

May 2007 | **Subprime Mortgages**

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Overview of Subprime Mortgages

I. Overview of Subprime Mortgages

Lenders' definitions of a subprime borrower vary, but they generally accept that a borrower with a credit score of less than 620 falls into the subprime category.

Certain criteria and weights are used to calculate an individual's credit score. For example, Fair, Isaac & Co¹. calculates FICO, one of the most common credit scores, by assigning values and weights to five factors: payment history, outstanding balances, length of credit history, new credit and types of credit.

FICO scores range from 300 to 850. The higher the score, the better the chances for getting loans at lower rates. Besides the subprime category, there are two other major credit categories: prime and near prime. A credit score of 720 and above is considered excellent and would qualify a borrower as prime. A borrower with a credit score between 720 and 620 is typically considered as near prime.

Subprime borrowers can have loans on credit cards, autos, mortgages etc.

1.1. Subprime Mortgages

The majority of subprime mortgages are taken out as cash-out refinancing loans², so they are often referred to as home equity loans (HELs). The subprime market consists of the following sub-sectors:

1) First-Lien Subprime Loans

The lender takes a preferred first mortgage interest on the property. The borrowers (obligors) have a 20%–25% equity in the property and select repayment terms of up to 30 years. The interest on the mortgage can be fixed or floating. The interest rate exceeds the interest rate available under agency programs³, because the borrower's credit is impaired. First-liens now comprise more than 80% of subprime securitizations.

2) Second Liens

The second lien has a perfected security interest in the property, but it is junior to the first mortgage lien. Second liens can be taken out at the same time as the first lien, for the purpose of purchasing a home with little down payment, or they can be taken out separately to refinance credit card debt, finance home improvements, etc. Second liens are about 10% of subprime securitizations.

3) High Loan-to-Value Mortgages

Some lenders make loans that exceed the value of the property (called high-loan-to-value, or HLTV loans). These loans generally do not exceed 125% of the property's appraised value. The interest on the amount of the mortgage that exceeds the property value is not tax deductible. In addition, these assets are generally treated as unsecured investments by regulators for capital purposes.

First-lien HLTVs have a typical LTV of 102%–103%, while second-lien HLTVs have a typical combined LTV of 110%–115%. First-lien HLTVs are issued for home purchase with no down payment. The amount in excess of 100% is used to finance the closing costs. Second-lien HLTVs are primarily consumer loans. The borrowers taking out first- and second-lien HLTVs have much stronger credit profiles than the borrowers taking out low-LTV first-lien subprime loans. HLTVs have declined in popularity, and today they are a small percentage of subprime securitizations.

4) “Scratch and Dent” Mortgages

The “scratch and dent” term encompasses loans that do not fall into the underwriting categories of lenders, but have some additional features that make them reasonably risky. For example, the borrower’s debt-to-income ratio may be too high, but the combination of disposable income and LTV make the loan attractive. These loans are also called “program exceptions.”

Other reasons for loans to be classified as scratch-and-dent include the following: (1) the loans have been removed from sale to a third-party purchaser; (2) they are delinquent loans (not in bankruptcy or forbearance⁴) up to three-months past due; (3) the loans are in bankruptcy; (4) the loans had prior multiple delinquencies that are now cured; and (5) the loans are subject to certain appraisal, credit documentation and/or other deficiencies.

5) Reperforming Loans

Reperforming mortgages include the following (a) rewritten loans where the prior loan may have been in default and the new loan was originated in a workout situation; (b) loans where the original loan terms have been modified pursuant to the Service Members Relief Act of 1940 (Relief Act loans); and (c) modified loans where the original loan terms have been subject to a material modification pursuant to a written agreement.

¹ Like Standard & Poor’s or Moody’s, which rates corporate bonds, Fair, Isaac rates individual consumers’ credit worthiness and provides credit reports to lenders such as credit card companies.

² Cash-out refinancing is a way for a homeowner to access the equity built in the house. By taking out a larger mortgage to refinance an existing smaller one, the homeowner receives extra cash to pay off other debt.

³ Agency programs refer to the mortgages from the Fannie Mae, Freddie Mac and Ginnie Mae, which are all “quasi” government agencies.

⁴ Forbearance refers to that the lender agrees to defer payments of currently or previously owed amount to a later date when the borrower is capable of paying again.

1.2. Subprime Profiles and Characteristics

Based on several lenders’ reports, the typical subprime borrower has a relatively stable employment history, with some years in his job and profession. The home is generally a single-family dwelling typical of an average American home - 1,500 square feet, 3 bedrooms, and 1.5 bathrooms. The average home price is US\$220,000. These collective borrower traits portray a picture of economically stable consumers with a home that has benefited from the strong housing market, but is typically not located in one of the highest growth areas.

Subprime Borrower Profile	
Age	43 years
Monthly Income	US\$5,780
Time in Property	5 years
Time in Job	8 years
Time in Profession	11 years
Property Type	84% single-family
Year Built	1960
Size	1,500 sq. ft.
No. of bedrooms	3.0
No. of bathrooms	1.5
Property value	US\$220,000

Source: Citigroup

As discussed in the table below, first-lien subprime loans are mostly taken as cash-out refinancing (60% of floating rate loans and 75% of fixed-rate loans). The cash-out is used for home improvements, paying off consumer debt, medical expenses and other consumer purposes. Other characteristics include:

1) Virtually all floating-rate subprime loans are hybrids. The fixed-rate term is either two years (80%) or three years (20%), after which the loans reset every six months, indexed to six-month LIBOR.

- 2) Historically, about 90% of the loans are taken out on borrower-occupied properties. There are very few investor properties in subprime pools, although their percentage has risen in the recent years.
- 3) More than 75% of the subprime loans are backed by single-family properties. For the majority of subprime loans (60% of floating-rate and 70% of fixed-rate), the borrower has submitted full documentation, which typically includes two years of income tax returns, pay stubs with verification of employment, and a full documentation of assets.
- 4) The majority of loans carry prepayment penalties, which slow down prepayments and contribute to lasting cash flows. The amount of penalty varies, though the most common penalty is six months’ interest on 80% of the unpaid principal balance.
- 5) About half of hybrids have two-year penalties, 20% have three-year penalties, and 30% have no penalties.

Therefore, the typical subprime loan is clearly differentiated from the other non-prime and non-agency category, namely, the alt-A loan. Alt-A loans are considered as near prime loans with higher credit scores and higher loan balances, but also have significantly higher concentrations of investor borrowers and loans with limited documentation (for example, no tax returns for years and/or limited income verification)

1.3. Size

Whole Loans⁵ and Cash RMBS

There is no precise measure of the size of subprime whole loans as the older vintages have most likely been paid off and the recent vintages may not be captured by the major loan databases. Based on LoanPerformance, a database that covers a large majority of subprime loans by an estimated 70%, the total outstanding amount of subprime loans could be close to US\$1 trillion.

Year	Current Outstanding Loan Amount (US\$ bn)
2006	500
2005	350
2004	180
2003	48
2002	15
2001	8
2000	4
Total	1,057

The amount of the whole loans originated before 2000 is insignificant—they have been paid off, refinanced or fallen into default.

But not all the whole loans are securitized. On average, the historical securitization rate has been about 60%—with roughly US\$600 billion subprime loans securitized, sliced and diced into different tranches of RMBS and sold to the public market.

Of the US\$600 billion RMBS backed by subprime loans, less than 8-9% or about US\$50 billion are non-investment grade rated (BBB- and below), which are of immediate concerns to investors in the event of massive defaults. Over 90% of securities issued are rated BBB and above due to the subordinations provided by the non-investment grade tranches.

By contrast, the total size of residential mortgage debt is estimated to be about US\$9.5 trillion (agency, prime, near prime and subprime), of which about US\$5.5 trillion are securitized into MBS. **Therefore, subprime mortgages account for 10.5% (1/9.5) and 10.9% (0.6/5.5) of the total residential mortgage debt and securitized MBS, respectively—not exactly dominant by any measure.**

⁵Whole loans are the same as mortgages. The use of the word “whole” simply means that the loan has not been securitized (or sliced and diced into various tranches of different credit ratings).

Related Markets

The cash subprime RMBS market has spawned other related markets, namely ABS CDOs and CDS on ABS (both single name ABCDS and the ABX indexes). It is even harder to put numbers on these markets.

According to BIS and ISDA⁶, the notional amount of the entire CDS market, including Corporate and ABS was about US\$26 trillion as of the end of 2006. A report by Fitch⁷ put the notional amount of ABS CDS at US\$500 billion at the beginning of 2006. Given the rapid expansion of synthetic ABS trading in 2006 and early 2007, the outstanding notional must have grown to a much larger number by now. By some estimates, it is over US\$1 trillion, including both longs and shorts.

As for the subprime ABS CDO⁸ market, it is an estimated 40% of the US\$600 billion CDOs issued in the last three years or about US\$240 billion in size.

Summary

Size of subprime whole loans:	US\$1 trillion
Size of cash RMBS backed by subprime:	US\$600 billion
Size of non-investment grade cash RMBS:	US\$50 billion
Size of ABS CDS and ABX Indexes:	US\$1 trillion
Size of ABS CDO:	US\$240 billion

Between loans, cash bonds and derivatives, there are over US\$2.2 trillion worth of instruments traded in the various markets (it would be double counting to include the loans and the RMBS deals backed by these same loans).

II. Origination and Securitization of Subprime Mortgages

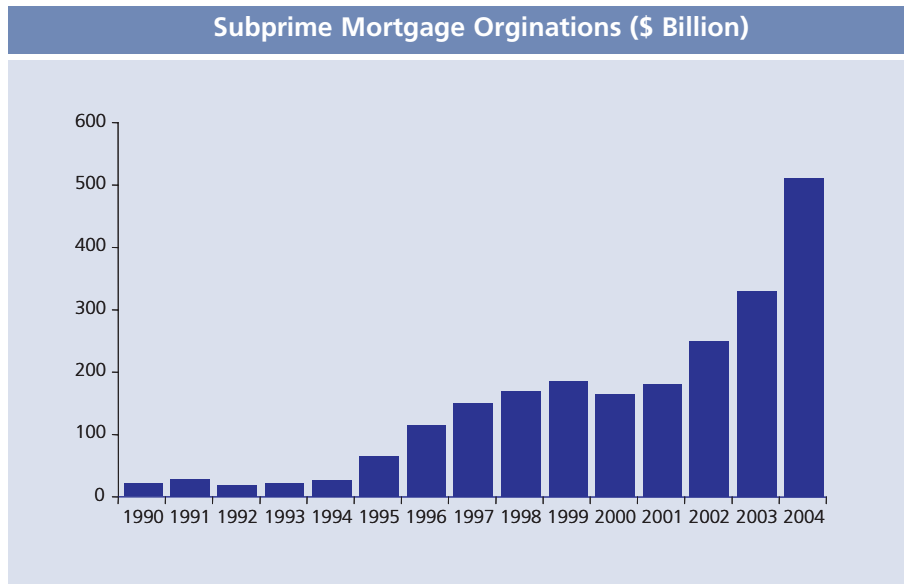
2.1. Evolution of Subprime Lending

The subprime mortgage market did not take off until mid- to late-1990s. Since then, growth has been phenomenal—the total volume of subprime loan origination has risen from US\$65 billion in 1995 to over US\$500 billion in 2004 (before paying off, prepayment and defaults). The last couple of years saw even stronger volumes—over \$600 billion subprime loans were originated in 2006 alone.

⁶Bank for International Settlements and International Swaps and Derivatives Association.

⁷Similar to S&P's and Moody's, Fitch is another major credit rating agency.

⁸ABS CDOs are CDOs issued with ABS as collateral, which could include subprime ABS or prime ABS.



