From: Clarkson, Brian [redacted]
Sent: Wednesday, March 21, 2007 3:04 PM (GMT)
To: McDaniel, Raymond [redacted] Mahoney, Christopher [redacted] Murray, Chester [redacted] Huber, Linda [redacted] Kanef, Michael [redacted] Cantor, Richard [redacted] Goggins, John [redacted] Zarin, Farisa [redacted]
Subject: FW: CDO Special Report: Impact of HEQ Downgrade on PIK-able Mezzanine SF CDO Tranches
Attach: CDO_Special_Report_Impact_of_HEQ_Downgrade_on.PDF

Another reason ratings are not the same. Hope Gus does no have to find a new profession...

-----Original Message-----
From: Harris, Gus
Sent: Wednesday, March 21, 2007 7:10 AM
To: Kimon, Noel; Clarkson, Brian; Robinson, Claire; Kanef, Michael
Subject: FW: CDO Special Report: Impact of HEQ Downgrade on PIK-able Mezzanine SF CDO Tranches

This is an interesting topic (and one that we may ask Jerry to write about). The essence of the article is that the "OC Haircuts" in CDOs will actually help the rated noteholders. What is very important here - and I don't think the market understands - is that Moody's has been the champion of these haircuts. Fitch has actually taken the contrary position - they have argued (privately, of course) that these haircuts are not good and that managers should be allowed ultimate flexibility. We have heard that they had approached managers and made the case to remove Moody's from their deals and have Fitch rate the deals because of our firm position on the haircuts. We have lost several deals because of our position on these haircuts.

We are on record, going back about 6 years, pushing for these haircuts. This is a good story for us and we will probably have Jerry write an update on our positions for haircuts. You will be hearing more about this topic and I am sure that all agencies will try to take credit for this feature. S&P has been a proponent of these haircuts, but they have been a follower in most cases. Nonetheless, I could see them try to take some credit and should get some. If Fitch tries to take credit and they succeed, I would first throw up and then consider a new profession.

-----Original Message-----
From: David Yan - Credit Suisse Securitized Assets Research [redacted]
Sent: Monday, March 19, 2007 4:23 PM
To: research.distribution[redacted]
Subject: CDO Special Report: Impact of HEQ Downgrade on PIK-able Mezzanine SF CDO Tranches

RESEARCH & ANALYTICS

Research Notification

CDO Special Report: Impact of HEQ Downgrade on PIK-able Mezzanine SF CDO Tranches

As the US housing market continues to slow down, problems linked to lax mortgage loan underwriting standards and proliferation of so-called "innovative affordability" mortgage products started to surface, most strikingly reflected in the much higher early default and delinquency rate of subprime loans originated in late-2005 and 2006: The impact of the meltdown of the subprime mortgage sector could be significant, and we focus on its impact on PIK-able tranches of mezzanine SF CDOs, most of which have a rating-based overcollaterialization (OC) haircut clause specified in the deal indenture.

March 19, 2007

Click to email authors: Yan, David; Ustun, Serif

Document Link

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19 March 2007
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CDO Special Report

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Impact of HEQ Downgrade on PIK-able Mezzanine SF CDO Tranches

As the US housing market continues to slow down, problems linked to lax mortgage loan underwriting standards and proliferation of so-called "innovative affordability" mortgage products started to surface, most strikingly reflected in the much higher early default and delinquency rate of subprime loans originated in late-2005 and 2006. The impact of the meltdown of the subprime mortgage sector could be significant, and we focus on its impact on PIK-able tranches of mezzanine SF CDOs, most of which have a rating-based overcollaterialization (OC) haircut clause specified in the deal indenture.

