Subprime Triggers—Good or Bad for BBB- Bonds?

As subprime credit continues to slide, we've encountered the question—"*Is it good for my subprime BBB- bonds if performance triggers pass, or am I better off if they fail?"* This question is given greater urgency by the amount of notional in the synthetic market referencing these bonds. A large part of the $300 billion notional ABX market is concentrated in the ABX.HE.BBB- indices, which reference <$1 billion of BBB- tranches.

In this article, we'll review the basics of subprime triggers and discuss major factors that determine whether a tranche is "long" or "short" the trigger. We also review the last few vintages of subprime deals that passed stepdown dates, and summarize the effect of the stepdown.

The Stepdown & The Trigger

Almost all subprime deals contain a stepdown provision. Stepdown refers to conversion of deal structure from sequential pay to *pro rata* pay. There are 3 direct implications of the stepdown: (1) end of principal lockout for all bonds below AAA (the mezz and OC tranches); (2) reduction of subordination to target levels; (3) release of principal to all mezz and OC tranches (OC release).

In the first 36 months (the '"lockout period"), all tranches other than the seniors are locked out and do not receive principal payments (unless the seniors have paid down completely, which we discuss below). By the stepdown date (almost universally set 37 months from the deal's closing date), the deal collateral is sufficiently seasoned that its performance may be tested. If the aggregate collateral performance is satisfactory (the loans exhibiting a low percentage of cumulative losses and serious delinquencies) the deal is permitted to step down.

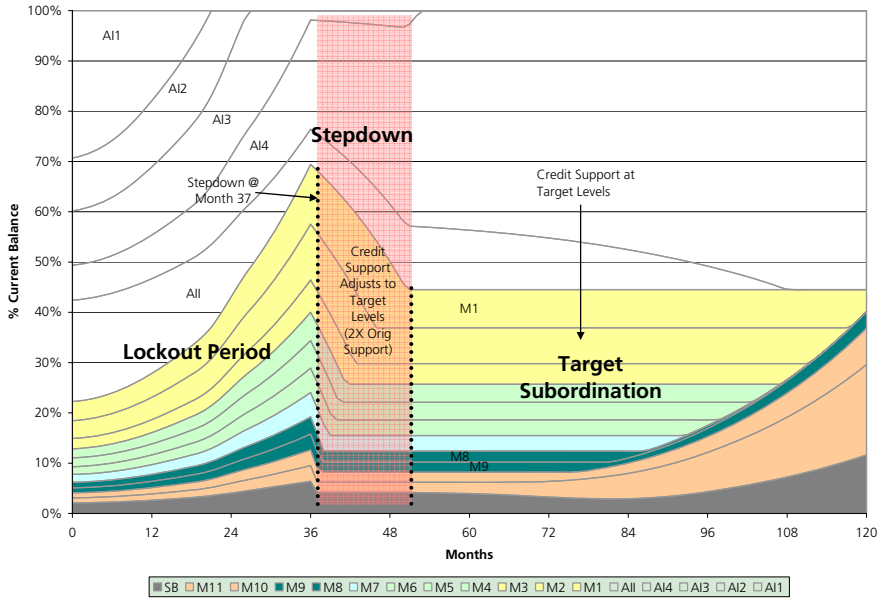
The trigger defines the collateral tests. Typically there are two triggers in the subprime deal, one testing the deal's cumulative losses against an upward-sloping loss schedule, a second the 60+ day delinquencies. The delinquency trigger comes in 1 of 2 flavors: a "hard"/"static" trigger comparing delinquencies against a static threshold, and a "soft"/ "dynamic" trigger for delinquencies against a threshold computed based on the % of senior subordination. Our November 18, 2003 *Mortgage Strategist* article "Hard vs. Dynamic Triggers In Home Equity Deals—Who Wins?" compares hard and soft delinquency triggers.

The deal steps down only if all triggers pass. As a matter of terminology, a trigger "failing" is equivalent to it being "in effect" or "tripped." Triggers are tested monthly, and may switch back and forth between pass and fail.

What is the purpose of the stepdown? The stepdown improves the economics of the deal by making the mezz bonds more attractive. The stepdown brings the beginning of the payment window of mezz bonds in from several years to 37 months, and can halve the average life of a BBB- compared to a sequential-pay structure. All of this can help reduce the needed margins or coupons of the mezz bonds, which reduces the cost of funding for the deal.

