Goldman Sachs Asset Management

Perspectives

Insights on Today's Investment Issues

The Subprime Market Meltdown: Crisis or Opportunity?

Executive Summary

The size of the subprime market has expanded over 800% between 2000 and 2005 – from $56 billion to $508 billion[1], due to aggressive lending practices and the rise in "affordability" loans. Today, the subprime market represents approximately 14%[1] of the overall mortgage-backed securities market. This rapid growth has resulted in a weaker credit profile for recently originated subprime loans that are now coming under pressure in the face of declining home prices and payment shock from higher reset rates of Adjustable Rate Mortgages (ARMs). The ramifications of a strong housing market are affecting all market participants including subprime borrowers, lenders and the securities market.

In this paper, we will address:

I. **Characteristics of a Subprime Borrower**
Subprime borrowers are lower-credit quality borrowers who, in general, have higher leverage relative to prime borrowers.

II. **Subprime Mortgage-Backed Securities (MBS) and Collateralized Debt Obligations (CDOs)**
Over the last several years, the risk of subprime loans has been distributed across the capital markets as loans are packaged and sold in the Home Equity Loan (HEL), Asset-Backed Securities (ABS) and CDO markets.

III. **The Virtuous and Vicious Credit Cycles**
The 2003 to 2006 period can be described as a virtuous credit cycle that started with a strong housing market, leading to lower credit losses and more stable credit ratings. This scenario began to rapidly unwind in the beginning of 2007, starting a period we now refer to as a vicious credit cycle. Higher credit losses on subprime mortgages led to rating instability, less demand for CDOs and, therefore, less demand for home-equity securities, and ultimately less demand for home-equity loans, resulting in a weaker housing market.

IV. **Declining Subprime Bond Prices**
Falling home prices, higher delinquency rates, lower demand for CDOs, loan originator fall-out and tighter lending standards have collectively contributed to the dramatic decline in subprime bond prices. We believe there are significant risks toward higher losses as the default rate rises and the competition among housing sellers increases.

V. **Subprime: Yesterday and Today**
We believe that continued deterioration in credit trends will likely lead to significant rating downgrades and additional selling pressure for securities backed by subprime loans. However, once the sector has re-priced to lower levels, we may begin to see some significant security selection opportunities with attractive risk-return profiles.

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[1] Source: Inside Mortgage Finance, Credit Suisse and Loan Performance

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I. Characteristics of a Subprime Borrower

Subprime borrowers are lower-credit quality borrowers who, in general, have higher leverage relative to prime borrowers. A few key metrics used when differentiating prime and subprime borrowers are: the FICO (Fair Isaac Company) credit score, loan-to-value ratio, debt-to-income ratio and percentage of ARM.

The FICO score is a relatively well-known score utilized by the credit bureaus and market participants to evaluate the credit quality of an individual borrower. There are several factors that contribute to the aggregated FICO score, but it primarily focuses on the individual borrower's credit history, and the level and type of debt incurred by the borrower. History has shown that this score is a fairly good predictor of relative default rates. For example, a prime borrower has an average FICO score of roughly 740, where as a subprime borrower has 630.[2] Estimates have shown that the likelihood of default is approximately six times higher for a subprime borrower[3] compared to a prime borrower. The second commonly used metric is the loan-to-value ratio, which is higher for a subprime borrower. On average, a prime borrower will borrow 75% and a subprime borrower will borrow 87% of the house value.[2] Because a subprime borrower has less equity in the house, the loan structure itself tends to be riskier. The debt-to-income ratio is also higher for a subprime borrower, which means that a larger portion of their income is devoted to mortgage payments. Lastly, a much larger percentage of these subprime loans are adjustable rate mortgages. ARMs are characterized by a relatively low rate during the initial loan period, followed by a significantly higher reset rate for the remaining duration of the loan. This reset could range from 30% to 40% higher. ARMs are generally taken out by borrowers who have riskier credit profiles, and who otherwise may not qualify for a loan.