- For 2005 and 2006 vintages of SF CDOs, on average about **80%** of the underlying collaterals are HEQ bonds.
- If the current weakening credit performance trend continues and the US housing market stays sluggish, we expect to see many downgrades on 2006 (or even 2005) vintage HEQ bonds in the next couple of years.
- Among all the rated CDO tranches, those that will be hit the hardest by the downgrades of underlying HEQ bonds will be the so-called PIK-able tranches, typically rated Single-A to Double-B.
- Failing OC tests could divert cash flows to PIK-able tranches.
- Most SF CDOs with OC triggers include a rating-based OC haircut mechanism.
- PIK-able CDO tranches could be shut off from cash flows due to the OC haircut after downgrades.
- During the second half of 2005 and 2006, about $6.8 billion tranches rated Single-A to Double-B were issued out of mezzanine SF CDOs with OC triggers.
- For both CDO investors monitoring their existing portfolios and high yield investors looking for potential opportunities in distressed assets, understanding the impact of the rating-based OC haircut caused by increasing HEQ downgrades is crucial. For the latter, we believe the OC haircut will cause there to be ample investment opportunities.

Impact of HEQ Downgrade on PIK-able Mezzanine SF CDO Tranches

As the US housing market continues to slow down, problems linked to lax mortgage loan underwriting standards and the proliferation of so-called "innovative affordability" mortgage products started to surface, most strikingly reflected in the much higher early default and delinquency rate of subprime loans originated in late-2005 and 2006. The impact of the meltdown of the subprime mortgage sector could be significant, and we focus on its impact on PIK-able tranches of mezzanine SF CDOs, most of which have a rating-based OC haircut clause specified in the deal indenture.

Recent vintages of mezz SF CDOs are collateralized mostly by HEQ bonds

On average about 80% of underlying collaterals of recent SF CDOs are backed by HEQ bonds

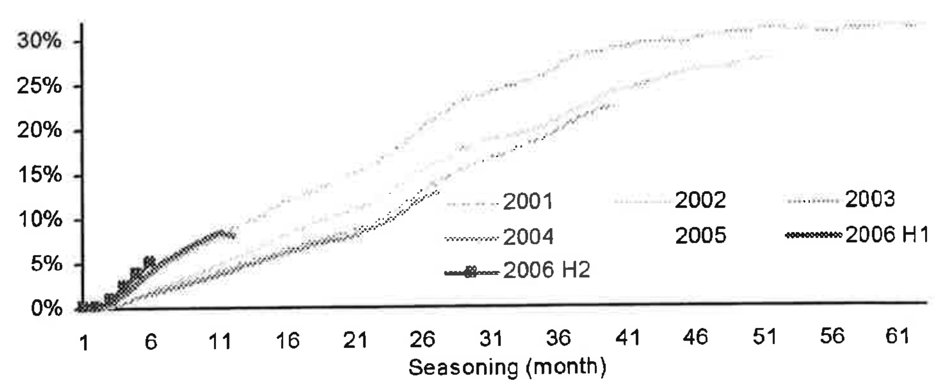
Many of the subprime (often also called home equity or HEQ) mortgage loans are packaged and securitized – funded by issuing rated securities. In recent years (since 2005), most of the BBB to BB rated bonds of these HEQ securitization transactions are purchased by mezzanine SF CDOs. For 2005 and 2006 vintages of SF CDOs, on average about **80%** of the underlying collaterals are HEQ bonds.

In tandem with the growth of the home equity market, the SF CDO market has also grown dramatically in recent years. For example, including unfunded tranches of hybrid transactions, total issuance of mezzanine SF CDOs reached almost $66 billion in 2006, compared to about $25 billon in 2005.[1]

SF CDOs are exposed to deteriorating HEQ loan credit

Almost all early indicators – such as loan delinquency rates – are showing that 2006-vintage HEQ loans could turn out to be one of the worst vintages ever (as shown in Exhibit 1).

Exhibit 1: ARM HEQ Loans 60+Days Delinquency Rate by Seasoning



Source: Credit Suisse, Intex

More downgrades on HEQ bonds of recent vintages are expected

If the current weakening credit performance trend continues and the US housing market stays sluggish, we expect to see many downgrades on 2006 (or even 2005) vintage HEQ bonds in the next couple of years, which will expose many of the SF CDOs backed by these bonds to downgrade or even suffer principal loss.

[1] Not including pure synthetic deals, CDO-squared deals, etc.

