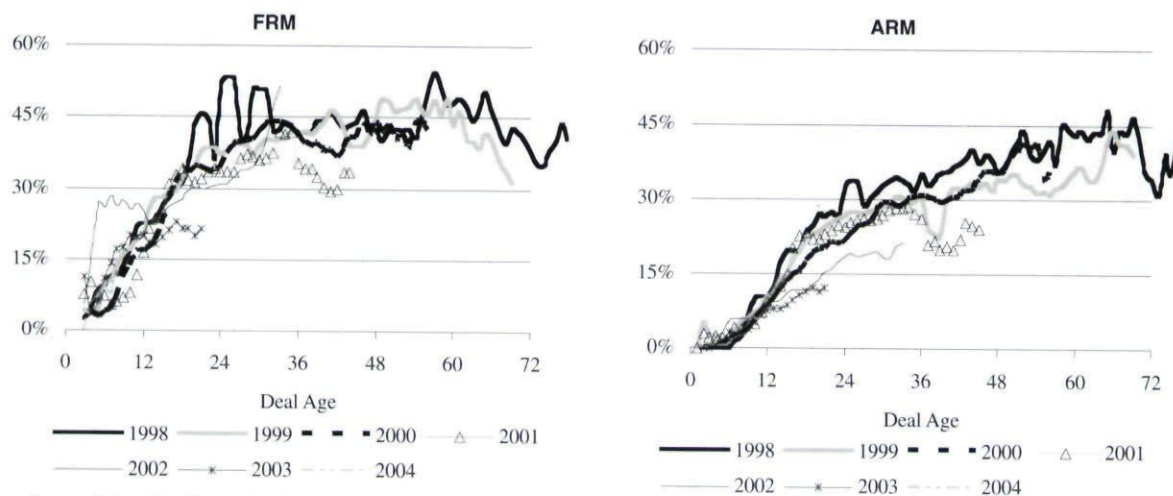
spread waterfall. This excess spread is available to build overcollateralization, and cover basis risk shortfalls and bond losses before paying the residual holder. In the event the current OC is lower than the OC target (because of collateral losses or initial OC ramp-up), any excess cash flow goes to pay principal to the bonds to attain the target OC (turbo principal). Thus, excess spread is available to meet any collateral losses before the deal experiences an erosion in OC.

There is some limited cross-collateralization among groups since the excess cash flow from one group can offset losses of another group to maintain the overall overcollateralization target of the deal. In the event of an interest shortfall because the bond coupon is limited to the net WAC of the collateral (basis risk shortfalls), the excess spread is available to meet this shortfall.

The excess spread also covers any unpaid basis risk shortfalls accruing from previous payment months and is

EXHIBIT 21

Severity (Pre-MI) by Deal Age



Source: Lehman Brothers, Loan Performance.

EXHIBIT 22

Subprime Servicing Entities

The HEL sector has three types of servicing entities with different responsibilities:

- **Primary servicer:** Responsible for the different aspects of loan administration — e.g., payment collection, loss mitigation, foreclosure, liquidation. The primary servicer is also responsible for submitting monthly remittance reports and advancing principal and interest to the trust. Most transactions have more than one primary servicer.
- **Special servicer:** Performs the specialized function of handling seriously delinquent loans. Thus, the special servicer focuses on loss mitigation, and managing defaults and REO (real estate owned) properties.
- **Master servicer:** Responsible for overseeing the different subservicers (primary and special) present on the transaction. Thus, the master servicer monitors the monthly remittance reporting and aggregation, and tracks the movement of funds among the different accounts. In addition, the master servicer handles the event of a subservicer bankruptcy/inability to service by handling servicing for an interim period before assigning a new subservicer.

available to pay back any bond principal losses experienced in previous months. The excess spread remaining after meeting these payments goes to pay the residual/net interest margin holder.

Trigger Mechanics

HEL deals include provisions to release principal to the subordinate tranches after an initial lockout period if the pool meets certain performance tests or triggers. Triggers provide additional credit protection to the senior bonds by directing a higher proportion of the available cash flow to senior bonds if performance deteriorates. This enhances senior credit support as the subordinate classes increase as a percentage of the total collateral.