Source: Inside B&C Lending

Many factors have contributed to this growth:

- 1) Lending institutions were not able to charge high interest rates and fees until the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) came into effect in 1980. The market was only available to homebuyers in the prime category.
- 2) In 1982, the Alternative Mortgage Transaction Parity Act made it possible to charge variable rates and allow balloon payments.
- 3) In 1986, the Tax Reform Act of 1986 increased demand for mortgage debt as it allowed interest deductions from income, making even high cost loans more affordable.
- 4) In 1994, interest rates unexpectedly rose and the volume of originations in the prime market dropped precipitously. Mortgage brokers and originators responded by increasing subprime loan originations in order to maintain volume.
- 5) The development of RMBS market and the acceptance by investors in the 1990s provided funding to subprime originators as they could securitize the loans, sell them in the public market and move on to originating new loans.
- 6) In the late 1990s, housing price appreciation (HPA) was high, while interest rates declined to some of the lowest levels in decades, thus providing low-cost access to the equity in homes. Of the total subprime loans originated, over 50% were for cash-out refinancing, whereas about 30% were for home purchases.

As the subprime market has evolved over the past decade, many firms that started the subprime industry have either failed or been purchased by larger institutions. The subprime meltdown of 2007 will undoubtedly prove as a catalyst to more consolidation.

Major Subprime Lenders Across Various Market Phases			
Pre- 1996	1996-1998	1999-2001	2002-2006
Money Store	Associated First	Household	Ameriquest
Beneficial	Household	CitiFinancial	New Century
Household	ContiMortgage	Bank of America	CitiFinancial
Guardian Savings & 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
		Ameriquest	Wells Fargo

Source: Inside Mortgage Finance

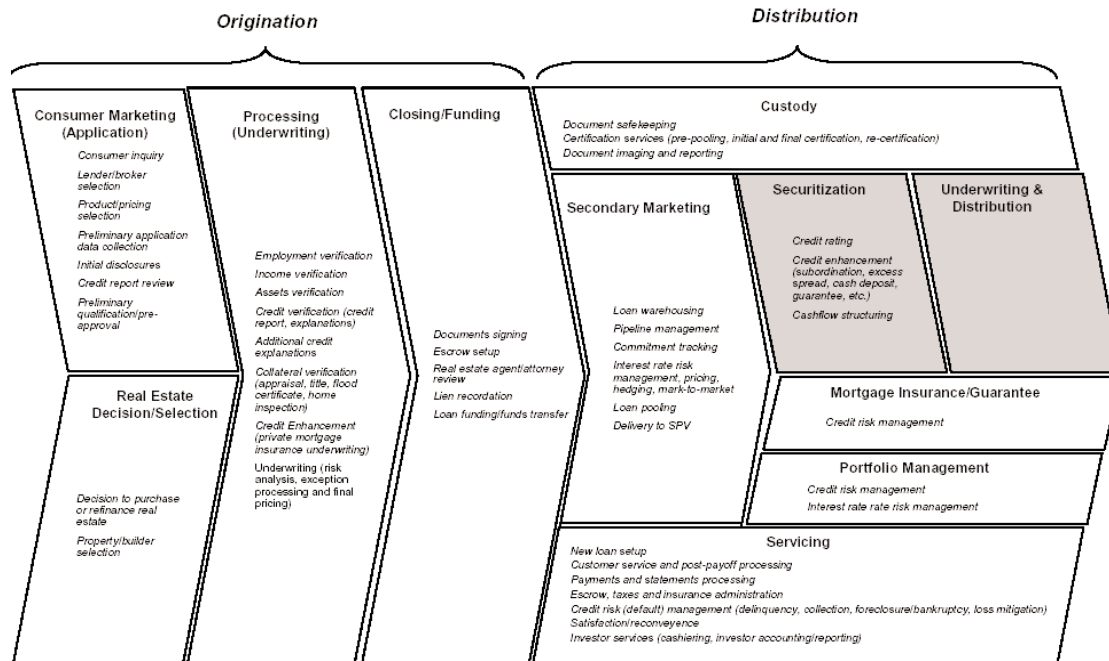
2.2. Origination

Subprime lenders create loans in three ways: retail, correspondent and broker network. Most lenders employ a combination of the methods. For the investor, the origination channel is relevant because it affects the performance of the loan. Loans from brokers and correspondents tend to see faster prepayments. In addition, investors typically scrutinize the re-underwriting practices of subprime issuers to ensure that bulk purchases do not result in lower credit quality of the loans.

Retail originators work directly with the borrower, either through retail branches or calling centers. Many customers are referred to the lender through affiliates, such as credit card companies, insurers, or related mortgage lenders. Retail originations are more expensive than other origination channels, but they provide the lender with points and loan origination fees, which are significant sources of income. Retail originations provide an opportunity for best loan selection and pricing.

Correspondent lenders (correspondents) are banks and finance companies that are typically too small or regionalized to warrant retaining and servicing the loans. Correspondents sell their originations to larger lenders in packages. Most final lenders re-underwrite the correspondent loans to make sure they meet the lender's credit criteria.

Mortgage brokers match borrowers with mortgage lenders. They act as an intermediary, trying to get the best match between the borrower and the lender. Brokers typically offer a loan to several lenders and act on the most competitive offer. The lenders, in turn, underwrite each loan before offering the loan terms. Broker channels have consistently dominated subprime loan production. In 2004 they accounted for more than 50% of subprime originations.

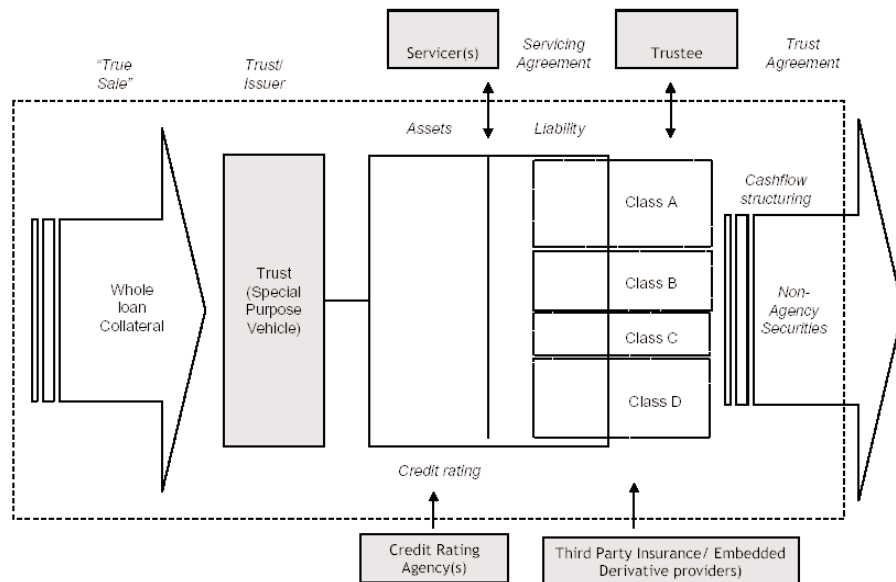


Source: Citigroup

2.3. Securitization

Securitization is the process of pooling subprime mortgage loans and converting them into packages of securities with various credit ratings. The process could include the following steps:

- 1) Originators sell whole loans (packages via a flow program) to a Wall Street Dealer or directly into a trust,
- 2) Trust issues rated, registered securities, which the dealer distributes to investors acting as securities underwriter,
- 3) AAA rating is achieved through senior/subordinate structure, whereby a portion of the pool is subordinated to the rest with respect to realized losses,
- 4) Dealer works with investors to structure various cash-flows to meet investor needs and requirements (reverse inquiry),
- 5) Trust receives cash flows from underlying loans and distributes monthly to investors according to distribution rules,
- 6) Dealers provide secondary trading liquidity, valuation and analysis.



Source: Citigroup

The senior/sub structure is currently the most common means of enhancing the credit in subprime deals. It accounts for more than 95% of current issuance. The senior/sub structure provides credit enhancement through three mechanisms:

- 1) Subordination;
- 2) Overcollateralization (OC); and
- 3) Excess spread.

All three mechanisms coexist in a deal, and the size of each one changes from month to month and deal to deal.

Definition of Subordination

Subordination means that payments of interest and principal on the classes are ordered according to some priority. If in a given month the amount of available cash is insufficient to cover the full interest and principal payments on all the classes, the classes with higher priority get paid in full, while some of the classes with a lower priority experience an interest or principal shortfall. Bonds that have higher priority of payments carry a higher credit rating.

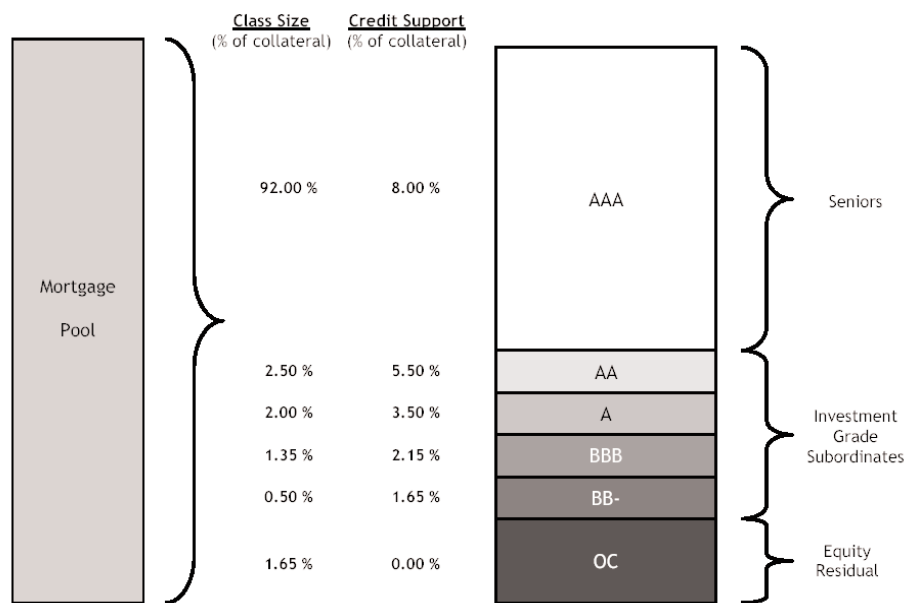
Definition of Overcollateralization (OC)

OC is the excess of collateral balance in a deal over the face amount of the bonds. Deals can either be issued with an initial OC, or the OC can be built up to some target level by using excess spread to accelerate the paydown of bonds.

Definition of Excess Spread

Excess spread is the difference between the gross coupon on the loans, adjusted for servicing and other fees, and the average coupon on the bonds. A typical servicing fee is 50bp per year and the trustee and other administrative fees are generally less than 2bp. Excess spread is the first line of credit protection in any subprime deal.

Please see below for a typical subprime RMBS structure (the current OC level, however, is much higher depending on the quality of the pool).



Source: Citigroup

III. Problems in the Subprime Market

A barrage of negative news about the subprime market has dominated headlines in recent months. We highlight some dates below.

3.1. Sequence of Events

March 14th

- National City reports that it might increase reserves US\$50 million after one of its mortgage insurance companies covering its HEQ portfolio rejected claims related to its mortgage losses. National City believes the reasons for rejecting the claims were “inappropriate”. National City also announces that they would write down US\$11 million in subprime loans.

March 15th

- ACC Capital Holdings fires an unspecified number of workers. This affects workers in Ameriquest (provider of subprime loans), Argent Mortgage (provider of loans via independent brokers), and AMC Mortgage Services (servicer of loans).
- GE agrees to purchase PHH Corp. for US\$1.8 billion, and upon closing the transaction sells PHH Mortgage (retail originator/servicer of residential mortgages) to Blackstone Group, the private equity firm.

March 16th

- Accredited Home Lenders puts up US\$2.7 billion of loans in its held-for-sale portfolio for sale, so it can enhance liquidity. The loans are being sold at a deep discount, and Accredited takes a US\$150 million hit on the sale.
- Credit Suisse doubles Fremont’s credit line to US\$1 billion. In addition, Fremont announces that it is unable to meet its extended (March 16) annual report filing deadline.
- Novastar cuts 17% (350 jobs) of its staff, primarily within the firm’s wholesale loan origination group and related functions.