Exhibit 2: Mezzanine SF CDO Exposure to HEQ Bonds of Each Vintage

	HEQ Vintage			
CDO Vintage	2006	2005	2004	pre-2003
2006*	**26%**	**60%**	12%	1%
2005	1%	**58%**	37%	4%

Source: Credit Suisse
* Based only on deals issued in the first half of 2006

As shown in Exhibit 2, for example, for mezzanine SF CDOs issued in the first half of 2006, 26% of the underlying HEQ bond holdings are from the 2006-vintage and 60% from the 2005-vintage. For those issued in the second half of 2006, the exposure to 2006-vintage HEQ bonds will be higher, as deals issued later in the year tend to ramp up more bonds issued in the same year.[2] We also see a significant variability of the exposure across different CDOs.[3]

PIK-able SF CDO tranches are exposed to deteriorating HEQ loan credit

Among all the rated CDO tranches, those that will be hit the hardest by the downgrades of underlying HEQ bonds will be the so-called PIK-able tranches, typically rated Single-A to Double-B.

Most cash flow or hybrid CDOs have built-in OC and interest coverage (IC) tests in the structure. These triggers are designed mainly to protect senior note holders from deteriorating credit quality and loss from underlying collateral. Cash flows – both interest and principal – will be diverted to pay down senior investors if these tests are failed. Both OC and IC tests could be set at several tranches of a transaction. Thus any tranches subject to these tests could possibly be denied principal and interest payments and the missing interests are usually added to the outstanding balance of the tranche, without triggering an event of default. These tranches are called PIK-able tranches.

Exhibit 3: OC/IC Tests of a Sample SF CDO

Cash Flow Diversion Tests	Trigger Level	Initial Level	Cushion	Recent Level	Cushion
AA O/C Test	107.9%	112.31%	4.41%	112.59%	4.69%
A O/C Test	104.4%	108.35%	3.95%	108.63%	4.23%
BBB O/C Test	**102.9%**	**104.94%**	**2.04%**	**105.57%**	**2.67%**
AA I/C Test	126.0%	184.81%	58.81%	130.18%	4.18%
A I/C Test	117.0%	175.42%	58.42%	124.78%	7.78%
BBB I/C Test	113.0%	162.99%	49.99%	120.11%	7.11%

Source: Credit Suisse

As shown by the example in Exhibit 3, the OC test limit at the BBB level is set at 102.9%. If the OC ratio of BBB-rated tranche (calculated as: Value of Collateral Assets divided by Par Value of Tranches Rated BBB or Above) drops below this level, cash flows to the equity tranche will be diverted to pay down the AAA-rated tranches first, until the test is cured.[4] By the same token, if the OC ratio of an A-rated tranche (calculated as: Value of Collateral Assets divided by Par Value of Tranches Rated A or Above) falls below 104.4%, cash flows to the BBB-rated tranche will also be diverted to pay down the most senior tranches as well, and the missing interest payment to the BBB tranche will be added to its balance – i.e., the tranche is then "PIKing."

[2] However, we cannot calculate the exact statistics since we don't have detailed collateral level information yet.
[3] Please refer to Loan-*Level Attributes of 2006-Vintage Mezzanine SF CDOs* (The CDO Strategist, February, 2007).
[4] In this sample deal, BBB-rated tranche is the lowest rated tranche above the equity tranche.

Most SF CDOs with OC triggers include a rating-based OC haircut mechanism

Structured finance securities – such as HEQ bonds – tend to have default profiles substantially different from those of corporate bonds. For example, the credit quality of these bonds may have significantly deteriorated before they become in default. To ensure that the OC tests function as intended, most of the CDOs today incorporate a rating-based haircut mechanism when calculating the value of underlying collateral for OC tests.

Exhibit 4: Par Haircut for Mezzanine SF CDO OC Tests

Asset Rating	"Excess" Threshold	Par Credit (% of Par)
Ba	10%	90%
B	0%	80%
Caa	0%	50%

Source: Moody's, "*CDO RatingFactors - Par Haircuts in Structured Finance CDOs*"

Exhibit 4 shows Moody's approach to conducting the haircut: for example, if more than 10% of the underlying collateral is rated Ba (Ba1-Ba3), the excess amount (par) will be multiplied by 90%.[5] Note that this is just one example set by Moody's, in reality the threshold and haircut levels could vary from deal to deal.

