

Subprime strikeout

Assessing the subprime mortgage market

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“It’s like déjà vu all over again.” — Yogi Berra

The period from 2000 to 2006 was a golden age for U.S. real estate. Strong global demand for U.S. real estate-related assets dramatically increased funding available for mortgage loans. Tax law changes enacted during the previous decade, fresh memories of the risks of investing in the stock market and a reduction in leisure travel following 9/11 all compelled consumers to shift their consumption patterns toward housing. Historically low interest rates made the dream of homeownership possible for an increasing number of Americans. As a result, record numbers of Americans became homeowners, and U.S. housing values soared.

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For a time, it appeared as though laws of supply and demand were suspended. As more Americans bought homes, housing valuations rose. But the higher valuations rose, the more demand there was for housing: Americans who already owned homes extracted home equity to fund their dreams of bigger, more luxurious residences, while Americans who were renting rushed to buy to avoid being left behind. Housing was the rage, and Americans got richer simply by sleeping under their own roofs.

But today, a more rational supply and demand relationship exists: higher prices have finally depressed quantity demanded. As a result, flat

housing prices and rising mortgage delinquencies are the new reality, and certain segments of the residential mortgage-backed securities (RMBS) market are disproportionately under stress. This paper seeks to explain the deterioration in the subprime mortgage market, which accounts for roughly 15 percent of mortgaged homes in the United States. After beginning with a brief survey of subprime mortgage financing during this decade, we examine the cracks in the foundation that have occurred over the past 18 months, review the current situation, and explain our view of the future for the subprime mortgage market. Fuller explanation of the history of the subprime market, more in-depth analysis of what precisely has gone wrong and an exploration of the broader impact of the subprime mortgage crisis are left for future development.

Subprime credit since 2000: Improving or deteriorating?

“We made too many wrong mistakes.” — Yogi Berra

Changes in underwriting since 2000

Prior to 2006, loans originated in 2000 were widely considered the lowest quality loans ever made in the subprime mortgage market. In response to the poor performance of the 2000 vintage, originators sought to eliminate the most default-prone loans from their pools. The focus of this effort was raising the quality of the borrowers who received subprime mortgages; the primary metric used to measure the quality of borrowers was their credit bureau score (“FICO score”).

The chart below shows the success originators had in improving FICO scores. In 2001, borrower FICOs at origination averaged 598. Scores peaked at 627 in 2005 and declined only slightly (to 624) in 2006. At the same time, the concentration of low FICO scores was reduced dramatically, and loans to borrowers in the lowest FICO bucket (below 550) were all but eliminated. The quality of loans, originators believed, had gone up along with average FICO scores.

But while FICO scores improved, other risk metrics worsened:

- While loan-to-value ratios on first mortgages were unchanged, “simultaneous seconds”—second mortgages taken simultaneously with first mortgages in order to provide purchase money to the borrower—increased dramatically. Whereas in 2000 simultaneous seconds existed on only 3 percent of subprime mortgages, by 2006 that number rose to 29 percent. This caused combined loan-to-value ratios—the measure of total debt secured by a given property—to rise from 80 percent to 85 percent. Subprime loans became substantially more leveraged.
- Over the same time period, interest-only loans appeared. While interest-only loans were virtually non-existent in 2000, they peaked at 28 percent of the market in 2005. To further complicate matters, most underwriters qualified borrowers only on the basis of their ability to make the initial interest-only payments, not the fully-amortizing payment. Borrowers in turn purchased more expensive homes

than they could have afforded were they required to pay principal. Again, leverage increased.

- The percentage of loans for which borrowers fully documented their income and assets decreased from 73 percent to 57 percent, increasing the risk of misrepresentation and fraud.
- Borrower debt-to-income ratios (DTIs) rose from 39 percent to 42 percent between 2001 and 2006. While this increase by itself is significant, it would be even more pronounced were DTI computed on the basis of a fully amortizing mortgage payment and were adjustments made for the uncertainty introduced by reduced income documentation.

While originators would admit certain metrics suggested there was more risk in subprime mortgage pools, they justified those risks by the improvement in FICO scores. The increasingly leveraged borrowers, they claimed, were willing and more than able to make their payments.

Trends in credit enhancement levels

The rating agencies, whose loan performance models have historically been FICO-driven, seemed to recognize the value of the non-FICO risk metrics. While rising FICO scores could have led to decreasing credit enhancement levels, enhancement was largely static between 2000 and 2005.