Transactions typically specify these performance

tests according to both cumulative losses (cumulative loss trigger event) and current delinquencies (delinquency trigger event).

- The cumulative loss trigger fails if the cumulative losses exceed a specified threshold. The threshold is generally specified as a percentage of the original balance of the deal and follows a schedule typically stepping up from month 36 to months 72–84. The threshold of the cumulative loss trigger is static, and does not change with the performance of the deal.
- The delinquency trigger threshold is typically specified as a percentage of the current senior enhancement of the deal. For example, the delinquency trigger might be specified to fail if the 60+ delinquencies are greater than 50% of the current senior

credit enhancement. Thus, the 60+ delinquency trigger threshold changes, depending on the current senior enhancement.

The dynamic nature of the delinquency threshold typically toggles this trigger intermittently between passing and failing over the life of the deal. An example should explain this. In a payment month when the 60+ delinquency trigger fails, the deal pays principal sequentially. This leads to an increase in senior credit enhancement, which in turn raises the delinquency trigger threshold (specified as a percentage of the senior enhancement). This delinquency threshold rises over the next few distribution dates to a level that exceeds the trigger.

The reverse mechanism then takes hold, as passing triggers causes the senior credit enhancement to fall. The threshold falls to a level that can trigger a subsequent failure at a later payment date. At this point the cycle is repeated.

Net Interest Margins

Issuance of a net interest margin (NIM) security allows the issuer to monetize a portion of the residual position while still maintaining economic exposure to the securitization through a smaller secondary residual position. Thus, an NIM represents the resecuritization of the more senior tranche of the residual (*Exhibit 26*). The growth in popularity of NIM structures has prompted recent transactions that further tranche the NIM into a front-back structure with an AA/A-rated front-sequential and a high leverage back-sequential.

In a typical HEL structure, the NIM may receive cash flow from sources as follows:

- **Excess spread:** The residual holder is entitled to receive the remainder of monthly excess spread once the target overcollateralization level has been reached, and basis risk shortfalls and bond losses have been covered.
- **Interest rate hedges:** HEL transactions include hedge instruments to partly offset interest rate risk. Payments under these interest rate cap/swap hedge agreements (after application to cover basis risk shortfalls and bond losses) are applied to NIMs.
- **Overcollateralization release:** This OC stepdown releases principal cash flow to the residual holder.
- **Prepayment penalties:** The residual holder sometimes holds the Class P security, which consists of prepayment penalty cash flow. While this security is completely separate from the residual and generally not subordinated, it is often included in an NIM securitization.

The risk for the NIM holder arises from a compression of excess spread. This can occur because of faster prepayments, higher losses, and increase in LIBOR. Higher prepayment speeds reduce NIM cash flow with lower excess spreads. This risk is partly mitigated by the offsetting impact of the prepayment penalty cash flow that flows to the NIM. The NIMs are also partly protected from losses since the principal payment windows on the NIMs are typically structured to end by month 24.

Losses in HEL deals are not common early in the life of the deal. Thus, the NIM is exposed to only the front end of the loss curve. The risk from rising interest rates is also mitigated by additional cash flow from the hedge instrument.

EXHIBIT 23

Capital Structure by Issue Year

	1998	1999	2000	2001	2002	2003	2004
AAA	92.3%	93.8%	91.8%	91.2%	89.0%	85.5%	83.5%
AA+	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	1.3%
AA	3.0%	2.3%	3.1%	3.2%	4.0%	5.2%	4.2%
AA-	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%	0.8%
A+	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.7%
A	2.4%	1.7%	2.5%	2.5%	3.1%	4.0%	2.8%
A-	0.1%	0.1%	0.0%	0.1%	0.1%	0.8%	1.7%
BBB+	0.0%	0.0%	0.1%	0.1%	0.3%	1.0%	1.5%
BBB	1.0%	1.0%	1.4%	1.6%	2.5%	2.2%	1.9%
BBB-	1.1%	0.9%	0.7%	0.7%	0.8%	1.0%	1.2%
BB+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
BB	0.0%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%
BB-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