[2] Source: Citigroup, Loan Performance and CPR & CDR Technologies

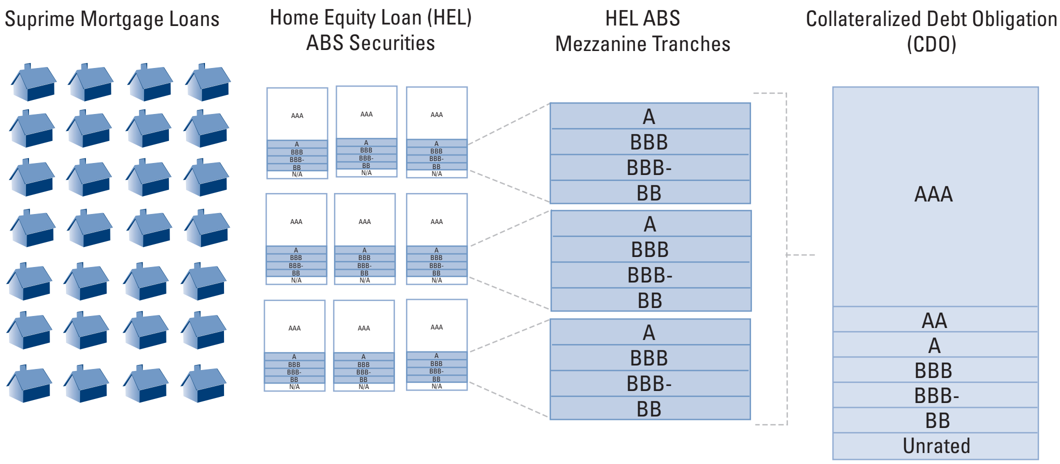
[3] Source: Fair Isaac Co. and Deutsche Securities

II. Subprime Mortgage-Backed Securities (MBS) and Collateralized Debt Obligations (CDOs)

In the past, originators of subprime loans, such as banks or mortgage originators, often carried these loans on their books. Over the last several years, however, the risk of subprime loans has been distributed across the capital markets as loans are packaged and sold in the Home Equity Loan (HEL) Asset-Backed Securities (ABS) and CDO markets. Banks essentially continued to make subprime loans knowing that the securities market would absorb the risk.

Exhibit 1 shows the progression of subprime mortgage loans from individual loans to CDOs. These securities are rated (i.e., "get tranched") from a credit perspective. Losses felt by the underlying pool of subprime loans are absorbed by the equity tranche, or the first loss tranche, of the security. After that, if the first loss tranche is wiped out from losses, the rated securities begin taking losses starting with BB then BBB-, etc.

Exhibit 1: Subprime investing



Security structures are sample representations
Source: Goldman Sachs Asset Management (GSAM), Deutsche Bank Securities and Citigroup

Some of the securities are offered directly into the market and purchased by various investors of asset-backed securities. But, a large percentage of the riskier tranches – known as mezzanine tranches – are put into special-purpose vehicles and tranched again in a CDO structure. This process fueled the strong credit cycle from which the subprime borrower benefited for some period.

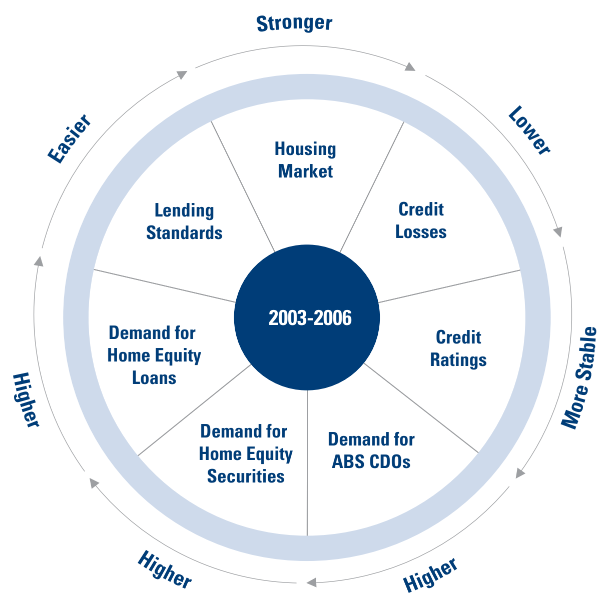
AAA-rated HEL bonds and CDOs. What's the difference?