March 19th

- Connecticut, Maryland, Rhode Island, and Tennessee issue cease-and-desist orders to New Century regarding taking new loan applications (Ohio issued a temporary restraining order). These states join Massachusetts, New Hampshire, New Jersey, and New York in similar orders after New Century failed to fund the mortgage loans after closing.
- Accredited faces expulsion from the NASDAQ Stock Exchange, after failing to file its 10-K by March 15.
- C-Bass will pay 28% less for Fieldstone under an amended purchase agreement.
- Fremont tells staff they may be dismissed in 2 months; employees will receive pay and benefits through May 18 unless they find other jobs.

March 20th

- Accredited receives a US\$200 million loan from Farallon Capital Management, the hedge fund manager. The 5-year loan may be used to fund new mortgages, general working capital, or other corporate needs.
- People's Choice Home Loan Inc., a mortgage lender based in California, files for Chapter 11 bankruptcy protection.
- Wells Fargo will eliminate over 500 subprime mortgage division jobs.

March 21st

- Fremont agrees to sell US\$4 billion in subprime loans, and estimates a US\$140 million pre-tax loss on the deal (the sale reflects 3.5% discount to face value). Fremont receives US\$950 million cash from the 1st sale installment. Remaining sales are expected to be completed over the next few weeks.
- Citadel, after purchasing ResMae for US\$180 million on 3/5, acquires a 4.5% ownership interest in Accredited.
- Bank of America cuts Option One's (H&R Block's mortgage lending unit) credit line from US\$4 billion to US\$2 billion.
- PHH Corp (acquired by GE; Blackstone Group owns PHH Mortgage) delays its 10-K filing for 2006.

March 22nd

- Barclays drops demands that New Century buy back US\$900 million in mortgages. In return, New Century agrees to transfer the mortgages it financed with Barclays "as is" and "without any representation or warranties", and will realize a US\$46 million loss on this deal.

March 23rd

- In its 2006 financial results, Freddie Mac discloses that it held US\$124 billion of non-Agency securities backed by subprime loans at year-end 2006, or about 18% of the US\$704 billion portfolio (nearly all of which were AAA rated).

March 26th

- Morgan Stanley announces it will publicly auction US\$2.48 billion of mortgages originated by New Century.

March 27th

- Merrill Lynch-owned First Franklin cuts an unspecified number of jobs relating to loan processors, as well as other jobs with similar functions.

March 28th

- Fulton Financial Corp. reports it will take a US\$5.5mm pre-tax charge in Q1 2007, due to EPDs⁹ on 80/20 piggyback¹⁰ and stated income loans.

March 29th

- HSBC chairman Stephen Green says the bank will cut back its subprime division “significantly”. Mr. Green adds: “Whether or not we’ll write it off completely I’m not sure.” HSBC had bought subprime lender Household International in 2003.
- Homebuilder Beazer Homes, currently under investigation by the FBI, receives a federal grand jury subpoena for documents related to its mortgage origination business.

March 30th

- First NLC (owned by Friedman, Billings, Ramsey Group, Inc.), a subprime originator based in Florida, announces it will close several of its wholesale operations centers, and will lay off employees.

April 2nd

- Barclays completes its US\$76 million acquisition of EquiFirst (subprime origination business unit of Regions Financial Corporation).
- To avoid foreclosures, EMC Mortgage (owned by Bear Stearns) sets up a 50-member team that will be responsible for meeting with homeowners having difficulty in making their mortgage payments.
- New Century files for Chapter 11 bankruptcy (no surprise for market participants!). New Century also enters into an agreement to sell its servicing assets and servicing platform for US\$139 million to Carrington Capital Management, and to sell certain loans and residual interests for US\$50 million to Greenwich Capital (both agreements are subject to the approval under the bankruptcy code). New Century will also reduce its workforce by 3,200 or 54%.
- News emerges of Grant Thornton’s resignation as auditors to Fremont and Accredited. The auditor states that the two companies “no longer meet our requirements for clients acceptance.”

April 3rd

- New Century’s US\$150 million loan is approved by the bankruptcy judge, enabling it to stay open while it auctions off assets.

April 9th

- Mortgage lender American Home Mortgage Investment Corp cuts its dividend, and reports that earnings would miss analysts’ estimates. Its shares fall nearly 20% on this news.
- The Bankruptcy Trustee oppose New Century’s proposed sale of US\$50 million mortgages to RBS.

⁹EPDs or Early Payment Defaults are delinquencies within the first few months (3-6 months) after taking out a loan.

¹⁰80/20 piggyback are second liens. Instead of taking one loan with a Loan-to-Value (LTV) of 95%, which requires mortgage insurance and is costly, the borrower takes out a first lien for 80% LTV and a second lien for the remainder 20%. The presence of the second lien does not affect the legal priority of the first lien in case of borrower default.

April 10th

- Accredited Home Lenders hired new auditors to replace Grant Thornton, the second firm it has parted ways with in the course of a year.

April 11th

- NovaStar announces that it received a commitment for an additional financing facility of up to US\$100 million, arranged by Wachovia. This facility is part of NovaStar's efforts to enhance liquidity. The firm also announces it is exploring strategic alternatives which may include a sale. NovaStar says originations of nonconforming loans (including subprime) fell 58% in Q1 2007 versus last year.

April 12th

- Wells Fargo files a complaint against New Century's auction of its mortgage service unit, stating that the auction process used shuts out competitors. C-Bass also says the auction rules make it too expensive to challenge the initial bidder (Carrington). Both Wells and C-Bass complain that New Century has not released enough information about the Carrington offer.
- New Century wins permission to sell about 2,000 mortgages to a RBS subsidiary unless a competitor exceeds the US\$47.3 million bid (face value of loans = US\$170 million). The auction ends April 30th. New Century also wins approval for US\$7.34 million worth of incentive payments to loan division employees.

April 13th

- First Horizon, based in Irving, Texas, shuts down its nonprime wholesale lending unit.
- Homefield Financial, based in Irvine California, shuts its wholesale lending division.

April 16th

- Fremont General Corp agrees to sell US\$2.9 billion of subprime home loans to an unidentified buyer, and expects to record a US\$100 million pretax loss on this sale. This follows a sale of \$4 billion worth of subprime loans announced last month.

April 17th

- Fannie Mae and Freddie Mac plan to help subprime borrowers avoid foreclosure by helping them refinance into more affordable mortgages. Fannie Mae plans to encourage 2,000 lenders to help subprime borrowers refinance their ARMs to 40-year fixed rate loans. Freddie Mac proposes offering fixed rate loans with as long as 40-year terms and ARMs with longer fixed rate periods.
- Credit Suisse agrees to buy nonprime residential lender, Lime Financial Services. Lime (founded in 1999) funded about US\$2.1 billion of loans in 2006.

April 18th

- Ellington Management Group, a Connecticut-based hedge fund, announces its plans to buy Fremont's real estate business and US\$2.9 billion of subprime loans.
- Washington Mutual announces its commitment to refinance up to US\$2 billion in subprime loans at discounted mortgage rates, to help homeowners (with subprime mortgages) avoid foreclosures.
- Freddie Mac announces to purchase as much as US\$20 billion fixed and adjustable rate mortgages to provide lenders with more options to offer subprime borrowers.

April 19th

- New Century receives permission to sell its loan service division to Carrington Capital Management (unless the US\$133.3 million bid is topped).
- GE's WMC mortgage unit will lay off 771 employees (50% of their workforce) and will also close 3 service centers.

April 20th

- H&R Block announces its plan to sell Option One to Cerberus Capital Management. Cerberus will pay [cash value of tangible net assets when the deal closes less US\$300 million]. H&R Block also shut its mortgage retail division

3.2. Government Related News

Regulators and politicians have stepped up their discussions over possible remedies as the flow of "bad" news continues. This included plans to tighten the underwriting standards and some form of federal "aid." At this stage, it is unclear how the different proposals (see below) might proceed and potentially affect the subprime market.

- Governor Ted Strickland said Ohio (with the highest foreclosure rate at the end of 2006) might have to expand its initial plans to raise \$100 million from municipal bonds to help homeowners refinance their mortgages.
- Senator Ronald Rice, who represents New Jersey, proposes a program similar to Ohio's, helping homeowners refinance their mortgages. Senator Ronald Rice wants a plan in which the state housing agency could borrow at least US\$100 million to offer 30-year fixed rate loans to borrowers facing foreclosure.
- Senator Chuck Schumer, a New York Democrat, calls for the federal government to bail out troubled borrowers. The Senator also proposes a bill that creates a national system regulating mortgage brokers. The legislation would also establish a "suitability" standard aimed at shielding borrowers from unaffordable loans.

Overall speaking, more and stricter subprime regulations seem extremely likely to happen in the near future, which should strengthen the underwriting standards and reduce delinquencies for the loans of 2007 vintage. Any bail out programs at tax payers' expense, however, are unlikely to pass.

IV. Effect on Market Constituencies

We should not underestimate the extent of problems in subprime. Negative news flow will continue and we will probably see more subprime bankruptcies in the future. So far we have heard reassuring words from Treasury Secretary Henry Paulson and Fed Chairman Ben Bernanke about the limited impact of the fallouts from subprime,

What are the repercussions? And how are the various market participants being affected by the meltdown?

4.1. Effect on Subprime Originators

The following shows the top 25 originators in 2006. Four of the originators (Ownit, ResMae, Mortgage Lenders Network and New Century) have already filed for bankruptcy, and several others are on the verge. A fair number of subprime originators could shut over the coming months, as they are currently unprofitable. Few independent subprime issuers are expected to have the capital necessary to support such a business for any prolonged period. Most independent subprime originators will seek "deeper pocketed" parents or they will be forced to declare bankruptcy.

Rank	Lender	2006 Volume Vol. (US\$ mil)	Mkt share	% Change Vol 05-06	Notes
1	HSBC Finance, IL	\$52,800.00	8.30%	-9.90%	HSBC Household Finance (rumored to be up for sale); Decision One (owned by HSBC (rumored to be up for sale)
2	New Century Financial, CA	\$51,600.00	8.10%	-2.10%	In breach of debt covenants; restating '06 earnings downwards; major shareholder lawsuits; blanket national layoffs beginning; stopped accepting loan applications, speculation of bankruptcy, stock de-listed from NYSE, SEC starts investigation; 5 additiona
3	Countrywide Financial, CA	\$40,596.00	6.30%	-9.10%	Countrywide stopped offering no money down loans.
4	CitiMortgage, NY	\$38,040.00	5.90%	85.50%	