What became troubling was that credit enhancement levels declined in 2005 and 2006, when significant credit problems began to appear in the subprime market.

Subprime credit trends, 2001-2006

Origination Year	Average Loan Size (\$thousand)	Weighted-average coupon (%)	FICO	CLTV	Loans w/ CLTV >80%	Loans w/ Simultaneous Seconds	Interest-only loans	Full Doc	DTI
2001	126	9.60	598	80%	42%	3%	--	73%	39%
2002	144	8.46	611	80%	45%	3%	1%	68%	39%
2003	164	7.44	620	82%	50%	8%	4%	65%	40%
2004	180	7.05	622	83%	56%	16%	15%	62%	40%
2005	200	7.22	626	85%	61%	25%	28%	58%	41%
2006	209	8.16	624	85%	61%	29%	18%	57%	42%

Source: Advantus, UBS

In fact, in spite of declining collateral performance, credit enhancement levels actually decreased between the last half of 2005 and the end of 2006. Using the ABX index as a proxy for the subprime market as a whole, credit enhancement levels decreased at all rating levels during the period, with BBB- levels decreasing from 4.4 percent for ABX 2006-1 to 3.7 percent for ABX 2007-1.* (See table below.)

Original credit enhancement levels on ABX indices

	AAA	AA	A	BBB	BBB-
2006-1	21.1	14.4	9.2	5.4	4.4
2006-2	21.5	14.4	9.0	4.9	3.9
2007-1	21.0	14.0	8.5	4.7	3.7

Source: Lehman Brothers

Trouble was on the horizon, as collateral quality worsened and credit enhancement levels declined.

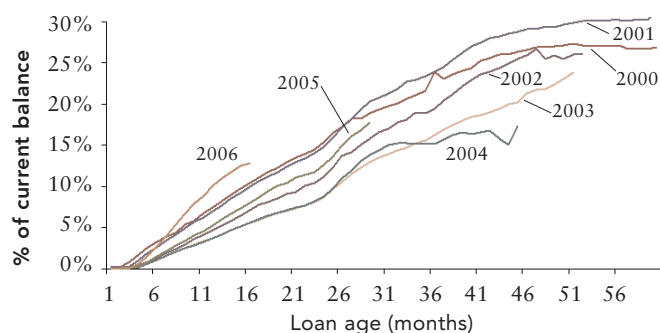
Early warning signs

“You can observe a lot just by watching.”
— Yogi Berra

Delinquencies and early-pay defaults in the 2006 vintage

By the middle of 2006, delinquency reports were already suggesting something was amiss in the 2006 vintage. While the 2000 vintage had been recognized as the worst performing to date, early performance of 2006 deals suggested their long-run performance could be worse. (See chart above right.)

60+ day delinquencies across vintages



Source: JPMorgan, Lehman Brothers

To further complicate matters, the term “early payment default” metamorphosized from an obscure term used in back rooms at loan servicing shops to common capital market nomenclature. An early payment default (EPD) is the failure of a borrower to make a payment within the first several months after taking out his mortgage. Historically, EPDs were rare: a borrower who has been appropriately qualified for a loan should have few reasons to default so early in the life of the obligation.

What was troubling about the 2006 vintage was that EPDs plagued every issuer and exceeded 10 percent of originations for some issuers. The occurrence of EPDs both increased and accelerated delinquency and default curves very early in the life of 2006 deals. While the FICO scores on the 2006 vintage were comparable to the peak scores in 2005, the performance of 2006 loans was immediately the worst of the decade.

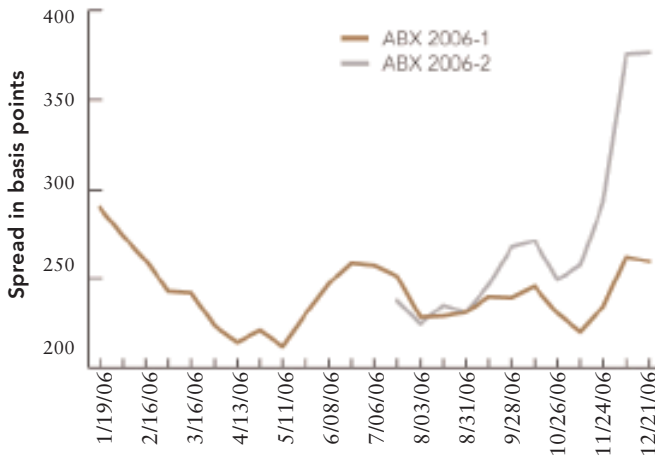
*ABX is a series of indices comprised of credit-default swaps (CDS) on subprime RMBS. Each series of ABX (e.g., 2006-1) references 20 subprime RMBS transactions, and is broken down into five sub-indices. The five sub-indices (AAA, AA, A, BBB and BBB-) reference individual name CDS on the individual classes of the 20 subprime RMBS transactions that were rated AAA, AA, A, BBB and BBB-, respectively, at issuance.