AAA-rated HEL bonds are protected by lower-rated bonds that absorb losses on the underlying loans, while CDOs are backed almost entirely by these riskier bonds. AAA ratings on CDOs that are backed by these portfolios of risky bonds are achievable only if these portfolios are well diversified from losses. We feel that this assumption will be challenged for many CDOs given the broad-based deterioration in subprime mortgage credit. Thus, subprime loan losses that result in the writedown of subordinate HEL bonds may still leave AAA and AA-rated HEL bonds intact, but may result in significant losses for higher-rated CDO tranches.

III. The Virtuous and Vicious Credit Cycles

The 2003 to 2006 period can be described as a virtuous credit cycle that started with a strong housing market *(Exhibit 2)*. The strong housing market led to low credit losses on loans, which translated to stable credit ratings. This increased the demand for CDOs, which ultimately increased the supply of credit as the market grew ten-fold. This meant that more homebuyers were injected into the market, in effect pushing the housing market up. This scenario recycled with higher house prices again leading to lower credit losses, more stable credit ratings, etc.

Exhibit 2: The virtuous credit cycle



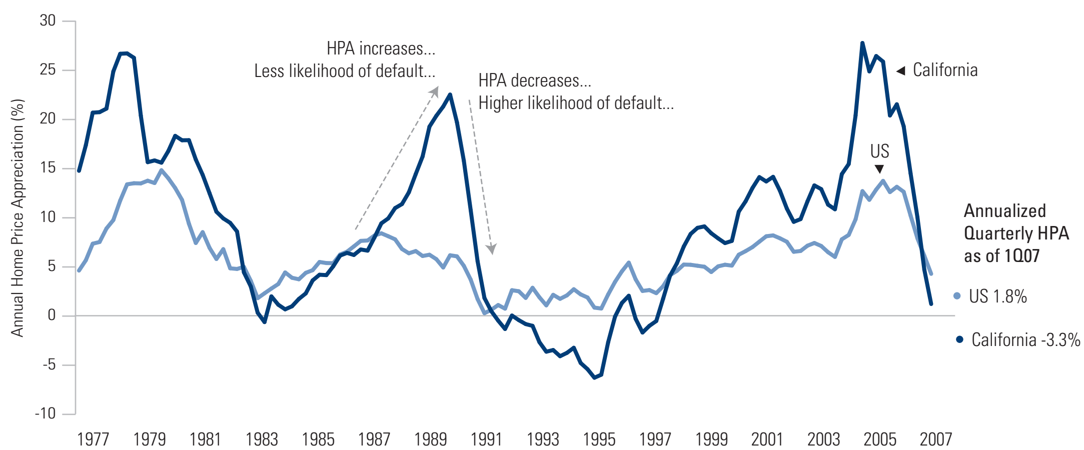
Source: GSAM

This scenario began to unwind rather rapidly in the beginning of 2007, as home owners who had received previously affordable adjustable rate loans were starting to grapple with higher loan reset rates. Higher credit losses on subprime mortgages led to rating instability, less demand for CDOs, and therefore less demand for the home-equity securities, and ultimately less demand for the home-equity loans. The unwinding of the cycle is where the credit crunch began to take hold. We are now in the phase where credit is being removed; there are less home buyers and, therefore, a weaker housing market outlook. We are already feeling the effect of the inventory accumulation of existing home sales, which is up from three months of supply several years ago to almost nine months of supply today.

There have been various cycles in home price appreciation over the last 30 years. But of particular interest is the rapid growth period that started in 2000 that subsequently accelerated into 2006. This acceleration ended earlier this year.

Exhibit 3 shows that while the US at large has gone through cycles, California, which represents a significant portion of the US housing market, has experienced even more volatility than the country as a whole. And we believe this could be especially problematic for certain securities. Given the fact that California house-price appreciation has gone negative now for the first time in over 12 years, we expect that US house prices will follow suit very shortly, driven by a high level of supply and poor affordability.

Exhibit 3: Falling home prices have increased the likelihood of default



Source: Office of Federal Housing Enterprise Oversight (OFHEO) and Lehman Brothers

So, why do home prices matter so much for the subprime borrower? Home price is an important consideration for subprime borrowers because of how they behave when home prices rise or fall. For example, if prices rise, the stressed borrower is more likely to sell their house at a profit, rather than default. However, when home prices fall, it is more economical for a stressed borrower to default on the house rather than attempt to sell it and take the loss. Defaulting is simply a more economical transaction, and is occurring to some extent in the housing market today.