Rank	Lender	2006 Volume Vol. (US\$ mil)	Mkt share	% Change Vol 05-06	Notes
5	WMC Mortgage, CA	\$33,157.00	5.20%	4.30%	WMC (subsidiary of GE) stopped offering hi CLTV loans and announced to lay off 460 workers on the loan production front
6	Fremont Investment & Loan, CA	\$32,300.00	5.00%	-10.90%	3/2/07 Fremont announced shut down of subprime business; Credit Suisse doubled Fremont's line of credit to \$1bb.
7	Ameriquest Mortgage, CA	\$29,500.00	4.60%	-61.00%	Ameriquest (On life support from Citigroup; may end up acquired. Owned by ACC); Recently shut most offices and settled with 30 states over predatory lending; laid off workers.
8	Option One Mortgage, CA	\$28,792.00	4.50%	-28.60%	Owned by H&R Block; up for sale; stopped funding loans for subprime/alt-a with CLTVs>95%; H&R Block reduced the value of Option One's residuals by \$29.2mm.
9	Wells Fargo Home Mortgage, IA*	\$27,869.00	4.40%	-8.10%	Wells announced staff reductions for their subprime operations
10	First Franklin Financial Corp, CA	\$27,665.50	4.30%	-5.70%	First Franklin (acquired by Merrill Lynch from National City for \$1.3bln)
11	Washington Mutual, WA	\$26,600.00	4.20%	-21.50%	Washington Mutual's Long Beach Mortgage cut 50 jobs in response to problems in subprime mkt.
12	Residential Funding Corp., MN	\$21,200.00	3.30%	-16.10%	GMAC-RFC (Major layoffs in ResCap; Reports 4th qtr loss due to losses on subprime loans)
13	Aegis Mortgage Corp., TX	\$17,000.00	2.70%	-4.70%	Aegis (recently closed two subprime operations centers)
14	American General Finance, IN	\$15,070.00	2.40%	-2.40%	
15	Accredited Home Lenders, CA	\$15,766.80	2.50%	-4.90%	Accredited Home is delaying earnings filing; announced sale of \$2.7bb of its loans in HFS portfolio, will take \$150mm hit on sale; may cut jobs; received \$200mm loan from Farallon Capital Mgt (hedge fund manager).
16	BNC Mortgage, CA	\$14,500.00	2.30%	-3.30%	Lehman subsidiary
17	Chase Home Finance, NJ	\$11,550.00	1.80%	19.70%	
18	Equifirst, NC	\$10,750.00	1.70%	21.60%	Acquired by Barclays
19	NovaStar Financial, KS	\$10,232.70	1.60%	10.20%	Novastar (serious impairments; likely no dividends in 2007, no taxable income through 2011, shareholder lawsuits, stopped offering high CLTV loans; cuts 17% of its staff)
20	Ownit Mortgage Solutions, CA	\$9,500.00	1.50%	14.60%	12/7/06 Ownit (partially-owned by Merrill and BofA) filed for bankruptcy

Rank	Lender	2006 Volume Vol. (US\$ mil)	Mkt share	% Change Vol 05-06	Notes
21	ResMae Mortgage Corp., CA	\$7,659.00	1.20%	11.60%	2/13/07 ResMAE filed for bankruptcy -- acquired by Citadel
22	Mortgage Lenders Network USA, C	\$6,000.00	0.90%	100.00%	2/5/07 - filed for bankruptcy
23	ECC Capital Corp., CA	\$5,484.50	0.90%	291.20%	ECC/Encore (fire-sale bought out by Bear-Stearns); trading of ECC stock has been suspended
24	Fieldstone Mortgage Company, ME	\$4,991.30	0.80%	-33.70%	Fieldstone (2007-02-16, bought by C-Bass); C-Bass will pay 28% less for Fieldstone under an amended purchase
25	Nationstar Mortgage (Centex), TX	\$4,619.00	0.70%	-23.00%	Owned by Fortress Investment Group
Total for Top 25 Lenders:		\$543,243	84.90%	-10.20%	
Total B&C Originations:		\$640,000	100.00%	-3.80%	

Source: Inside B&C Lending

According to the UBS mortgage strategy team headed by Laurie Goodman, the origination model in place for most of 2005-2006 followed this structure: the all-in cost of origination was US\$101.5, and the loans were sold at US\$102.5. The only other expense item was the "hit" from early pay defaults (EPDs). Typically in the subprime arena, EPD protection is provided for the first payment. In other words, if a loan misses the first payment, the loan is labeled an EPD and can be "put back" to the originator. (EPD protection is typically for the first 3 months for Alt-A paper). Thus, for most of 2005, the cost to the originator of the EPDs was 20 bps. That is, EPDs were 2% of the pool balance, and the originator lost 10 points on each loan put back to them (the loans could be resold at US\$90). Thus the originator was clearing ~US\$0.80 per US\$100 of loan origination (100 bps - 20 bps EPD "hit").

At this point, origination is a very unprofitable business. The all-in cost of origination is higher (US\$102, rather than US\$101.5), as fixed costs must be spread over a smaller number of loans. In addition, the loans are selling at a loss, and EPDs are higher. In the current market, the sale price on a clean package of loans is in the US\$98-99 range. The last clean package traded at US\$99, and prices have dropped since then (we'll use US\$98.5 as the sale price). Thus, origination is now a money-losing business—a loan is originated at US\$102, sells at US\$98.5—locking in a US\$3.50 loss/US\$100 originated. EPDs have been running ~6% of the pool balance on the very weak 2006 origination. Two months ago, these loans were trading at a price of US\$80, suggesting that the cost of the EPDs was 120 bps (20 points on 6% of the pool balance). More recently, the liquidation value of the delinquent loans was US\$65, suggesting that the cost of the EPDs is 210 bps (35 points on 6% of the pool balance). Thus, the loss on very low quality recent origination approaches US\$5.60 per US\$100 par.

This analysis indicates that it is now unprofitable to run a subprime business, and it will remain so for the near future. Even originators currently in good shape will be running down their capital for months to come, and most of those without deep pockets are likely to be acquired or exit the business. It should be noted that the first round of bankruptcies stemmed from lenders' lack of capital to meet EPDs. The second round of bankruptcies will come from originators' capital being eaten away.

To make matters even more problematic, many originators are relying on warehouse lines with the dealer community to finance themselves. As loan values decline, these positions are subject to margin calls. These lines also contain warehouse lending covenants regarding their financial condition; a number of originators are in violation of such. These lines are often renewable yearly (some every 6 months, some at will), thus rollover risk is a concern. If covenants are breached, payments can be accelerated.

According to Goldman's team, the business will eventually be profitable again. Fewer loans will get made. Volume will fall by a minimum of 30%, maybe more. Loans that will be made will be of higher quality. We are already seeing that subprime originators are unwilling to offer the popular 80/20 piggy-back loan; they are more generally steering away from high LTV lending. With more limited supply and better quality product, we would expect EPDs to fall and prices to rise. That reversal, however, will take a while. We expect some signs of stabilization later this year. However, by then, it will be too late for many current market participants.

4.2. Effect on Wall Street Firms

Wall Street firms' exposure to subprime is limited, making up just a small part of their overall business. For example, Bear Stearns has noted that only 3% of total mortgage revenue has historically come from sub-prime. Similarly, Lehman noted that U.S. subprime-related revenues (originations, securitizations, trading) has averaged less than 3% of total firm revenues in the past six quarters.

There has been considerable speculation by market participants about the direct exposure of major dealers to sub-prime originators. Investor concerns center on warehouse lines to finance sub-prime originators and ramp up CDO deals. It is expected that the losses from both activities will be rather limited. A bigger concern is that the largest impact will be on future revenues (albeit such revenues will remain a relatively small part of large operations).

Financing for sub-prime originators takes two forms—either Single-seller Asset Backed Commercial Paper (ABCP) programs or warehouse line (repo financing). In the former, the A1/P1 commercial paper is extendable, and a large bank steps in behind the investor to provide a market value swap. In 2006, originators funded about 25% of their needs through ABCP. However, this has become prohibitive from

a liquidity point of view; these programs require more cash to fund the same amount of loans than do warehouse lines. Thus a number of originators have closed these programs. The ABCP conduits now account for only 10% of total loan financing, and do not represent a large risk to institutions.

Originators have turned increasingly to warehouse lines (repo lines) for financing. The dealer community has built in a variety of protections. The most important protection is that in the event of bankruptcy, the warehouse line provider (dealer) is exempt from the automatic stay and can liquidate the assets as if they own them. In addition, warehouse lines initially provide financing to the originator with a 2% haircut, and the dealer providing the financing has the right to make margin calls as needed, based solely on the dealer's determination of market value. Clearly, if the originator is unable to meet the margin calls, the dealer could liquidate the collateral. An additional dealer protection is the use of warehouse lending covenants, which require the originator to provide up-to-date financials and to meet debt coverage ratios and profitability targets. If the originator is unable to meet these covenants, the dealer could accelerate the required payments. Finally, the lines are generally renewable.

The net result, according to UBS' mortgage strategy team, is that subprime originators are obliged to work very closely with the dealer, who is in the stronger position. A number of originators have breached their covenants. Collateral from at least one major originator has been liquidated to free up warehouse lines (the loans sold at 92-93). In that particular case, all dealers were made whole as enough pre-emptive margin calls were made to bring the cost below liquidation price. More generally, assuming the collateral was purchased at par, sold at 92.5, had a 2-point haircut and some early margin calls were made—the loss to the dealers would be about 3 points.

In the event of bankruptcy, any losses on the warehouse lines not covered by collateral liquidation would be unsecured claims. In short, given the 2% haircut and margin calls—Wall Street's losses on warehouse lines are likely to be relatively small.

It is important to realize that the warehouse lines are not fully utilized, as new production has been very light. It is true that many of the loans on warehouse lines are getting increasingly stale, and are apt to sell at lower dollar prices the longer they sit on warehouse lines. This "stale" collateral is estimated to be about US\$30 billion. Even so, with protections in place, the impact on the dealer community is apt to be muted.

A second source of concern is CDO warehouse lines. Generally, when a CDO is ramping, the dealer takes spread widening risk and receives the carry. However, that risk can be hedged, since the dealer is essentially long credit risks through single name CDS, and can short the ABX against it. In fact, with the ABX¹¹ selling wider

than single name CDS, dealers that consistently hedged CDO warehouse lines have not lost money. Most of the Mezzanine Structured Finance CDOs¹² that were over 50% ramped have been distributed, albeit at much wider spreads. In many cases, the deals were downsized. A number of the high grade CDOs that were mostly ramped were unwound, as the liabilities widened to the point where it was economic to liquidate the deals. The Mezz and high grade SF CDOs that were very minimally ramped are basically on hold.

The third source of direct risk is originators who cannot honor their early pay defaults. There is no way to hedge this risk, but again, the magnitude is small.

All told, according to UBS, there are three direct risks from the current situation. Collectively, these risks are small relative to revenue from the mortgage business. Actually, the largest effects on mortgage revenues will be revenue loss from a reduction of new issue activity in sub-prime and Alt-A markets. Moreover, the amount of SF CDO deals is apt to be much lower going forward, again impacting dealer revenues. Even so, revenues from subprime and Alt-A are a small percentage of the overall flows of a well-diversified Wall Street firm.

4.3. Effect On the Housing Market

The meltdown in the subprime market impacts the broad housing market in several ways. The higher number of defaults over the years to come will cause even more houses to come onto the weakened market. Already the housing slowdown has created a historically high number of non-occupied homes for sale. The problems could be compounded during periods with large amounts of mortgage rate resets. This will put further downward pressures on home prices.

Due to the loose underwriting standards, a large number of recent years' subprime loans went to individuals who probably do not have incomes or jobs allowing them to manage the financial burdens associated with owning a home. The shakeout in subprime lending (and to a lesser extent, Alt-A) will force these people back into the rental market. Overall birth rates and immigration data point to a need for increased housing in coming years, but the subprime meltdown will reduce the number of Americans owning homes.

¹¹For detailed information on ABX, please refer to chapter "VI. ABS CDS and ABX Indexes."

¹² Mezz SF CDOs are backed by mezz ABS bonds, typically of lower credit qualities than AAA/AA/A.

Even more important to the housing market is the reduction in the number of affordable loans that mortgage lenders will offer. In both subprime and Alt-A, the most egregious loans will no longer be made. Between the push back from the capital markets and the new lending rules likely to be put in place by federal and state banking regulators—many of the “new” loans of recent years will be history, at least for as long as it takes us to forget that the immediate benefits of loose lending standards (more people can afford homes now) will be offset later by rising default rates.

The problems in subprime will cause home prices to be flat-to-slightly negative for the next 1-2 years. After that, there could be a long period of flattish price appreciation and recovering from the subprime debacle could take years.

One mitigating factor—the longer home prices remain stagnant while incomes rise—the more affordable housing will become. When home price appreciation has leveled off, family incomes have continued to rise, and interest rates have declined, making homes much more affordable over the past year. The National Association of Realtors Housing Affordability Index had fallen from 146 in February 1999 to 99.6 in July 2006. As of January 2007, it had rebounded to 116, and it’s reasonable to expect that it is even more favorable currently.

4.4. Effect On the Economy

These events will clearly drag on economic growth. Will this be sufficient to cause an economy-wide credit crunch or recession? Most economists would say “no”. At the margin, however, events in the sub-prime arena clearly make the Fed more willing to ease than to tighten.