ABX 2006-1 is a series of ABX that began trading on 1/19/06. It references 20 subprime mortgage transactions issued in the third and fourth quarters of 2005.

ABX 2006-2 is a series of ABX that began trading on 7/19/06. It references 20 subprime mortgage transactions issued in the first and second quarters of 2006.

ABX 2007-1 is a series of ABX that began trading on 1/19/07. It references 20 subprime mortgage transactions issued in the third and fourth quarters of 2006.

BBB- spreads for ABX in 2006



Source: UBS

ABX: See no evil, hear no evil, speak no evil?

As the subprime mortgage crisis was developing, the credit-default swap market in subprime RMBS was growing rapidly. The development of ABX facilitated both hedging of subprime positions and speculation on their future.

Using the BBB- tranche of ABX as a barometer, it would be reasonable to conclude there was no collateral problem at all. ABX 2006-1 ended 2006 at a tighter spread (higher value) than at inception, and 2006-2 widened (declined in value) meaningfully only into year end. (See chart above.) Trading levels implied there was no problem at all.

It was not until 2007 that performance of the 2006 vintage significantly impacted levels. As the chart to the right illustrates, on January 19, 2007, ABX 2007-1 freed for trading. The deal closed its first day of trading at a spread of 462 basis points over LIBOR. That was the tightest spread (highest value) at which it has traded to date.

By the end of February, ABX spreads reflected that high delinquencies were not simply the result of transient early-payment defaults; they also indicated broader collateral quality deficiencies that will plague the 2006 vintage for the indefinite future.

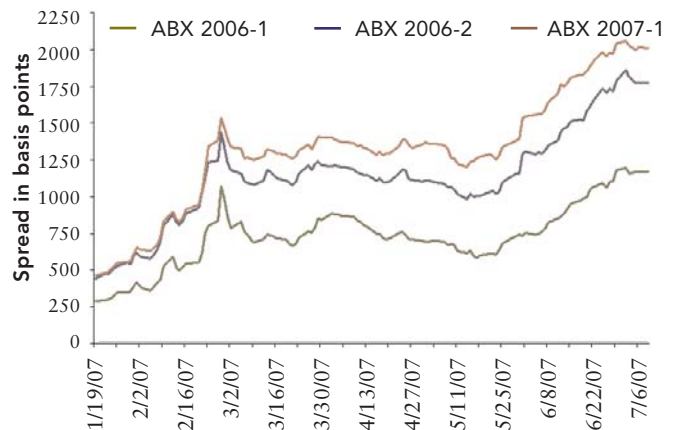
While ABX is composed of outstanding subprime mortgage issues, ABX spread levels are also a good barometer of whole loan execution (the price originators are paid for the pool of loans they originate). As market execution for subprime loan pools deteriorated, numerous originators discontinued operations, citing losses on retained mortgage loans, reductions in retained capital, and a lack of access to additional funding. As originators exited the business (see table on page 5), they simultaneously defaulted on warranties made to investors to provide reimbursement for early-payment defaults. This meant not only was the quality of loans sold into 2006 vintage deals poor, but the warranties made on the quality of underwriting were worthless.

Rating agencies act to adjust ratings

“It’s tough to make predictions, especially about the future.” — Yogi Berra

Through the first half of 2007, only a handful of the poorest performing deals had been downgraded; the rating agencies had been largely silent about the poor performance of the 2006 vintage as a whole. But that changed the week of July 9, when Standard & Poor’s (S&P), Moody’s, Fitch and Dominion all initiated reviews and/or downgraded distressed subprime transactions. In total, the agency actions affected

BBB- spreads for ABX in 2007



Source: UBS

3,174 individual classes across 424 transactions. The value of securities downgraded or placed under review totaled more than \$138 billion.