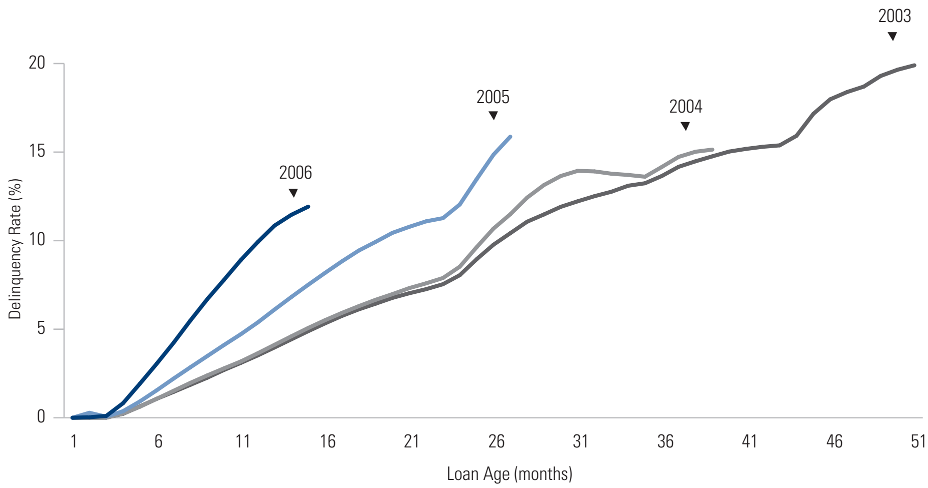
This weakness in home prices exposed what became very weak underwriting by subprime originators. Evidence of this can be seen in recent vintages (i.e., origination year) that are becoming delinquent faster, and defaulting earlier than older vintages, due to home price deceleration and weaker underwriting standards. For example, as seen in *Exhibit 4*, 2006 vintage loans, which are now approximately 15 months old and are delinquent 60 days or more, represent a delinquency rate of roughly 12%. And those originated in 2005 are becoming delinquent faster than those originated in 2004 and 2003.

Part of the reason that these 2006 and 2005 vintage loans are becoming more delinquent is that they consist of loans that have a piggyback loan, or a second lien loan, on top of them. These are second mortgages or home equity loans taken out by a borrower at the same time the first mortgage is started or refinanced. Subprime borrowers often use these loans to make their down payment for their first loan. In 2003, only seven percent of subprime mortgages had a second-lien loan. By 2006, that number increased to 33 percent.[4] Therefore, we believe that this cohort of borrowers is likely to continue to deteriorate in terms of its delinquency rate and ultimate loss rate. This trend has led to more negative rating outlooks and will, most likely, also lead to significant downgrades.

[4] Source: JP Morgan, deal documents as of May 4, 2007

Exhibit 4: Easy lending standards have resulted in higher delinquencies

Loans delinquent 60 days or more



Source: Credit Suisse, Loan Performance, as of May 2007

In fact, on July 10, 2007, Standard & Poor's announced that it may cut ratings of 612 classes of Residential Mortgage-Backed Securities (RMBS) backed by subprime mortgages. These securities, which were originated between the fourth quarter of 2005 and the fourth quarter of 2006, represent approximately $7.4 billion in total assets. Their rationale for taking action was three-fold: very poor collateral performance; expectation of increasing losses on the underlying collateral pools; and the consequent reduction in credit support. They are also conducting a review of CDO securities that would have these underlying securities within those portfolios.