PIK-able CDO tranches could be shut off from cash flows because of the OC haircut after downgrades

Thus, if the underlying HEQ bonds suffer a lot of downgrades, PIK-able CDO tranches could then be shut off from cash flows. How many downgrades it takes to PIK a tranche varies from deal to deal. Let's take the sample CDO in Exhibit 3 as an example. The current actual Single-A OC ratio is 108.63%. If the par value of the collateral drops below **96.11%** of the current collateral par after several underlying HEQ bonds are downgraded and after the rating-based haircut, the Single-A OC test will fail and the BBB-rated tranche could PIK.[6]

Exhibit 5: A Hypothetical Scenario*

% of Assets Downgraded to Ba	20%	Haircut Amount (%)	1%**
% of Assets Downgraded to B	10%	Haircut Amount (%)	2%
% of Assets Downgraded to Caa	2%	Haircut Amount (%)	1%
		Total Haircut Amt (%)	4%
		Par Value after the haircut (%)	**96%**

Source: Credit Suisse
* All the numbers are expressed as a % of current par value of the underlying collateral
** Calculated as (20%-10%)*(1-90%)

How many downgrades does it take for this to happen? We assume all the assets in the sample CDO are currently investment grade rated and we show in Exhibit 5 a hypothetical situation in which the current par value of the underlying collateral of the sample CDO drops to **96%** due to rating-triggered haircuts after the presumed numbers of downgrades, thus failing the OC test.

How many PIK-able CDO tranches are exposed?

Based on our calculation as shown in Exhibit 6, during the period from second half of 2005 to 2006, totally about $6.76 billion tranches rated from Single-A to Double-B were issued out of mezzanine SF CDOs that have performance triggers such as OC or IC tests.

[5] Let's look at a hypothetical example. If the total par value of the collateral is $500 million, of which $60 million is rated from Ba1 to Ba3 - higher than the $50 million (10%) limit. Thus, the extra $10 million Ba-rated assets will be valued at $9 million ($10 million times 90%) and the total value of the collateral will be $499 million.
[6] The 96.11% number is calculated as 104.4%/108.63%, i.e., the OC limit divided by the current OC ratio. We assume the denominator in the OC ratio calculation does not change over time, otherwise the result could be different.

During the second half of 2005 and 2006, about $6.8 billion tranches rated from Single-A to Double-B were issued out of mezzanine SF CDOs with triggers

Exhibit 6: Market Size of Subordinated Mezz SF CDO Tranche ($billions)*

$billion	A	BBB	BB	Total
2005 H2	0.59	0.76	0.05	1.40
2006 H1	0.69	0.64	0.07	1.40
2006 H2	1.95	1.71	0.30	3.95
Total	3.23	3.12	0.42	**6.76**

Source: Credit Suisse
* Only cash or hybrid deals with OC/IC tests/triggers are included.

Of course, not all of these bonds will be equally impacted by the potential downgrades of the HEQ sector. The two main determinants are:

1. The structural features of an individual deal. First, not all the tranches rated from Single-A to Double-B are PIK-able – depending on where the OC/IC test is set. If there is no OC/IC test set at Single-A or above, then the BBB-rated tranche will not be subject to PIKing. Second, HEQ downgrades are not only contingent on credit performance of the underlying loans but also the credit enhancement embedded in the structure of HEQ transactions. More recent vintages of HEQ bonds – such as 2005 and 2006 – tend to have higher credit enhancement levels than earlier vintages. Third, the CDO structure itself matters. One example is the tightness of the OC/IC test. Tranches subject to tighter tests – i.e., less cushion – will be more easily PIKed.