Standard & Poor’s

On the morning of July 10, S&P placed 612 classes of subprime RMBS on CreditWatch with negative implications. The affected classes were all subordinate bonds from transactions issued between October 2005 and December 2006, totaling \$7.35 billion. (These classes represent approximately 1.3 percent of the \$565.3 billion in subprime mortgage bonds S&P rated during the time period.) While the majority of classes had an original rating of BBB+ or below, there were some classes with an original rating as high as AA. On July 12, S&P took formal action on these classes. The action resulted in 498 downgrades and 83 affirmations (with removal from CreditWatch). Thirty-one classes remain on CreditWatch negative.

Moody’s

On the afternoon of July 10, Moody’s announced its rating actions. Moody’s actions affected 431 classes: 399 classes were downgraded, while 32 more were placed under review for possible downgrade. All of the classes were from deals issued in 2006, totaling

approximately \$5.3 billion. (These classes represent approximately 1.3 percent of the \$407.7 billion of subprime mortgage bonds Moody’s rated during the time period.) The majority of classes were originally rated Baa1 or lower with modest representation up to A2.

Fitch

On July 12, Fitch announced it was placing 170 subprime mortgage transactions “Under Analysis,” indicating they have been identified for in-depth review with the expectation of a near-term rating action. While the Fitch announcement did not specify which classes of each transaction are under the most scrutiny, the announcement did indicate that bonds rated BBB and below were most likely to be affected by the review. While Fitch’s action included deals issued as far back as 2001, the majority of the deals were issued in 2005 and 2006. The total amount of bonds Under Analysis is \$132.3 billion; classes rated BBB and lower are \$7.1 billion and represent approximately 1.7 percent of Fitch’s rated U.S. subprime RMBS portfolio.

Dominion Bond Rating Service (DBRS)

Finally, on July 16, DBRS acted on 126 classes of subprime RMBS, upgrading 17, downgrading 94 and

Consolidation in the subprime mortgage industry

Discontinued operations	Acquisitions and changes of control
Ameriquest (retail)	Argent Mortgage (by Citigroup)
Fremont Investment and Loan	Centex Home Equity (by Fortress)
Meritage Mortgage	Encore Credit (by Bear Stearns)
Mortgage Lenders Network	EquiFirst (by Barclays)
New Century Mortgage	Fieldstone (by C-BASS)
Ownit Mortgage Solutions	First Franklin (by Merrill Lynch)
People’s Choice Mortgage	GMAC-RFC (by Cerberus)
	HomEq (by Barclays)
	MortgageIT (by Deutsche Bank)
	Option One Mortgage (by Cerberus)
	ResMae (by Citadel)
	Saxon Mortgage (by Morgan Stanley)

Source: *Advantus*

placing 15 under review with negative implications. These actions spanned vintages from 2004 to 2006 and classes with original ratings from BBB- up to AA+. The total dollar volume of securities impacted was \$1.1 billion.

Rationale for rating actions

“The future ain’t what it used to be.” — Yogi Berra

While the rating agencies differed slightly in their rationale, the dominant reasoning for their rating actions was as follows:

- Collateral performance to date (measured by delinquencies, foreclosures and losses) has been significantly worse than expectations.
- Poor collateral performance shows no signs of abating.
- Forecasts for the U.S. housing market are substantially worse than when ratings were initiated. This is expected to weigh heavily on the subprime sector.
- In view of both collateral performance and estimates of weak forward-looking home price appreciation, lifetime cumulative loss estimates need to be revised upward.

New models, coming to a rating agency near you

“If you come to a fork in the road, take it.” — Yogi Berra

Revising ratings on an entire vintage of collateral has compelled the rating agencies to make changes to the models used to estimate default probabilities and assign credit ratings. While all agencies are reviewing their models, S&P was the fastest to make revisions and has been the most forthcoming about the changes.

S&P made a number of modifications to both their rating and surveillance methodologies. They released the modifications simultaneously with their rating actions and made the changes effective immediately:

- Fraud detection capabilities will now be a significant focus of their lender underwriting reviews.
- Voluntary and involuntary prepayment curves were increased, resulting in less benefit from excess spread in the calculation of total credit enhancement and higher base-case default frequencies.
- Loss severity expectations on defaulted loans were increased from 33 percent to 40 percent.
- Senior and highly rated subordinate classes of deals in which the deep subordinate classes have been downgraded will need to demonstrate a higher level of credit protection in order to maintain their current ratings.

Details of revisions to other rating agency models are forthcoming.

So what inning are we in?

“The game ain’t over till it’s over.” — Yogi Berra

The inevitable question is, “What inning are we in?” Is it the bottom of the ninth, nearing the end of the subprime mortgage downgrades? Or are we still in the early innings, with more rating actions to come?