What is the purpose of the trigger? The trigger allows the deal structure to behave like two structures; a "Dr. Jekyll" mode for well-performing collateral, and a "Mr Hyde" mode for poorly performing collateral. At any given period, the triggers determine which mode is in effect.

Figure 1: Tranche Balances/Credit Support in Stepdown



Source: UBS, INTEX

In Figure 1 (above) we ran a sample subprime deal with pricing speeds and our historical loss assumption curve.[4] The graph shows the tranche current balances as a % of deal current balances from deal origination to month 120. The tranches are ordered on the diagram by seniority, with most senior bonds on top, so the amount of subordination at any period can be visualized as the distance to the floor. The AAA bonds (names beginning with "A") have equal seniority, and from the credit perspective should be regarded as a single tranche. At any given period, only the tranche at the very bottom is exposed to writedowns. In this run, only the OC tranche (called SB) takes writedowns.

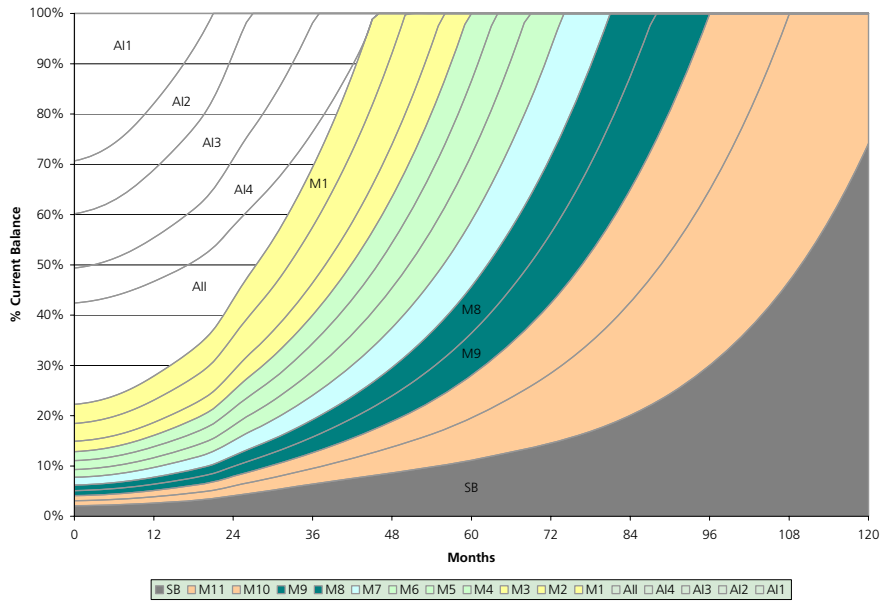
[4] Deal is RASC 2006-KS3 (included in ABX.HE 06-2), running as of pricing 3/29/2006, with pricing speeds (100 PPC ARM, 23 HEP FRM) and 130% of UBS Historical Estimate Loss Curve (described in the October *31 Mortgage Strategist* article "Subprime Break Points—It's *ALL* in The Assumptions")

The 100% level of the graph denotes the entire current loan balance, which amortizes over time. Bonds not paying principal (such as mezz bonds prior to month 37) will have a constant dollar versus a declining balance, and therefore grow in thickness over time. Bonds paying *pro rata* will exhibit a constant thickness (M1 through M9 from months 51 through 76.) Bonds paying sequentially will narrow over time (AII during the lockout period, or the sequential AAA group: AI1, AI2, AI3 and then AI4).

During the lockout period subordination increases dramatically; bonds move farther from the floor. At stepdown, subordination is reduced, and tranches move closer to the floor. In Figure 1, the deal steps down in month 37.

When the deal steps down, it reduces excess subordination levels by releasing OC (which we discuss below). Once the target subordination levels have been reached, the deal pays principal to all tranches (Senior, Mezz, and OC) *pro rata*. The *pro rata* payment and target subordination levels are evident by the plateaus in Figure 1 after the stepdown.

Figure 2: Tranche Balances/Credit Support w/o Stepdown

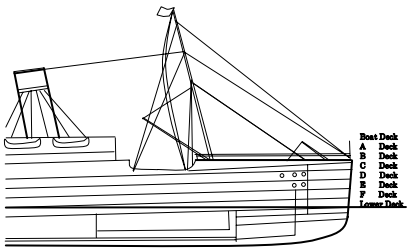


Source: UBS, INTEX

If the deal fails to step down, the deal becomes a sequential pay structure, and principal continues to be directed to the seniors. Figure 2 (above) shows the deal run with the same assumptions as in Figure 1, except stepdown does *not* occur. In this case, we see subordination consistently increase for all tranches. This mode provides the greatest credit protection to the senior interests, and is appropriate for adverse credit.