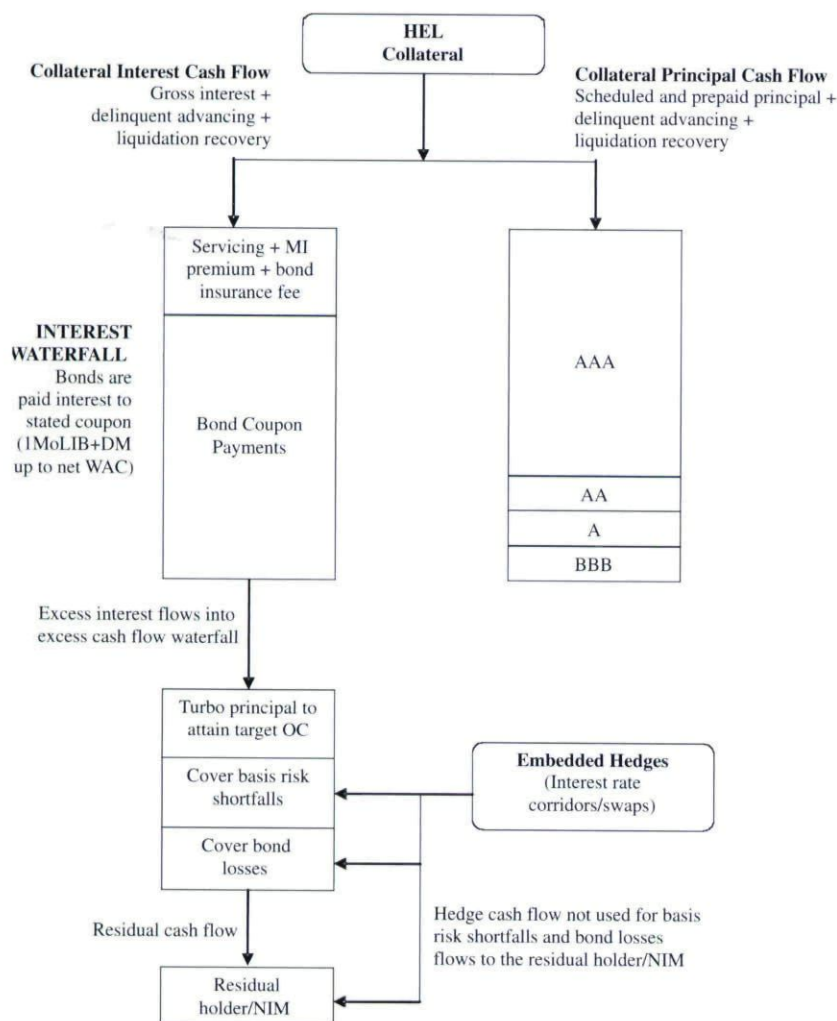
Source: Lehman Brothers, Intex.

Mortgage Insurance

Some HEL deals use mortgage insurance (MI) as an additional form of credit enhancement. Mortgage insurance policies protect a REIT against a limited amount of loss (specified by the policy) in the event of default by the homeowner (*see Exhibit 27*). MI policies dampen effective loss severities and thereby reduce the level

EXHIBIT 24

Deal Waterfall Payment Mechanics



of subordination and overcollateralization required. This is offset by the lower excess interest available in the structure due to payment of the insurance premium from the interest cash flow (senior in the interest waterfall). Recent HEL transactions include mortgage insurance on high LTV loans (usually over 80 LTV), which are associated with higher default frequencies and loss severity rates.

HEL transactions use two types of MI policies:

- **Bulk/Lender-paid:** This is the more common form of MI. The trust purchases mortgage insurance to reduce severity rates on defaults. In this case, the borrower is not aware there is a mortgage insurance policy on the loan. The mortgage insurance premium is paid from the cash flow received by the trust (typically senior in the waterfall). Bulk policies are also referred to as lender-paid

policies since the insurance premiums are paid by the holder of the loans (the trust) instead of the borrower.

- **Borrower-paid:** At the time of making the loan, the lender sometimes requires a mortgage insurance policy before extending credit to the homeowner. While origination-level policies are commonly used by prime mortgage originators, they are not very common among subprime lenders. These are typically referred to as borrower-paid MI policies since the borrower explicitly agrees to pay the insurance premium to the insurance provider.