Is the heart of the lineup coming to bat?

We believe it is still very early in the game, and there are a number of catalysts for additional rating reviews:

- Recent rating actions were concentrated on bonds rated Baa1/BBB+ and below. Historically the agencies have taken a progressive approach, downgrading more senior classes only as performance trends solidify. S&P has already stated that credit enhancement levels of 2006 vintage deals must improve if non-downgraded classes are to retain their ratings.
- 2007 vintage deals have not been subjected to the higher credit standards implemented in the agencies’ new surveillance and rating methodologies.

- Rate resets on short-dated hybrid ARMs (adjustable-rate mortgages), the dominant subprime mortgage product in 2005 and 2006, will begin later this year and continue into 2009.
- Following the interest rate resets, interest-only loans will begin amortizing.

Praying for a 10-run rule

We believe there are more rating reviews on the horizon, and significantly more downgrades to come. Our reasoning is as follows.

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We expect the performance of the 2006 vintage will show little improvement prior to rate resets. There are simply no significant catalysts for performance improvement. Further downgrades are likely for the deeply subordinated classes that have already been downgraded once, and more senior classes are likely to fail to attain the credit enhancement levels necessary to maintain their current ratings.

In our view, the collateral characteristics of the 2007 vintage deals issued to date are not materially different from the 2006 vintage. Most of the loans backing these deals were either originated in 2006 or underwritten to similar criteria. While some of the most egregious underwriting errors of 2006 were corrected by the first quarter of 2007, those corrections have not flowed through to significant improvements in collateral performance. In fact, performance for the reference obligations underlying ABX 2007-1 is actually worse than the performance for 2006-1 when adjusted for seasoning. While modest increases in required credit enhancement in the first half of 2007 will provide some insulation to

the most senior classes, we believe the magnitude of the increase is insufficient to offset the revisions in loss estimates the rating agencies are enacting. This will likely lead to broad-scale downgrades of subordinate classes of 2007 vintage transactions.

Finally, we believe the most significant catalyst for downgrades lies in reset risk on short-dated hybrid ARMs. The secular rally in interest rates from 2000 to 2004 and the housing market rally from 2003 to 2006 provided more than six years of attractive financing to subprime borrowers. This has taught borrowers to expect refinancing to lower their mortgage rate and/or allow them to extract equity from their home. But the future does not appear so rosy:

- Forward interest rates are higher, such that borrowers' rates upon refinancing would increase substantially, even if there were no crisis in the subprime market.
- The crisis in the subprime market has raised the cost of capital market financing for subprime mortgages significantly. This translates into even higher rates for borrowers.
- Subprime mortgage lending standards are tighter. As a result, many loans originated over the past 18 months would not be approved today, and hence are not refinancable, even at today's higher rates.
- Almost all forecasts for home price appreciation suggest borrowers will have limited equity to extract to help them cope with increasing mortgage payments.

Structured finance investing at Advantus

In this environment, it is impossible to make investment conclusions on the basis of credit ratings. This is one reason Advantus employs a fundamental, bottom-up investment process that looks beyond ratings to identify securities that offer the best opportunities to maximize expected returns for risks assumed.

At the center of our investment process is a seasoned team of analysts and portfolio managers who apply knowledge and experience gained over past credit cycles to today's rapidly changing market. This experience, combined with our disciplined research process, helps us find value even when fundamentals are deteriorating and markets are dislocated.

Our research process is equally focused on quantitative and qualitative analysis. Quantitative analysis is vital to understanding both the collateral backing our investments and the attributes of the specific bonds we buy. Our quantitative analysis is driven by our cutting-edge proprietary analytics, which are combined with third-party analytical solutions to provide us with the clearest possible view of the risks inherent in the investments we make.

The focus of our qualitative analysis is our due-diligence program. In addition to developing and maintaining relationships with major issuers and underwriters, we maintain an active on-site due diligence program to evaluate and review loan originators and servicers. This enables us to gain an up-close understanding of the fundamental challenges facing the industry, while at the same time allowing us to assess the relative competencies of the parties that manage our transactions. As a result, we have hands-on exposure to the primary market in which we invest and a clear understanding of how our transactions are being managed down to the individual loan level.

It is the combination of our experience and our rigorous focus on each aspect of a transaction—from loan origination, through to securitization and on to loan servicing—that allows us to thrive in turbulent markets.

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