As we mentioned earlier, subprime mortgages account for roughly 11% of the total residential mortgage debt and securitized MBS, not exactly dominant by any measure.

2005 and earlier sub-prime origination has some home price appreciation already built in. Let’s assume that 50% of outstandings were originated in 2006, many with little or no equity in their homes. This particular group cannot afford to pay the increased rate, and a borrower lacking equity in his home must write a check to refinance though he doesn’t have sufficient funds to do so. Let’s further assume that 50% of these loans are problem loans¹³ (likely to experience default or have trouble refinancing), many of which are 2/28 loans resetting in 2008. Thus, the “problem” subprime loans could total 3.0% of mortgage debt (12% sub-prime x 50% 2006 origination x 50% problem loans).

¹³2/28 loans are loans with fixed rates for the first two years and reset afterwards

By early 2008, some new loan structures will have evolved which will allow some of the problem borrowers to remain in their homes. Moreover, originators have some flexibility to modify loans due to a more benign environment possibly reducing the number of problematic loans.

Clearly problems are compounded if home prices decline significantly. Then we could face a scenario where borrowers with 85-90% LTV would also be unable to refinance without writing a check. Assuming all 2006 loans do default at some point, "bad" loans could make up 6.0% of total mortgage debt (12% subprime x 50% 2006 origination x 100% problem loans)—still a relatively small percentage.

In addition to the direct effects of the housing market overhang (which include the dampening effect on employment in housing construction and the real estate industry in general), the fallout from subprime is likely to have two indirect effects:

First, the tightening of credit standards is likely to further weaken home sales and housing construction. Despite this, it would still be difficult to consider credit "tight". Moreover, the MBA purchase index is at levels similar to mid-2006, indicating no effect so far on home purchases.

Second, moderating house price appreciation (HPA) is likely to contribute to weaker consumer spending through reduced home equity extraction (HEE). According to economists at UBS, HEE fell to 2.1% of disposable income in Q4 2006 from 3.1% in Q3 2006 and 6.9% in Q4 2005. For 2006 as a whole, HEE took up an estimated 3.5% of disposable income, down from 6.3% in 2005. HEE may continue to slow. However, the sharp decline in HEE in the last few quarters has not been associated with a sudden weakening in consumer spending. Market participants can argue about the potential impact on spending; but this remains unclear as we are experiencing a time lag.

4.5. Conclusions

As made plain by events over recent months, turmoil in the subprime sector are proving highly problematic for the mortgage credit and the subprime origination communities. They put a downward bias on home price appreciation, and the housing overhang should keep prices flat for a number of years. These events are also a drag on economic growth, but not substantial enough to throw the economy into a recession.

Negative news on subprime may continue for years to come, but contagion will be limited.

V. Servicing Subprime Mortgages

After loans are originated, sold and securitized, they still need to be served, either by the same originator (on a serving retained basis) or another servicer (on a servicer released basis): collecting monthly payments, transferring the funds to the various parties and so on. Even more importantly, servicers play a critical role in mitigating losses on “bad” loans and everything else equal, a good servicer can significantly lower default rates, increase recoveries and shorten the length of a workout in the event of a bankruptcy.

There are three types of servicers: primary, special and master.

- 1) Primary loan servicing refers to the management of loan cash flows, including communication with the borrower, loan reporting, and the management of initial delinquencies.
- 2) Special servicing refers to the servicing of severely delinquent loans, including foreclosure, and the subsequent management and sale of repossessed properties.
- 3) The Master servicer oversees the performance of primary and special servicers, manages the servicing portfolio, and advances interest and principal on nonperforming loans. If either servicer is unable to meet its obligations, the master servicer takes over the servicing of the loan portfolio and therefore serves as the ultimate guarantor of the servicing operation.

5.1. Various Stages of Delinquent Subprime Mortgages

When a subprime mortgage has gone “bad”, it typically goes through the following stages:

Delinquency

When a loan is past due by 30 days or more, it is delinquent. However, there are different standards counting the “past due” days. The American Mortgage Bankers Association (MBA) states that past due days be counted from the “due date”, while the Office of Thrift Supervision (OTS) dictates that the past due days be counted one month after the “due date”. All subprime servicers observe the OTS standards, while prime servicers use the MBA standards.

“Casual delinquencies” are loans that have been delinquent for 60 days or less. These loans typically have higher chances of being “cured.” Loans that have been delinquent for more than 60 days are seen as “serious”, as their chances of becoming current again decrease as days go by.

Delinquency rates are calculated by dividing the total balance (or number) of loans in delinquency by the total current balance (or number) of loans outstanding, respectively.

Foreclosure

When a loan is delinquent and the servicer is unsuccessful in collecting the payments, the foreclosure process may start. Foreclosure is a legal process to transfer the title of the property from the borrower (mortgagor) to the lender (mortgagee) based on the mortgage agreement.

In the US, foreclosures are guided by the laws in the state in which the property is located. Some states require a lender to obtain a court order and the borrower be permitted to contest the foreclosure in court. This process is called a “judicial foreclosure,” which is lengthy and costly for the lender. Other states are “non-judicial, where foreclosures are typically faster and cheaper for the lender. Faster foreclosures are better because they limit legal costs and the loss severity.

Top 10 Subprime Outstanding : Time in Foreclosure Varies Based on State		
State	Time in Foreclosure	% Outstanding
California	7.3	25.2
Florida	8.9	9.5
New York	14	5.7
Texas	6.2	5.3
Illinois	12	3.9
Michigan	7.9	3.0
Arizona	6.1	2.9
New Jersey	14	2.8
Georgia	5.9	2.7
Maryland	9.2	2.6
Weight avg all states	9.2	100%

Source: LoanPerformance

The length of a foreclosure can be affected by a servicer’s engagement in loss mitigation. If the servicer and borrower can work out a plan to bring the loan back to current, the foreclosure process would stop.

Foreclosure rates are calculated by dividing the total balance (or number) of loans in foreclosure by the total current balance (or number) of loans outstanding, respectively.

REO

REO stands for “real estate owned”. REOs are loans that have completed the foreclosure process and the underlying property is now legally owned by the securitization trust.

Similar to the calculation of delinquency rate, REO rate is calculated by dividing the total balance (or number) of loans in REO by the total current balance (or number) of loans outstanding in the pool, respectively.

5.2. Loss Mitigation

All things being equal, a servicer that is skilled at mitigating losses can significantly alter the path of loss and maximize the loan value.

Loss Mitigation

The servicer may offer a payment plan to avoid foreclosure. The rationale of such an offer is that by making a delinquent loan re-perform, rather than going through a lengthy and costly foreclosure process without receiving any payment, the lender and RMBS investors can maximize the value and minimize the loss.

The payment plan could come in many forms such as:

- 1) Deferring owed amount (forbearance);
- 2) Forgiving part of the amount owed;
- 3) Changing loan terms such as lowering interest rates and/or recasting maturities.

However, a failed mitigation may prove more harmful than a straight foreclosure. Based on some estimates, re-default rates within two years post-mitigation can run as high as 25%.

Deficiency

Assume a lender forecloses on a delinquent borrower, evicts the borrower and sells the home. If, at the end of that process, the sale proceeds are insufficient to cover the full amount of the unpaid mortgage loan balance, plus fees, costs, accrued interest over the period of delinquency, then there is a "deficiency." In so-called "deficiency states," the lender can then pursue the borrower personally for the amount of the deficiency.

In a "one-action" state, notably California, the lender can choose to take back the home or can go after the borrower personally, but not both. However, if the borrower took out the mortgage for a purpose other than to purchase a home, then the lender may seek recovery both out of the property and from the borrower personally.

One generally would not expect an individual that is delinquent on their mortgage to have significant personal assets. Often, the real value in obtaining a deficiency judgment is to induce cooperation from the borrower. Anecdotally, a startling number of borrowers go into foreclosure without ever returning a collector's phone calls (in subprime, it can be as high as 50%). To a surprising extent, defaulting borrowers often find themselves in a position of some power. They can be difficult to evict, they can file frivolous bankruptcy filings repeatedly, they can vandalize their home, etc. The lender's right to collect on a deficiency is arguably a bargaining tool, perhaps more so than a financially viable source of recovery.

Losses

Losses in subprime loans and RMBS are generally not realized until the underlying REO property is sold. More likely than not, the sale proceeds will not completely cover the sum of outstanding mortgage balance, interest and principal amount past due (the servicer has advanced), legal expense and real estate tax etc. The difference is the net loss. Net loss divided by the total loan amount is called "loss severity". One minus the loss severity ratio is called the recovery ratio.

Losses can be recognized early on even before a foreclosure's completion for a second lien mortgage or a junior loan. In this case, there is virtually no hope whatsoever to recover any meaningful amount. Therefore, the loan will have to be booked as losses when it hits the delinquency timeline.

Although documents for most home equity transactions mandate that the servicer should advance principal and interest payments so long as they are "deemed recoverable," in practice the advance policies vary among servicers. Some will automatically make the advance throughout the foreclosure and even when the loan is in REO, as long as the loan is a first lien mortgage. Others will advance for a particular number of months. If the servicer chooses not to advance, the eventual realized loss will appear smaller than if advances were made to the end.

The use of mortgage insurance ("MI") reduces the net loss amount of a loan. For transactions that have lender-paid MI, that typically reduces the effective loan-to-value (LTV) ratio of the loans in the pool to 60% or even 50% (i.e., there is max 60% to lose vs. a 95% LTV loan, where 95% can be lost). The reported net loss will be significantly lower than transactions that do not have MI.

In addition to loss severity, the constant default rate (CDR) is used in estimating total losses. $CDR = 1 - (1 - \text{monthly loss rate})^{12}$. Simply put, CDR is the annual default rate of all loans. CDR multiplied by loss severity is the total loss one can expect in a pool.

Constraints on Loan Modifications

As discussed above, servicers most commonly modify the terms of the loans to mitigate their losses. However, changes to loan terms will impact the amount of and/or timing of cashflows to the securitization trust and RMBS investors. To prevent that, RMBS transaction documents (specifically, Pooling and Servicing Agreement or PSA) may limit how much can be changed.

5.3. Conclusions

Servicing disruptions will likely to increase as the current credit cycle plays out and the housing market continues to soften. While there is some standardization in servicing and common use of systems, turmoil at the level of the servicers will exacerbate loan deterioration. There have even been some very rare and extreme cases where lenders who were found guilty of wrongdoing were barred from initiating foreclosure proceedings in a given state.

Many subprime borrowers respond best to aggressive collection, even in the early stages of delinquency. If personnel disruptions in servicing are widespread, even some borrowers with the ability to pay may fall behind and be unable to catch up. Moreover, in the case of a servicing transfer (due to a bankruptcy or liquidation, etc.), the transition period is likely to cause higher delinquencies and possibly eventual losses. In such situations, knowing who the back-up servicers are, what their true roles are in the securitization (is it really to service, or is it just to find another party to service?) becomes critical.

VI. ABS¹⁴ CDS and ABX Indexes

The arrival of credit default swap technology in the ABS market provides investors with new opportunities to acquire ABS exposure and better mechanisms to manage risk via shorting. The market for asset-backed credit default swaps (ABCDS) has grown rapidly. Investors have jumped right in, pushing trading volumes in subprime loan ABS beyond those of cash instruments (please see Chapter I, page 6 for estimated size). The vast majority of swaps have been single-name contracts referencing subprime loans.

6.1. ABS CDS Basics

In the most plain-vanilla CDS, the protection seller makes a payment to the buyer only when a "credit event" such as issuer bankruptcy or a failure to pay principal occurs. When a credit event does occur, the contract usually terminates in one of two ways: physical settlement or cash settlement. In a physical settlement, the buyer of protection delivers the defaulted bond to the seller and receives par in return. In a cash settlement, the buyer of protection receives the net difference between par and the market price (also known as the recovery value) of the defaulted security. In this case, a process involving multiple dealer bids is often used to determine the market price of the bond. Investors have similar economic exposure under either type of settlement.