A strong originator and servicer is important, as claims on covered loans can be rejected (rescissions) or adjusted in case of fraud, bankruptcy, incomplete loan files, or servicer error. The credit risk of the MI provider is not a significant risk factor since the major MI providers (MGIC, Radian, PMI) are AA-rated. In addition, the trust holds cancellation rights in the event of an MI provider rating downgrade.

VI. RATING AGENCY METHODOLOGY

Rating agencies estimate two key variables before rating a transaction. First, they review loan-level data to calculate base case

losses for a pool. Losses will depend primarily on collateral characteristics, but other factors such as an originator's past performance will also affect base case loss estimates. The expected cumulative net loss estimate serves as a foundation for the amount of credit support needed for a given rating category. The rating level assigned represents a multiple of cumulative credit losses expected over the life of the deal.

Second, the agencies determine the amount of excess spread available to build credit enhancement or cover losses.

In addition to losses, the other important assumptions in calculating excess spread credit are interest rates, loss timing, prepayments, collateral weighted-average coupon deterioration, and triggers.

EXHIBIT 25

Overcollateralization Buildup Mechanics

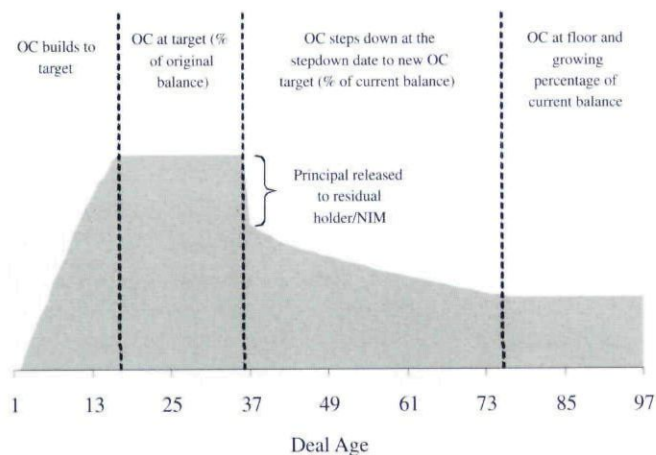
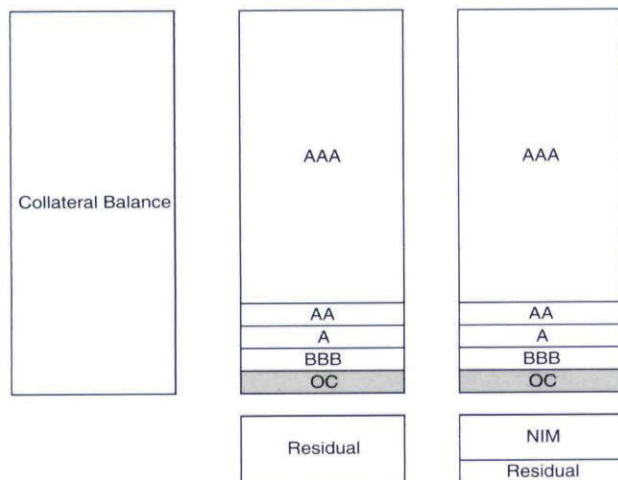


EXHIBIT 26

NIM Securitization Structure



Interest Rates

LIBOR stresses are used to assess the basis risk in HEL transactions. Current HEL transactions typically have 20%-35% fixed-rate loans backing mostly floating-rate bonds. Without adequate hedge protection, when rates rise, a transaction will have less excess spread. Therefore, steeper LIBOR curves will impose a higher level of stress.

In response to growing concerns as to basis risk, all three rating agencies introduced stricter interest rate vectors in 2004 that are significantly steeper than the forward curve (see Exhibit 28). This has resulted in an increase in OC levels and subordination for transactions rated using the new methodology.³

Timing of Losses

The timing of losses can have a dramatic effect on the credit protection of a subordinate bond. Since excess spread is highest in the first few years of a transaction, a flat constant default rate (CDR) or front-loaded loss curve will boost the cumulative losses that a transaction can absorb. Back-loaded loss curves are more stressful for credit (except for NIM bonds). The loss curve assumptions may vary to maintain realistic default rates depending on the total level of prepayments.