Credit Support

The "Titanic model" of credit structure compares the level of credit support in a deal with the decks of an ocean liner. Support on the Titanic followed seniority: First-class suites occupied A-D decks (the top four decks); second-class staterooms occupied E deck; third-class berths filled the F and Lower decks. A passenger on E-deck would expect to stay dry until the F-deck below was completely under water. In such a model, one would expect a tranche to be susceptible to a writedown if and only if every tranche below it in subordination were completely written down. In a sequential pay deal, this is in fact quite true. Losses flood the structure from the bottom, and principal is paid out through the top of the structure (with First-class passengers grabbing the lifeboats first).



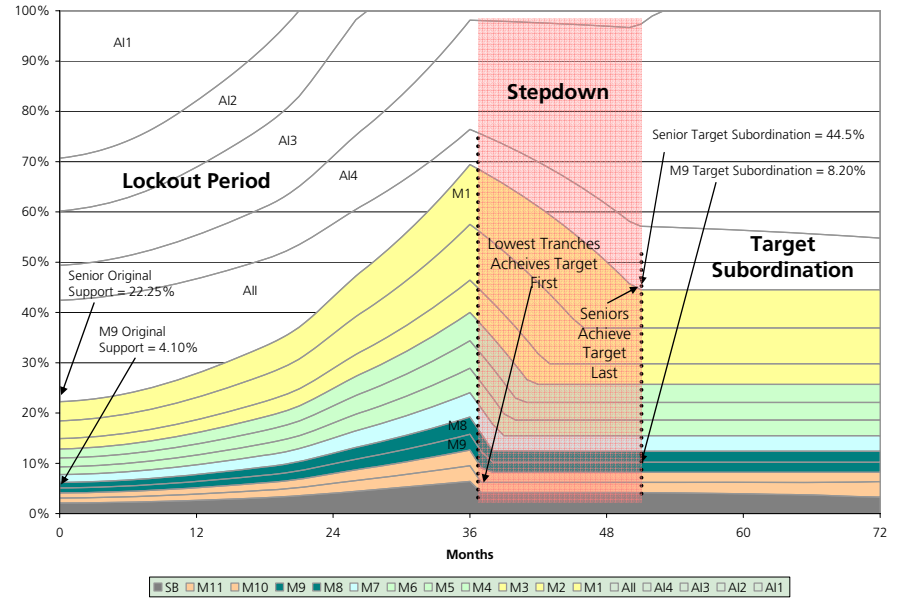
R.M.S. Titanic

How is the amount of credit support set? Using collateral characteristics and deal features, the rating agencies determine the amount of original credit support needed for every rated tranche in a deal. Credit support for a tranche M is measured as the balance of all tranches below M as a percentage of the deal's balance. As an example, a BBB- bond might have 4.10% of original credit support (the aggregate balance of all tranches below the BBB- make up 4.10% of the deal), while an AAA tranche might have 22.25% original credit support. The 4.10% of credit support means that losses would need to eat through 4.10% of the deal's balance before the BBB- bond began to suffer writedowns. Credit support at deal issuance is called the *original support*, and support at any given period based on current balances is referred to as the *current support*.

Current support is a % of the current deal balance; as the deal amortizes, the dollar amount will shrink over time. Contrast this with cum loss that is a % of original balance. Can we say that an 8.20% cum loss will likely write down a tranche with 8.20% current support? Not really. 8.20% of our sample deal's original balance is $94 million. The tranche started off with 4.10% of original support, or $47 million. Using our pricing assumptions, we generate cashflows and find the deal's excess interest totals $86 million. Furthermore, by period 31, losses exceed the 2.250% trigger threshold and the cum loss trigger fails, preventing the deal from stepping down. Therefore, $47+$86=$133 million is available as subordination to the BBB-, against $94 million in projected losses. The losses absorb all excess interest, all of the OC and BB tranches, and partially write down the BB+ tranche. The BBB- is unscathed in this case. However, changes in prepayment assumptions, or the shape of the default curve, could have changed the outcome. Suffice it to say that 8.20% cum loss and 8.20% current subordination are not directly comparable.

The other observation we can make regarding credit support measures is that the current support percentage includes subordination and over collateralization, but does not take excess spread into account.