¹⁴ ABS includes RMBS and other types of ABS, but is used inter-exchangeably with RMBS throughout the paper.

From a bird's-eye view, the mechanics of ABCDS are very much in line with those of generic CDS. There are, however, several unique features of the asset-backed securities that CDS on ABS must handle, which make the swaps unique themselves.

Amortization and Prepayments: Most ABS have principal that is paid over time and are subject to some amount of prepayment uncertainty. The outstanding notional of an ABS declines with scheduled principal payments, voluntary prepayments, and defaults. In contrast, corporate bonds do not typically amortize and principals stay the same.

AFC Risk: Most subprime ABS securities have coupons that are capped at the net weighted average coupon (net WAC) of the collateral. This cap, known as the available funds cap or AFC, can result in "interest shortfalls" on the bond equal to the difference between the "expected" coupon (i.e., LIBOR + coupon spread) and the actual coupon received.

Timing of Principal Writedowns: Principal losses on ABS occur over time, whenever losses on the collateral in the trust exceed the credit enhancement available for the bond. This contrasts with corporate or sovereign debt, where a failure to pay principal is a one-time event of default.

Reversible Writedowns and Shortfalls: In most structures, interest shortfalls and principal writedowns in one month can be reimbursed or reversed at a later date. The former can be repaid from excess spread in later months, usually with accrued interest (this is known as the "interest carry-forward" feature in ABS). The latter can be reversed if credit performance of the collateral improves, resulting in a "writeup" of principal.

Clean-up Calls: Virtually all ABS transactions have a clean-up call feature, which gives the issuer the right to purchase the collateral remaining in the trust when the deal balance falls to 10% or less of the original amount. If the call option is not exercised, the coupon spread on many ABS "steps up" to 1.5-2.0 times the original amount.

Lack of Homogeneity: No two ABS bonds are truly alike. ABS vary due to differences in collateral, seasoning, deal structure, servicer, and a host of other factors. Additionally, non-AAA ABS are issued in relatively small sizes; the size of the BBB-tranche of a US\$2 billion subprime ABS transaction, for example, may not exceed US\$15 million. The lack of homogeneity coupled with small tranche sizes keep the liquidity of some ABS limited.

ABS CDS address these characteristics through a combination of a "pay-as-you-go" structure and some uniquely defined terms in the contract. For example, to address amortizations and prepayments, the notional amount used to calculate premiums decreases over time, in line with that of the underlying bond. As with many derivative products, understanding the nuances of ABS CDS is critical—the devil is in the details, as they say.

There are generally four “credit events” as defined in ABS CDS:

Failure-to-pay: The reference cash bond fails to pay all principal by the legal final maturity date.

Writedown: The balance of the reference cash bond is written down.

Distressed rating downgrade: One of the three major rating agencies downgrades the reference cash bond to Caa2/CCC or below.

Maturity extension: The legal final maturity date of the reference cash bond is extended.

When a credit event occurs, the protection seller is typically required to make a payment to the protection buyer, who, as discussed below, has the right to terminate the CDS through a physical settlement.

It is important to note that non-payment of interest is not a credit event in ABS CDS, although it does trigger a payment to the protection buyer. Additionally, ABS CDS do not include bankruptcy as a credit event, since ABS bonds are issued by a bankruptcy-remote special purpose vehicle.

The Pay-As-You-Go System

To handle principal writedowns that occur over time and relatively limited liquidity in some ABS bonds, ABS CDS are structured as “pay-as-you-go” (PAUG) contracts with a physical settlement option. If a credit event occurs, the buyer of protection has the option, in whole or in part, to terminate the CDS contract by physical settlement, delivering the bond to the protection seller in exchange for par in return. This may be an option for investors who own the bond or can find it in the secondary market, but in practice, this will often prove challenging.

Allowing investors to use PAUG mitigates issues that can arise when many investors (e.g., protection buyers) try to source bonds that are in short supply. As the term implies, under PAUG, the CDS contract remains outstanding, and the protection seller makes payments equal to the writedown amount and, to some extent, interest shortfalls.

The buyer continues to make premium payments based on the notional of the ABS CDS contract adjusted for writedowns and paydowns.

There are three payment “legs” to each ABCDS contract: a fixed payment leg, a floating payment leg, and an additional fixed payment leg (Figure 3). The “fixed” payment is simply the premium paid by the buyer of protection, a fixed percentage of notional. The “floating” payments are made by the protection seller, representing writedown amounts, interest shortfall amounts, and principal shortfall amounts (principal shortfalls are defined as unpaid principal at the legal final maturity of the reference bond). The “additional fixed” payments are made by the buyer, and consist

of any reimbursements for reversed writedowns and shortfalls. Of course, such payments are not truly “fixed,” but are labeled as such because they flow in the same direction as the “fixed” leg CDS premium.

Pay-As-You-Go Payment Mechanics		
Payment	To / From	Amount (s)
Fixed payments	Buyer to Seller	CDS Premium
Floating Payments	Seller to Buyer	Principal writedowns Interest shortfalls Principal shortfalls
Additional Fixed Payments	Buyer to Seller	Reversed principal writedowns Reimbursements of interest shortfall payments Reimbursements of principal shortfalls

Buyer is the buyer of the protection, also known as the seller of the ABX index.

6.2. Differences between Corporate CDS and ABS CDS

While ABS CDS are generally similar to corporate CDS, there are significant differences between the two due to the unique nature and structural mechanics of ABS products. Below we highlight these differences.

Reference Entity

In corporate CDS, the reference entity is effectively a corporate issuer, while in ABS CDS, it is a single ABS security. The failure of a corporate issuer to pay principal or interest on any debt obligation is typically a “credit event” for all of that issuer’s CDS. This “cross-default” concept is absent from the ABS market.

Credit Events

Credit events in corporate CDS include bankruptcy of the reference corporation, failure to pay principal or interest, and restructuring. Unlike corporate CDS, ABS CDS do not include bankruptcy or restructuring as credit events. In addition, non-payment of interest is not a credit event in ABS CDS, although it does trigger a payment to the protection buyer under PAUG.

Maturity Date

The maturity date of corporate CDS is largely independent of the maturity of the issuer’s bonds, and tenors are typically 1-10 years, while the effective maturity date of ABS CDS is the earlier of the bond’s legal final maturity and the date when it is fully paid off or written down.

Settlement

Most corporate CDS require physical settlement, while some contracts specify cash settlement. In either case, the buyer does not have the option to choose one or the other. ABS CDS are structured as “pay-as-you go” (PAUG) contracts with the buyer retaining a physical settlement option if a credit event occurs.

Principal Writedown

Principal loss is a one-time event for corporate bonds and results in settlement (and termination) of the CDS. Under the PAUG structure, the protection seller in an ABS CDS must reimburse principal losses over time, until maturity of the contract. Furthermore, if principal writedowns are later reversed, ABS CDS provide for writeup of the CDS notional and reimbursements to the protection seller.

Non-payment of Interest

Failure to make interest payments on the underlying bond is considered a credit event in corporate CDS but not so in ABCDS. Interest shortfalls, defined in ABCDS as any nonpayment of expected interest, can occur due to an available funds cap (AFC), which limits the bond coupon to the net weighted average coupon (WAC) of the collateral. While not considered credit events in ABS CDS, they do trigger payments from the protection seller, who may later be reimbursed.

Prepayment Uncertainty

Corporate CDS are not subject to prepayment risk, since corporate bonds usually have bullet maturities. However, ABS CDS are exposed to prepayment uncertainty. To handle this complication, the notional amount of ABCDS declines with reductions in the balance of the reference cash bond.

6.3. Applications of ABS CDS

There are many ways ABS CDS can be used:

Acquire Credit Risk

ABS CDS provide investors access to credits they otherwise may not be able to gain due to scarcity of cash bonds. For example, ABS CDS allow subordinate investors such as CDOs ramp up their portfolios more quickly than is possible when only cash bonds are available. CDS also allow investors to acquire more exposure to a specific bond than is available in the cash market. An investor with a particularly strong view or with a larger portfolio could, for example, sell protection in a US\$10 million CDS contract referencing a BBB bond that has only US\$5 million outstanding.

Increase Leverage

Since CDS require no initial cash outlay (beyond any margin requirements), they provide an efficient means of making leveraged credit investments. As discussed earlier, investors with relatively high funding costs should find it more attractive to sell protection through ABS CDS than to buy the cash bond and fund it on balance sheet.

Short the Market

ABS CDS have transformed ABS from languishing as a long-only cash market. ABS CDS allow investors to express a bearish as well as bullish view on the credit quality of ABS collateral in general. Investors seeking to profit from a housing market slowdown, for example, may buy protection on a number of subprime bonds from a wide range of issuers.

Hedge Exposures

ABS CDS can be used as hedging instruments for mortgage originators, banks, and other investors. The subprime mortgage market has experienced an annualized growth rate of 50% over the past four years. As the market has grown, bank and originator margins have compressed, increasing their desire to hedge pipeline risk (i.e., the risk of spread widening after loan rates are locked but before they are closed and sold or securitized).

Relative Value Tranche, Vintage and Issuer Trades

ABS CDS can be used to reflect not only a bullish or bearish view on the market, but also a relative value view on one issuer versus another, one part of the capital structure versus another (e.g., BBB+ versus BBB), one vintage versus another (e.g., 2003 versus 2005), or even one product type versus another. CDS makes such “pairs trades,” in which an investor goes long one risk while shorting another correlated risk, relatively easy to execute.

6.4. ABX Indexes

The ABX is a series of index products for ABS CDS. The ABX references 20 subprime transactions and has five sub-indexes broken down by rating buckets: AAA, AA, A, BBB and BBB-. Each sub-index will be composed of 20 equally weighted ABS CDS referencing cash bonds, one from each deal. Thus, the same deals will be represented in each sub-index (e.g. the 20 underlying exposures in the BBB ABX will come from the same deals as the 20 underlyings in the AAA ABX). To ensure liquidity, the dealer community has committed to providing daily marks on the ABX indexes.

New ABX indexes will be introduced every six months, creating a market in which both on-the-run indexes (the ones most recently created) and off-the-runs (earlier vintages) trade. Unlike corporate CDX (corporate CDS indexes), which often have the same names in old and new indexes, the new ABX will have 20 completely new deals compared with the old ABX. Therefore, the new ABX may have a very different risk profile than the older ones.

While ABX generally have similar mechanics as single name ABS CDS, there are some differences that differentiate the two.

Key Differences between Single-Name ABCDS and ABX		
Contract Term	Single-name ABS CDS	ABX
Settlement Option	Physical settlement option if a credit event occurs	No other settlement option
Interest Shortfall	No cap, variable cap, fixed cap	Fixed cap
Clean-up Call Treatment	Option to terminate the CDS contract if the deal is not called CDS premium to step up if CDS remains in effect	No option to terminate the the option contract No step up in ABX premium

Buyer is the buyer of the protection, also known as the seller of the ABX index.

6.5. Trading of ABX-Upfront Exchange of Cash

The ABX indexes are quoted on price terms rather than spread terms. Each of the ABX indexes will have a predetermined coupon that is fixed (in percentage of notional terms) over the life of the index. Prices on the index will be quoted as a percentage of par, with any premium or discount representing the amount to be exchanged upfront on a new contract. For example, assume the BBB ABX index is at par with a fixed coupon of 150 bps and a spread duration of 4 years. If spreads widened by 100 bps, the BBB ABX index would trade at about US\$96. At this point, to enter into a new contract, the seller of protection in the ABX would receive US\$4 or 4% of the notional plus a premium of 150 bps.