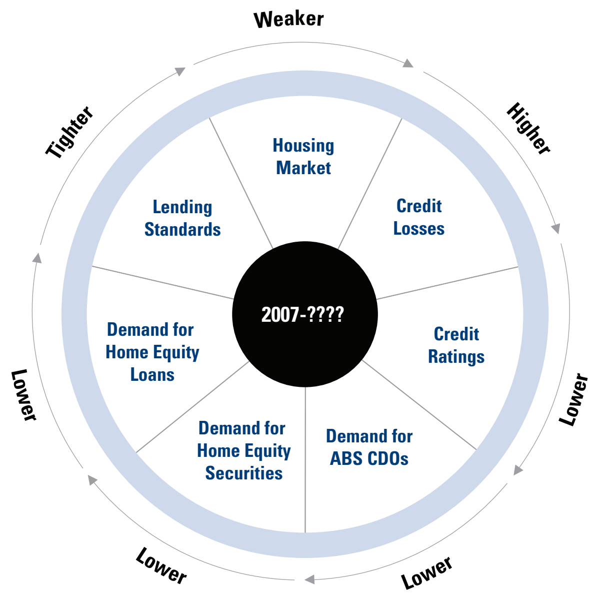
CDOs ultimately provided risk capital to the subprime mortgage market as evidenced by the rapid growth of CDO issuance of approximately $100 billion in 2004 to nearly $250 billion in 2006.[5] CDO issuance has fallen in 2007, and our current estimates for CDO issuance this year range from 10% to 20% of what it was in 2006.

Lower CDO demand decreases the supply of credit available to subprime borrowers. Originators representing approximately 25%[6] of 2006 volume have either filed for bankruptcy or have exited the business. An additional 20%[6] have either been sold or are on the market as of May 2007. And a significant number of remaining originators have announced losses and cutbacks in origination. Banks have started to tighten their lending standards as home price appreciation has decelerated and delinquencies have increased. This reduction in available credit should lead to less housing demand and lower home prices. These factors combined will further restrain credit availability to the subprime borrower. This vicious cycle is shown in *Exhibit 5* (next page).

[5] Source: Lehman Brothers

[6] Source: National Mortgage News, ABSnet and GSAM estimates

Exhibit 5: The vicious credit cycle

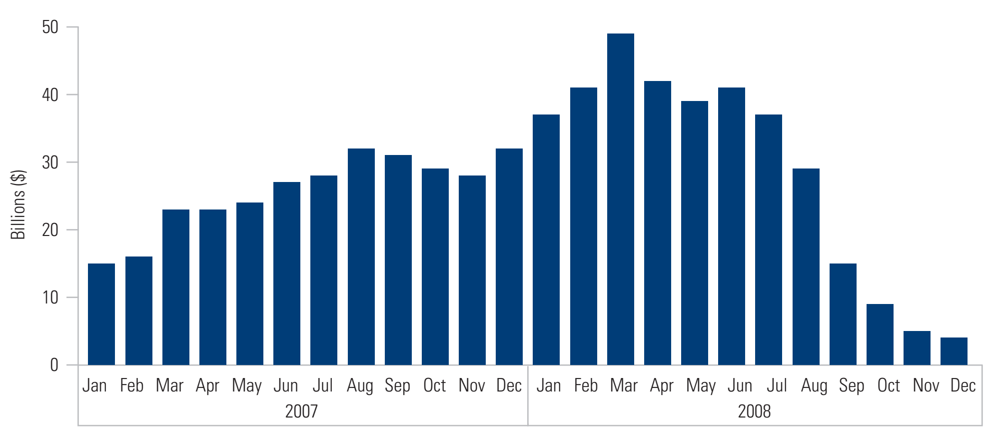


Source: GSAM

As illustrated in *Exhibit 6*, demand for credit from subprime borrowers is growing quite rapidly at a time when the availability of credit is diminishing. Subprime ARMs, which are typically fixed for only two years, will reset from a low teaser rate of seven or eight percent to a much higher rate of roughly 11 percent. In order to avoid a payment shock, subprime borrowers will need to refinance. But due to more stringent lending standards, these borrowers may not be able to find a willing lender. This supply and demand imbalance is likely to exacerbate the vicious cycle.