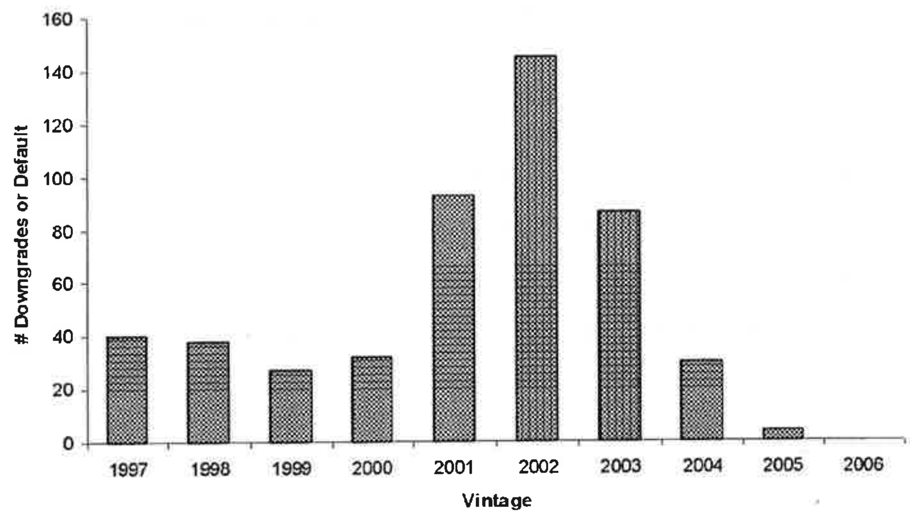
2. The credit attributes of the underlying HEQ loans of each CDO. Based on our study, the loan attributes across different CDOs could vary dramatically.[7] For those with higher exposure to the 2006-vintage (and late 2005) HEQ loans, and higher exposure to worse issuers and riskier loans – such as second lien and low-documentation loans – the potential risk is higher.

It is very hard to predict the exact timing and magnitude of potential downgrades of HEQ bonds by the rating agencies. Generally speaking, rating agencies will downgrade or put the bonds on negative watch for future downgrades if the existing enhancement levels are low given their projected losses on the underlying loan pools.

Traditionally most downgrades on HEQ bonds came after the three-year step-down date. Exhibit 7 shows the number of downgraded subprime mortgage bonds from different vintages as of March 9, 2007. We include all three rating agencies, so for example if the same bond were downgraded by all three agencies – regardless of the timing and magnitude of the downgrades – it is counted as three. Interestingly, so far most of the downgrades came from 2003 or earlier vintages, as these bonds have passed step-down. There are very few downgrades on 2005 and 2006 vintages yet. On the other hand, this means the potential risk of downgrade is higher: if the housing market stays weak longer than expected and as financially stretched subprime borrowers are hit by possibly serious payment shock in 2007 and 2008, we could see many downgrades on HEQ bonds issued from late 2005 to early 2007.[8]

[7] Please refer to *2005 Mezz. SF CDOs in Focus - Part 1: Are SF CDOs Simply Buying the HEL Market?* (The CDO Strategist, June 29, 2006); *2005 Mezz. SF CDOs in Focus - Part 2: Underlying Home Equity Loan Characteristics* (The CDO Strategist, October 5, 2006); and *Loan-Level Attributes of 2006-Vintage Mezzanine SF CDOs* (The CDO Strategist, February, 2007).
[8] Also, the volume HEQ bonds issued during this period is much higher than that of earlier vintages.

Exhibit 7: # of Downgraded Subprime Mortgage Bonds (by Vintage)*



Source: Credit Suisse, Moody's, S&P and Fitch
* As of 3/9/2007. Numbers include all three rating agencies, i.e., if the same bond is downgraded by all three agencies, it will be counted as 3. second-lien transactions, HELOC, HLTV, etc. are excluded.

Conclusion

Estimating the downgrade risk of HEQ bonds is difficult: On one hand, the current credit performance trend of recent vintages of HEQ loans and the direction in which the US housing market is heading both point to a fairly high possibility of increasing downgrades; on the other hand, the higher credit enhancement levels of recent HEQ bonds also provide more cushion against potential loss and downgrade risk. Which factor eventually outweighs the other remains to be seen.

However, for both CDO investors monitoring their existing portfolios and high yield investors looking for potential opportunities in distressed assets, understanding the impact of the rating-based OC haircut caused by increasing HEQ downgrades is crucial. For the latter, we believe the OC haircut will cause there to be ample investment opportunities.

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