Similar to single name ABS CDS, ABX provide investors with a multitude of new opportunities for investment and risk management. A few of these are listed below:

- 1) Acquire broad exposure to subprime market in a single contract
- 2) Increase leverage by taking exposure synthetically rather than in the cash market
- 3) Reduce funding costs by taking exposure synthetically rather than in the cash market
- 4) Express macro views on the housing market
- 5) Hedge portfolio risk against losses or systematic spread widening
- 6) Hedge CDO pipeline or CDO equity risk against losses or spread widening

VII. EIM's Views and Strategy

What would be the best strategy to first protect us from being “hit” by the subprime woes and secondly, benefit from higher volatilities and potential opportunities?

7.1.A World of Polarization

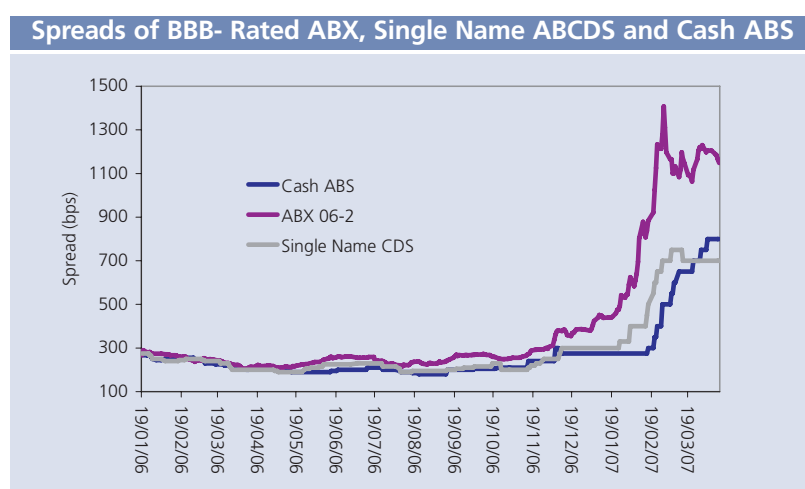
The debate over the state of the housing market is not clear-cut. Views are polarized between the housing bears that fear a prolonged meltdown, and the bulls that believe that the correction is already overdone. The bears could not have been more outspoken with their views frequently aired in the media.

Where does this leave housing-related credits? One word springs to mind: uncertainty. Some argue that BBB- rated ABX 06-2, trading at 1,150 bps over Libor or about US\$71 on April 12th, should widen by another 900 bps and trade below US\$50 to justify the weak fundamentals, while others, believing that the “fair” value is around high US\$70s and will see any such widening as buying opportunities.

Fundamentals vs. Technicals

Economic data cited by housing bears may well be pointing to a “doomsday” scenario. Assuming a flat home price appreciation (HPA), losses on sub-prime pools are estimated to be 8% and if HPA is negative, for example, -3%, losses could reach 12%. Since BBB- rated sub-prime ABS will be hit at the 8-10% loss level, it has become popular to put on shorts, primarily via ABS synthetics such as ABX, single name ABS and mezzanine tranches of ABS CDOs.

Macro funds, dedicated short credit funds and even long/short equity funds’ relentless appetite for protection has pushed spreads wider, particularly in the synthetic index market (e.g., ABX). In addition to the systemic spread widening, tiering has increased between high and low quality ABS within the same credit ratings.



Source: UBS

On the other side of the bearish trade, demand from outright long accounts and CDOs, albeit much lighter recently, keeps the widening somewhat in check, but thus far not enough to offset the widening.

BBB- rated cash bonds, single name CDS and ABX have behaved very differently, with the former two widening much less, at 350 bps and 450 bps tighter than ABX, as of mid-April. Spreads between the three had not been much apart until mid-2006. What has caused the large divergence? It would be hard to blame it all on the fundamentals as all three are BBB- rated referencing the same 20 deals.

Technicals provide a much better explanation. The holders of ABX are mostly hedge funds that have not been historically known for picking individual credits. Moreover, after a 40% drop in the S&P 500 Home Building Index in the first half of 2006, it looked like a much better idea to short the housing market by buying protection on BBB- ABX (then 250 bps over Libor).

By contrast, the clientele of cash and single name CDS are outright accounts and CDOs, which do not typically go short. In November of 2006, a few large OWICs (Offers Wanted in Competition, or widely distributed lists of individual bonds to be shorted) from hedge funds surprised the market and finally pushed cash and single name CDS spreads wider, albeit to a much lesser degree than ABX. In December, cash ABS spreads narrowed while others continued to widen, which fundamentals alone fell short to explain.

It is surprising that the wide divergence between spreads of cash bonds, single name CDS and ABX has not been arbitrated away. Inhibitive transaction costs might be the reason (ABX bid/offers are 4-5 bps, while cash ABS bid/offers could be 25 bps on weak names). Nevertheless, the arbitrage for CDOs has become much more attractive—equity IRRs of synthetic ABS CDOs have increased to over 30% due to wide spreads. CDO liabilities have widened too, but more than compensated by the higher spreads in assets. Relative to the previous 13%-15% IRR, the increase in return will be enough to entice many to step up buying once the dust settles. For example, a number of hedge funds have been busy working on launching ABS CDO equity funds.

In summary, weak housing fundamentals mean losses, and many that have shorted the subprime sector have made a killing. However, liquidity is gradually coming back from CDOs and long accounts, which can ensure that a greater percentage of borrowers stay in their homes (rather than default). As long as the technicals improve and fundamentals do not fall precipitously and unexpectedly, shorting the housing market via synthetics at the current “stressed” levels no longer seems to be the best trade in town.

7.2. Synthetics as a Means of Shorting

Since their debut about two years ago, single name ABS CDS and ABX have quickly become liquid ways of going long or short housing credits. Unlike corporate CDS, the pay-as-you-go (PAUG) structure of ABS derivatives is something new and among the various risks, some are:

- 1) Basis risk. The "one credit two spreads" phenomenon is more pronounced in ABS, as shown in Chart 1. As technicals come and go, P&Ls fluctuate randomly with no apparent fundamental reason, which we do not believe is a risk well compensated for.
- 2) Structure risk. When GM and Ford were downgraded in early 2005, funds that were long CDO equities and short mezzanine debt (or selling protection on equities and buying protection on mezzanines), seemingly hedged against downgrades, were caught by surprise. CDO equities sold off while mezzanine debt rallied despite sharing the same collaterals—the structures of the bespoke deals put no pressure on mezzanines. And the fact that most mezzanine investors were buy-and-hold investors further increased mark-to-market values of mezzanine debt.

Many short-biased funds are long CDO equities to offset negative carry. Could a "double whammy" happen again to the "long equity and short mezzanine" trades? Although many argue that ABS are different than corporate credits when it comes to default correlation, we are yet to be convinced.

- 3) Negative carry. The negative carry is substantial before any final pay-off. A 10x levered short credit fund that started trading in mid-2006 could spend Libor + 250 bps on BBB- ABX Index and easily incur 25% negative carry (as leverage levels vary, so does the corresponding negative carry). The actual carry will be smaller due to cash and other returns, but will likely exceed 20% per annum after management fees.
- 4) At the current spread levels, the negative carry is much higher—for a similar 10x levered fund, the negative carry could exceed 100% a year (again, at a lower leverage level, the negative carry could be less). Unless the deals are completely wiped out, shorting at the current levels would be hard to justify—it would be a large bet based on an unusually bearish view on the housing market and even entire economy.
- 5) Individual deal performance has diverged significantly in ABX 06-2, as indicated by the 60-day plus delinquencies ranging from 0.80% to 10%. Buying protection on a diverse pool is a blind bet against weak, but also solid credits, which are the majority of the index. This is a sub-optimal way to invest at best.

Some may argue that all stocks are not equally unattractive, but people short S&P 500 futures all the time. However, there is no negative carry associated with shorting S&P futures.

Potential Upside

The potential upside to the bearish trade, given the current “stressed” levels, is limited. If the waiting period is one year, and the second year is up 120% (assuming 10x leverage and the price of the BBB- ABX declines by 12% to US\$61, which is middle point between the high US\$70s “fair” value that many fundamental ABS credit funds believe and the high US\$40s that the “bears” adhere to), an investor would gain about 20% in total (120% minus 100% cost in the first year) or 10% per year. Some claim the upside is 200%, which is difficult to believe (when was the last time you came across a trade that is nearly as crowded as this one?)

Whether or not to pay for the negative carry is one issue, quite another is when and how large the payoff can be. While the debate continues, let’s not miss out on the opportunities that can return 10% or more at lower volatilities.

7.3. EIM’s Strategy

Several funds we are invested in profited from short positions on subprime. These funds played the theme in a variety of ways and benefited tremendously from the widening out of spreads.

Going forward, however, we think that there will be more money to be made from stressed or distressed opportunities than simply being short. Whether it is in two months or six months, the distressed opportunities are emerging in whole loans, ABS and potentially ABS CDO tranches. In capturing these potential opportunities, we will be “bottom-up” with a focus on the primary market at the individual loan level. Funds with servicer and REO workout experience are preferable.

In 2005, we developed a “bar-bell” approach to credit investing given our cautious views. Following that approach, we saw returns of 12% net at 3.0% volatility in our credit portfolios in 2006.

The same approach can be readily applicable to subprime ABS credit investing—what we find exciting is not only the bearish trades, some of which may still have attractive upside on a very selective basis, but also longs in stressed and distressed situations arising from an increasing number of delinquencies, defaults and downgrades.

Stressed/Distressed Opportunities

There has been a strong supply of stressed/distressed whole loans as the subprime originators have gone out business and loans are being sold at deep discounts to meet liquidity demands. Use New Century as an example. Its “Scratch and Dent” loans¹⁵ are now selling at low US\$90s or even lower prices. In January, the same loans were sold at above par or high US\$90s.

¹⁵Loans that have been put back to the originators due to Early Payment Defaults (EPDs). Typically, these loans are still paying and have not gone into delinquency.

However, are the prices low enough to compensate for the defaults and losses? What if Housing Price Appreciation (HPA) is flat or even negative?

The following table shows a scenario analysis for performing loans based on the following assumptions:

- 1) Loan purchase price of US\$92;
- 2) -10% HPA (house prices drop by 10% per year for the life of the loans (over 4 years);
- 3) Loss severity of over 62% (only 38 cents recovered on the dollar vs. a historical average of 60 cents recovery) and;
- 4) 2.61x of the base default curves (for example, 2.61 x 9% = 23.50% default rate at the 37th month for 2/28 loans vs. historical highs of mid-teens)

The expected return of selective "Scratch and Dent" loans (after being securitized) could be running at 14.4% gross, despite the extremely high assumptions on default rate and loss severity. In the base case, assuming 2.06x of base default curves and a loss severity of 54%, the yield can be as high as 31% gross.