Exhibit 6: The impact of higher reset rates for subprime ARMs

Subprime ARM resets may exacerbate the vicious cycle



Source: Lehman Brothers and Loan Performance

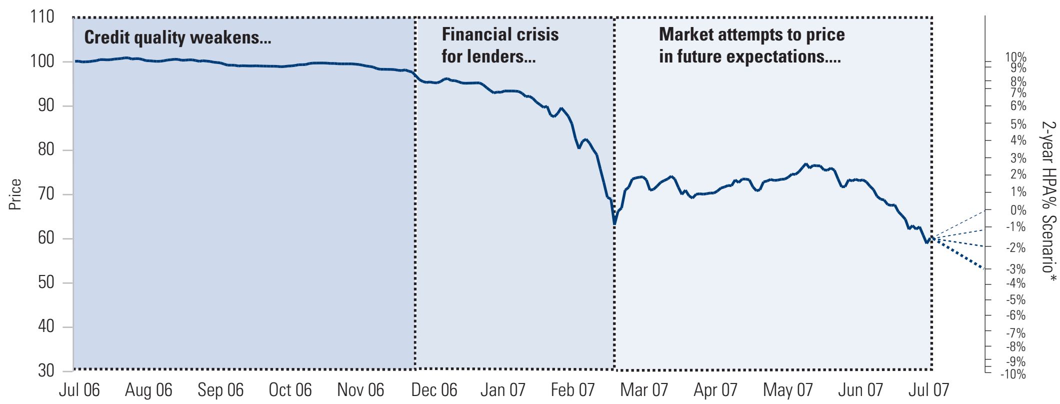
There are potential offsets with loan modifications and subsidized refinancing assistance that may ease the burden to some extent. However, we believe these efforts serve only as a band-aid on the problem rather than a long term solution. Ultimately, we are likely to see these borrowers exiting the mortgage pool by defaulting on their loans.

IV. Declining Subprime Bond Prices

All of the factors discussed previously – falling home prices, higher delinquency rates, lower demand for CDOs, loan originator fall-out and tighter lending standards – have collectively contributed to the dramatic decline in subprime bond prices. *Exhibit 7* charts the ABX Index, which references 20 BBB- subprime securities originated in the first half of 2006. The chart shows the price through time, and an estimate as to the fair value given a level of home-price appreciation.

Exhibit 7: Dramatic declines in subprime bond prices

Subprime ABS credit default swap Index (ABX.HE 06-2 BBB-)



Source: JP Morgan, Markit Partners and Lehman Brothers

* Reflects projected index price to indicated home price appreciation over the next two years, as of June 12, 2007. HPA reverts to 4% at the end of Year 4. This information discusses general market activity, industry or sector trends, or other broad based economic, market or political conditions, and should not be construed as research or investment advice. Please see additional disclosures.

As shown on the chart, the index price was relatively stable during the months when demand from CDOs was high. The market was pricing in 8% to 10% home price appreciation in these indices. In the beginning of this year, however, the virtuous credit cycle broke and the price fell quite dramatically. This could be viewed as a re-pricing to lower house-price appreciation expectation. Accordingly, we did not view the sell-off as an overshoot, but merely an acceleration of the eventual correction that we expected to take place.

Today, the index price is near $40, having fallen from $60 at the end of July. This prices in approximately 4% to 5% home-price declines for each of the next couple of years before reverting back to a more normal long-term average. Given the high level of home-price inventory, tighter credit conditions and its negative feedback loop, we believe that there is great uncertainty in the level of home price appreciation over the next several years. We believe there are significant risks toward higher losses as the default rate rises and the competition among housing sellers increases. Lower-rated subprime mortgages and certain higher rated CDO tranches will ultimately begin to take significant losses.

V. Subprime: Yesterday and Today

Subprime borrowers benefited from a virtuous credit cycle during the 2003-2006 period. But the virtuous cycle is becoming a vicious cycle where borrowers are overleveraged due to what was previously easy credit availability and expectations of future home price growth; weak underwriting and slower home price growth has led to significantly higher delinquencies; looming ARM resets are poised to further strain subprime borrowers; and loan defaults and tighter credit conditions may prolong housing market weakness, resulting in additional credit losses. While some have called for the bottom of the housing market here in the middle of this year, we would not expect it to happen for at least another year.

We believe there is still uncertainty as to how deep the home price decline may actually be. Continued deterioration in credit trends will likely lead to significant rating downgrades and additional selling pressure for securities backed by subprime loans. The rating agencies have only downgraded, or put on watch, approximately 30% of the 2006 BBB cohort. This number could rise to over 80% of 2006 subprime BBB bonds. That said, we believe that once the sector has re-priced to lower levels (in six to twelve months in our estimates), we may begin to see some significant security selection opportunities with attractive risk-return profiles.