Prepayments

The key to more conservative prepayment assumptions is to create basis risk by using a faster prepayment curve for adjustable-rate mortgages and slower speeds for fixed-rate mortgages. Fitch and Moody's are more conservative and achieve a greater basis risk stress by assuming faster hybrid prepayments. S&P's base case voluntary prepayment curve constant repayment rate (CRR) is based on the specific deal prospectus pricing curve, and its involuntary component (CDR) of prepayments is dependent on total cumulative losses.

Weighted-Average Coupon Deterioration

The collateral WAC will tend to drop over time as borrowers with higher interest rates prepay faster than the average subprime borrower (whether voluntarily or involuntarily). The WAC may also deteriorate as the mix of fixed- and floating-rate collateral changes over time.

Triggers

There are practically no differences in rating agency approaches regarding triggers, which are assumed to fail in most cases. They can have a significant effect on cash flows and credit enhancement levels. In some transactions, overcollateralization levels are allowed to step down when triggers are passed after the lockout period ends. While some subordinate securities may receive principal at this time, enhancement levels drop, and subsequent losses may actually be more stressful for the remaining tranches.

VII. RISK FACTORS

HEL securities carry risks arising from structural features, macroeconomic conditions, regulatory provi-

EXHIBIT 27

Mortgage Insurance Claim Calculation

To calculate the payment against the MI claim, loans are specified to be covered down to a target LTV. For example, for a loan with an initial LTV of 90%, the target LTV might be specified as 60%. The MI coverage percentage is calculated as the $(\text{Original LTV} - \text{Target LTV}) / \text{Original LTV}$. Thus, the coverage percentage is 33.3% $[(90 - 60) / 90]$. In the event of default, the lender submits a claim to the MI provider. The claim amount is the sum of the unpaid principal balance, P&I advanced, and expenses (legal fees, real estate taxes, property maintenance expense).

The MI provider has the options:

- Pay the full claim amount and obtain title to the property, or
- Pay the coverage percentage of the claim amount.

The MI provider makes an economic decision in choosing between the two options, depending on the expected sale price of the property. An example might be:

Original Loan Term	
Original property appraisal	100,000
Original loan value	90,000
Original LTV	90%
MI Policy	
Target LTV	60%
Coverage %	33.30%
MI Claim Calculation	
Unpaid principal balance on default	80,000
P&I advanced	10,000
Other expenses (legal, property tax)	20,000
Total claim amount	110,000
MI Provider Options	
Option1: Pay total claim and obtain title to property	
Amount paid	110,000
Amount recovered through property sale	85,000
Net cost	25,000
Option2: Pay coverage% of the claim amount	
Net cost $(110,000 \times 33.3\%)$	36,667

In this example, the MI provider would choose to obtain title to the property since the net cost (\$25,000) is lower than the payment under the second option (\$36,667).

If the sale price of the property is more than $(100\% - \text{Coverage}\%) \times \text{Claim Amount}$ (\$73,333), the MI provider would choose to obtain title to the property and pay the full claim amount. The trust thus incurs no loss on the default as long as the property sale price is higher than this amount. If the property value falls lower than this value, the MI provider will choose Option2. The payment against the MI policy is then capped at \$36,667, and the trust incurs the loss in excess of this MI payment.

sions, and credit performance. The degree of these risks varies across different vintages and transactions.

Interest Rate Risk

HEL investors are exposed to rising interest rates due to the basis risk between floating-rate bonds and a combination of fixed-rate and hybrid collateral. HEL transactions are at risk on two fronts. First, the floating-rate bond coupon

is capped at the net weighted-average coupon (net WAC) on the collateral. Thus, HEL floaters include embedded short interest rate caps whose strike is dependent on the net WAC of the collateral. This is also known as available funds cap (AFC) risk.

Second, the excess spread available to cover losses or basis risk shortfalls drops as the collateral coupon rises at less than the coupon on the floating-rate bonds in a rising interest rate environment.