New Century Scratch and Dent - HPA Analysis

Class	Size	% of Collat	Fixed / Float	Rating (M/S/F)	Bench	DM	Price	WAL	Mdur
SNR	247,686,000	66.25%	Floating	Aaa/AAA/AAA	1M LIBOR	27	100.00	1.15	1.07
M1	28,040,000	7.50%	Floating	Aa1/AA+/AA+	1M LIBOR	65	100.00	4.02	3.43
M2	23,180,000	6.20%	Floating	Aa3/AA-/AA-	1M LIBOR	100	100.00	5.39	4.43
M3	15,702,000	4.20%	Floating	A2/A/A	1M LIBOR	150	100.00	4.68	3.87
M4	6,356,000	1.70%	Floating	A3/A-/A-	1M LIBOR	225	100.00	4.45	3.63
M5	13,085,000	3.50%	Floating	Baa2/BBB/BBB	1M LIBOR	550	88.76	4.32	3.42
M6	5,982,000	1.60%	Floating	Baa3/BBB-/BBB-	1M LIBOR	850	80.05	4.23	3.24
Collat	373,866,173	WAC = 9.132% / 19.77% IO / 29.49% Balloon / LTV2 = 87.59% / FICO = 622 / 2nd = 20.18%							

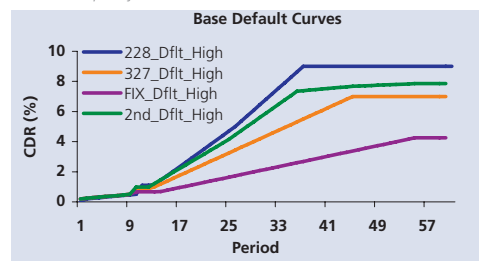
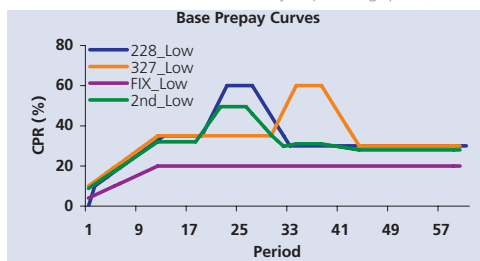
- (1) 3/28 ARM = 35 CPR
 (1) 2/28 ARM = 35 CPR
 (1) FIX = 30 CPR

(2) Swap Rate = 4.97% (150 PPC on Bonds; no drop)

AAA Spread	27.0
Sub Spread	207.4
Total	129.3

Base Case		HPA Decreased by 10%	
Target Yield	31.00%	Whole Loan Price	92.00
Base Case Default Freq.	205.74	Default Freq.	261.16
Base Case Loss Severity	54.21	Loss Severity	62.19
Whole Loan Price @ Base	92.00	Yield @ HPA Decrease	14.40%

In adjusting HPA, loss severity was increased 10 percentage points for each loan, while the HPA in each state was decreased by 10 percentage points, increasing foreclosure frequency



Source: EIM and an anonymous hedge fund

Non-Performing Loans

Non-performing Loans are generally defined as mortgage loans that have stopped paying monthly payments and are currently in late-stage delinquency, including foreclosure or bankruptcy, where the borrower has demonstrated either an unwillingness or inability to make mortgage loan payments. These loans may also have been reclaimed by lenders as real estate owned (“REO”).

Given the nature of these loans, the primary exit strategy will be foreclosure and sale of the underlying property at a price in excess of the cost basis. In certain instances it may be possible to arrive at an arrangement, either through loan modifications or some form of forbearance plan, which will allow the borrower to begin making monthly payments. In these circumstances, and to the extent the borrower is able to demonstrate both a willingness and ability to make timely mortgage payments, the “re-performing” loans can be sold to a 3rd party at substantial gains relative to the initial cost basis.

The “home runs” for an investor would be buying non-performing loans at discount prices (for example, at mid-60s in mid-April 2007), making the loans re-perform and then selling them at higher prices (around mid-80s or higher at the time of writing), generating 30% gross return on an unlevered basis.

However, the percentage of non-performing loans that can become re-performing is generally small. Although it varies across pools depending on pool specifics, on average less than 20% of outstanding loans are ever expected to re-perform.

Therefore, over 80% of non-performing loans will go through the REO process and end up being liquidated (underlying houses are sold). Assuming a loss severity of 54% (the base case in the above table, which is a severe loss by historical standards), the cumulative loss could be 44% of the total unpaid principal balance. As long as the purchase price of the loans is $1 - 44\% = 56\%$ (or 56 cents on the dollar), there will be no expected principal loss for the investment¹⁶. For an experienced “bottom fishing” investor that can source loans at “fire sale” prices (e.g. from “distressed” originators that are desperate for liquidity), the potential upside can be very attractive even without leverage.

Rarely is leverage applied to non-performing loans in the funds that we have invested or considering investing. However, up to 100% of financing can be readily obtained from Wall Street dealers in the current environment. If conviction on the quality of loans is high enough and a certain level of leverage is deployed, the expected return will be further enhanced.

¹⁶The real break-even price can be quite a bit higher than 56 cents because loans are not liquidated at the same time—the later a non-performing loan is liquidated, the higher the chance for it to re-perform.

The following shows a scenario analysis for non-performing loans given certain "base case" assumptions:

1. Loan purchase price of US\$63;
2. 82% of loans end up being REO and liquidated;
3. Loss severity of 40%;
4. 1 x leverage

Non-Performing Loans & REO	Base Case	Sensitivities (Market Down)				Sensitivities (Market Up)			
		+10% Dflt Crv +10% Severity	+20% Dflt Crv +20% Severity	-10% Dflt Crv -10% Severity	-20% Dflt Crv -20% Severity				
Unpaid Principal Balance	400,000,000	400,000,000	400,000,000	400,000,000	400,000,000				
Base Case Gross Defaults	81.83% 327,320,000	83.45% 333,800,000	84.92% 339,680,000	80.00% 320,000,000	77.87% 311,480,000				
Base Case Cumulative Loss	33.20% 132,800,000	36.81% 147,240,000	40.42% 161,680,000	29.24% 116,960,000	25.30% 101,200,000				
Purchase Price	62.95 251,800,000	62.95 251,800,000	62.95 251,800,000	62.95 251,800,000	62.95 251,800,000				
Note Financing (Liquidating Trust)	53.00% 212,000,000	212,000,000	212,000,000	212,000,000	212,000,000				
Trust Equity	47.00% 188,000,000	188,000,000	188,000,000	188,000,000	188,000,000				
Bond Discounts	0.22% 866,226	866,226	866,226	866,226	866,226				
Expenses	0.62% 2,482,268	2,482,268	2,482,268	2,482,268	2,482,268				
Basis before Purchase Px Discount	191,348,494	191,348,494	191,348,494	191,348,494	191,348,494				
Purchase Px Discount	37.05 -148,200,000	-148,200,000	-148,200,000	-148,200,000	-148,200,000				
Net Basis in Residual	43,148,494	43,148,494	43,148,494	43,148,494	43,148,494				
Residual Cash Flow	26.47% 105,898,596	21.68% 86,726,169	17.00% 68,009,682	31.81% 127,225,103	37.37% 149,462,509				
Cash-on-Cash Return	145.43%	100.99%	57.62%	194.85%	246.39%				
MV of Resid @ 30.0% Yield	10.79% 43,148,496	8.99% 35,969,100	7.13% 28,531,674	12.62% 50,483,796	14.28% 57,105,109				
Yield at Base Price (62.95)	30.00%	23.19%	14.88%	36.02%	40.70%				

Source: EIM and an anonymous hedge fund

In the worst scenario, where 85% of loans are "hopeless" and have to be liquidated at a loss severity of 48%, 20% worse than the "base case," the annualized gross yield is still close to 15%. In the best scenario, where loss severity is 20% better than the "base case," annual yield could exceed 40%.¹⁷

Other Long Opportunities

There has been limited supply of distressed cash RMBS bonds, as the cash market is inherently small in size. It was estimated that there were only US\$3 billion "fallen angel" ABS in 2006 and distressed ABS paper may still be hard to come by despite the recent sell-off, leaving funds struggling to find attractive deals. Synthetically, however, investors can go long the single name RMBS or ABX indexes by selling protection on the names.

Given the difficulty in sourcing and investing in distressed ABS, it makes sense to consider CDO Equity, ABS Residuals and Credit Opportunity Funds on a selective basis once the dust settles. The timing of it is for anyone to debate. Nevertheless, the following table compares the three investment options.

¹⁷ Loan pools vary in quality and prices and leverage levels may not be the same. Therefore, expected returns can be different from those shown.

ABS Residuals vs. ABS CDO Equities and Credit Opportunity Funds			
	ABS Residuals	ABS CDO Equities	Credit Opportunity Funds
Investments	Residential mortgage security residuals	Cash and synthetic ABS bonds,	Leveraged loans, high yield bonds and soon, ABS
Investment Goals	Primary: Income from Excess Spread Secondary: Capital Growth	Primary: Income Secondary: Capital Growth	Income and Capital Growth
Targeted Returns	20% Gross IRR High current yield	15%-22% Gross IRR depending on assets High current yield	15%-18% Gross IRR Medium to high current yield
Target Volatility	Very Low (<3%)	Very Low (<3%)	Low to Medium (5-6%)
Cash Flow Profile	Immediate and front-end loaded	Immediate and front-end loaded	More evenly spread but at manager's discretion
Duration of Returns	2 to 3 years	3 to 6 years	2-3 years for loans and ABS, longer for high yield bonds
Asset Diversification	Medium. Higher if self-originated	Medium	Medium to High
Primary Risks	Defaults, prepayments. Risk mitigants: servicer and REO workout experience	Defaults, prepayments, valuation	Defaults, prepayments, financing, valuation and illiquidity
Use of Leverage	Yes, term non-recourse financing with no margin calls	Yes, term non-recourse financing with no margin calls	Yes, combination of term funding and traditional financing (Repo)
Liquidity	Improving and better than CDO equities	Limited	Quarterly after first year lock-up
Transparency	Extremely high, monthly loan level data	High, monthly portfolio report	Limited

Source: EIM, Bear Stearns, Morgan Stanley

ABS Residuals are the "equity" or "first-loss" tranche in home-equity ABS deals that receive the excess cash flows after covering losses. Equivalent to CDO equity in capital structures but much more under-followed, residuals from the primary market could present favorable risk-adjusted returns. Although liquidity in residuals is scarce, it has been improving. For example, Amaranth sold US\$500 million of residuals in two days at cheap but not distressed levels to JP Morgan and Citadel. Both firms profited to the tune of hundreds of millions of dollars when they disposed of the trades just weeks later.

One or a combination of the choices in the above table could help offset the negative carry if one indeed decides to go short on selective subprime deals. With a 25/75 split between short-biased funds and Residuals/Opportunity Funds (feel free to twist the weights based on your views and available managers), the resulting portfolio exhibits a long convexity profile—attractive returns can be achieved regardless of the direction of the housing market, while a positive return is retained in the "status quo" scenario.

	Housing Meltdown	Status Quo	Housing Rally
Short-Biased	+40.0%	- 20.0%	- 30.0%
Residuals/Opps Funds	+ 9.0%	+16.0%	+25.0%
25/75 Split	+16.8%	+7.0%	+11.3%

Note: Assuming 4x leverage for a short biased fund focusing on BBB flat subprime RMBS.

Even more appealing, Credit Opportunities Funds/ABS Residuals will benefit from the distressed opportunities and wider spreads and produce even higher returns.

Manager Selection

Funds that could meet the following criteria have better odds to succeed in capturing the aforementioned opportunities:

- 1) With direct access to a servicing platform or better yet, own a servicing platform;
- 2) With dedicated REO team and deep loan workout experience;
- 3) Analytics that process loan level information and value distressed and non-performing loans;
- 4) Experience in loan sourcing and bidding;
- 5) Experience in securitization or in obtaining non-recourse term financing

Criterion 1 alone will eliminate many funds from consideration as only a handful of hedge funds have the capital or mandate to own a servicing platform. In contrast, private equity firms have been busy snapping up servicers in the recent crisis. However, it would be virtually impossible for a regular hedge fund investor to benefit from such a servicing platform, unless the investor can invest in a private equity fund that does not mark to market.

7.4. Conclusions

After the recent sell-off, liquidity has all but disappeared, pushing subprime prices down to levels that are hardly justified by fundamentals alone. The lack of liquidity has continued into May as we are finishing up this paper. Cognizant of the poor fundamentals, we believe that even “bad” deals can be attractive at certain distressed price levels. Through careful selection, potential upside of these distressed opportunities can be very attractive for the discerning investors.

With thorough due diligence processes and right execution platforms (such as servicing), a few funds that we have invested or will be investing are well positioned to benefit from the distressed opportunities in subprime loans, RMBS and potentially in the near future, CDO tranches.

Realizing that we are incapable of calling the timing of the market, a “bar-bell” approach with primarily long distressed and some selective short exposures; hence being long convexity¹⁸ is our preferred approach to investing in subprime credits.

¹⁸ The distressed nature of the loans or securities means that any further price declines will come at a decelerating speed before the price and the value “floor,” which is determined by the liquidation value of the underlying property, finally converge. The positive convexity comes from: 1) deceleration of price declines and/or 2) convergence of prices and value “floor,” at which point volatility can only help barring a downward move of the value “floor.”

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