Certain structural features partly offset the interest rate risk inherent in deals:

- The risk of being capped out at the net WAC is partly mitigated by the presence of a carryforward feature. The carryforward feature allows the basis risk shortfall to be paid from any excess spread available in the deal in the current month or any later month. This raises the effective AFC strike of the short caps embedded in these floaters, since bonds can still receive full coupon (1MoLIB + DM) if there is excess spread in the deal.
- Deals include embedded interest rate hedges to offset the interest rate exposure. Deals commonly use interest rate corridors and swaps that provide cash flow to the trust as LIBOR increases. The hedge cash flow is available to cover basis risk shortfalls (if any).

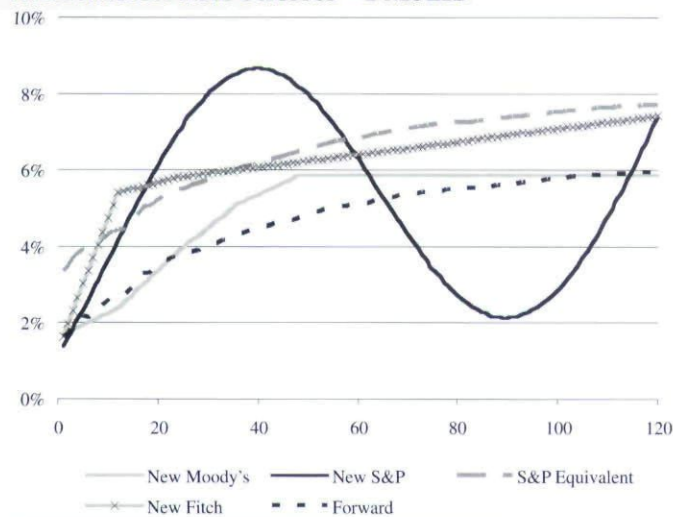
The basis risk inherent in the structure typically increases with deal age.

During the first two years, there is typically enough excess spread to cover most AFC issues, because losses are low, and the AFC cap is out of the money (the carryforward feature is valuable for subordinates).

Excess spread compression and AFC issues come into play more later in the life of the deal for three reasons. First, the fixed-rate collateral percentage increases over time, as hybrid loans typically prepay much faster than fixed-rate loans over the life of the deal. Second, losses typically start ramping up after the first year and reach 3-

EXHIBIT 28

AAA Interest Rate Stresses—1 MoLIB



5CLR around month 36. Third, most interest rate hedges are typically not outstanding after the first 24 months and do not offset basis risk late in the life of the deal.

Housing Market Slowdown

HEL collateral performance is highly dependent on the strength of the housing market. Strong home price appreciation since 2003 has had a strong impact on prepayments and credit performance (defaults, delinquencies, and severities). Prepayments have been fast on the 2003 and 2004 vintages partly due to strong cash out refinancings driven by robust HPA. Credit performance has improved, since borrowers have been bailed out by the built-up equity in their homes in the face of any credit problems.

In the event of a slowdown in the housing market, prepayments are expected to slow similarly, and losses and delinquencies will likely increase. We estimate that the effect of a 3% slowdown in the appreciation rate would increase defaults by 30% and slow prepayments by 5% on 2004 vintages. The combined effect would be an increase in total cumulative losses by 35%–40%. Bonds are partly protected since the excess spread available to offset losses increases with slower prepayments.

Predatory Lending/Servicing

The subprime business has come under increasing scrutiny for a variety of predatory practices, typically charging of high interest or fees, including excessive prepayment penalties, extending loans beyond a borrower's financial ability to repay, or refinancing a loan despite no benefit to the borrower (flipping). Predatory servicing issues have also led to probes into the practices at major subprime servicers such as Fairbanks and Ocwen. The second-largest servicer, Fairbanks, was downgraded three full grades to below average, and paid its regulator (Office of Thrift Supervision) \$40 million in settlement claims relating to questionable servicing practices.

HEL transactions are at risk due to assignee liability provisions attached to certain predatory lending statutes. Assignee liability permits a borrower to hold the purchaser or assignee liable for the same penalty as the original lender. This is a growing problem, as certain state laws allow unlimited assignee liability provisions (uncapped penalties). Lenders have been adjusting to a patchwork of evolving local, state, and federal regulations enacted to address the issue.

EXHIBIT 29

Factors to Assess Potential Liability in Predatory Statutes

- **Scope of the statute:** The loans covered by the statute should be identified. The statute should clearly distinguish between loans that are covered and those that are not.
- **Assignee liability test:** For any type of loan under its scope, the statute should be examined to see if it imposes assignee liability. If the statute does not carry assignee liability, the cash flow of the trust is not available to meet any potential liabilities due to predatory abuses.
- **Maximum penalty assessment:** For loans carrying assignee liability (exposed loans) that are covered by the statute, the maximum amount of penalties should be established. It should be determined whether monetary damages are limited to a dollar amount or if they are uncapped (unlimited assignee liability). Rating agencies allow loans to be included in transactions only when they carry either no assignee liability or the risk associated with violating an antipredatory lending law is quantifiable (limited liability).
- **Safe harbors:** The availability of certain provisions (such as due diligence procedures) that a purchaser or assignee can implement to avoid liability (safe harbors) or limit the number of violations.

The problem has been compounded by a lack of clarity around statutory violations in several jurisdictions. Certain jurisdictions have subjective standards to determine whether a loan is predatory (for example, net tangible benefit or repayment ability tests), while others are vague as to the categories of loans covered by the statute.

Rating agencies have also been amending their criteria to protect transactions from predatory lending liabilities. Transactions including loans with assignee liability require additional credit enhancement due to the risk of potential liabilities (*Exhibit 29*). Loans in jurisdictions that carry unlimited potential liability or with vague statutory violation clauses are typically not included in transactions.

Agencies also rate the ability of lenders to implement compliance procedures to minimize violations. Lenders are usually required to make representations regarding the securitized loans and warranty repurchasing loans that violate statutory provisions.

It is unfortunate that the increasing focus on predatory lending has impacted the availability of credit in different jurisdictions. Lenders might reduce or completely eliminate lending in some states to protect themselves against vague lending statutes or curtailment in the market for the sale of loans originated in that state. Lending practices have changed with a changing market appetite for certain types of loan. For example, the Federal Home Loan Bank and GSEs have stopped buying securities backed by loans with prepayment penalty terms over three years.

IO Credit Performance

The HEL market has witnessed limited credit performance in an environment of rising rates. With high consumer leverage and consolidation of traditional forms of consumer debt (credit cards, auto loans) into mostly floating-rate mortgages, investors should be concerned as to credit performance as rates rise. This risk has been further accentuated in the HEL market with the shift toward credit-levered products such as interest-only loans and piggyback seconds.

IO mortgages have exploded in popularity over the past several years, to account for around 15%–20% of 2004 originations. There has been concern around IO performance due to the potential for greater payment shock (rate reset and amortization reset). This is accentuated for loans whose IO periods coincide with the initial fixed-rate period, leading to a simultaneous double shock for the borrower.

Trends in IO issuance characteristics also point to an increase in risk:

- IO terms have been shortening, and in an increasing percentage of loans the IO period coincides with the initial fixed-rate period.
- Initial IO originations have had significantly better credit characteristics (higher FICO, loan documentation, loan size) than hybrids, but these differences in borrower quality have diminished in recent originations.
- While the IO product in prime jumbos has been motivated mainly by tax considerations, there is evidence to suggest that affordability constraints drive subprime borrowers toward IOs.

The additional risk of IO loans has been partly factored in by the rating agencies; Moody's has demanded an additional 15%–20% credit enhancement for IO loans. We believe the risk is more pronounced when the IO period coincides with the initial fixed-rate period, leading to a double payment shock for borrowers. The risk is mostly from higher foreclosure frequencies and limited on the severity front.

VIII. SUMMARY

The HEL market has grown rapidly over the last three years to form the largest segment of the ABS market. Analysis of HEL securities requires a careful examination of the interaction between collateral performance (credit and prepayment) and structural features. The wider spreads in the sector are explained by this combination of prepayment and credit features, which positions it uniquely between the mortgage and asset-backed sectors.

The next few years will test the maturity and depth of the HEL market, with potential structural and credit risks from rising interest rates, leverage in the housing market, and an evolving regulatory environment.

To order reprints of this article, please contact Ajani Malik at amalik@iijournals.com or 212-224-3205.

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