Figure 3: Target Credit Support

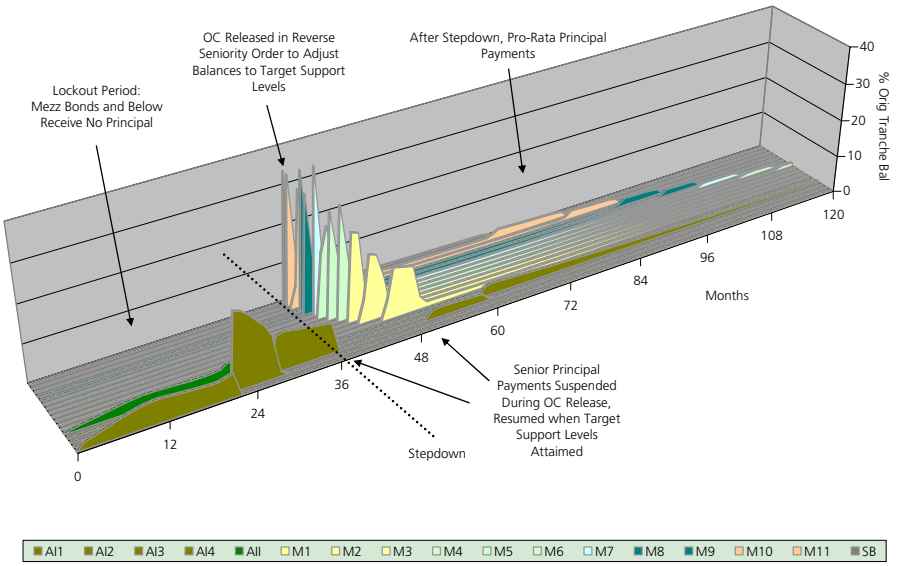


Source: UBS, INTEX

At stepdown, credit support across the entire capital structure is higher than at deal issuance, and often many times higher. This is due partially to the principal paydown of seniors (factors for seniors prior to stepdown average 3-4% for 2002 and 2003, and half of the seniors are completely paid down by stepdown). In addition, subprime deals utilize excess spread (excess interest net of losses) to pay down principal, thus speeding up senior pay downs. Post-stepdown, a target level of subordination is prescribed for all tranches, which is typically double the original subordination. For our BBB- example, the post-stepdown credit support will be 8.20% (2X the 4.10% Original Support). This is typically much less than the current subordination in the deal immediately prior to stepdown, which averaged 16% for BBB/BBB- bonds.

The process of transforming the deal from being overly credit-enhanced to the target (2X original) level of support is referred to as "releasing OC." The process of releasing OC progresses from the bottom of the capital structure and works upwards. At each tranche level, the reduction of current balance is effected by making a principal payment to the bondholder. For example, if the BBB- in our example were supported by a single OC tranche providing 16% of support to the BBB-, then half of that balance would be paid out as principal to the holder of the OC piece, thus reducing the balance (and support) to 8% (the target amount). The BBB- would then reduce its balance to provide the ideal level of support to the BBB bond it supports, and so on. OC release typically takes several payment periods, as balances may be drawn down as principal only as fast as collateral cash flow comes into the deal. The OC release and support adjustment is a bit unusual, as payments are made in reverse priority relative to seniority. In fact, during OC release, senior principal payments are completely suspended.

Figure 4: Releasing OC—Mezz Bonds & OC Release Principal at Stepdown



Source: UBS, INTEX

Figure 4 (above) shows our sample deal releasing OC. The graph is normalized so that each cashflow is shown as a % of original tranche balance.

BBB Stack (on the Knife's Edge)

The BBB stack (BBB+, BBB, BBB-) is structurally significant, mainly because of its position at or near the bottom of the Mezz stack. Historically, subprime losses have been low enough that mostly OC tranches have experienced writedowns. However, as losses rise and approach the threshold of hitting the BBB stack, the trigger will have an important effect on the BBB/BBB- bondholder. Potential Mezz writedowns would happen years after the stepdown test, thus the trigger's duty is to make a decision at the stepdown date about reserving subordination today against future losses.

Given the challenging HPA environment, losses are expected to reach levels where some BBB/BBB- bonds will likely be written down. The rising of the "loss waterline" changes the effect of the trigger on BBB interests.

Effect of Triggers and the Loss Waterline

a) *BBB/BBB- below the waterline* - If losses are sufficiently high that the BBB has an expected loss of 100%, its interests become allied with the OC piece. When the BBB is deeply under water, a stepdown is always desirable. In the most extreme example of this case, half (based on 2000-2004 historical experience) the BBB principal is paid at stepdown and the remainder soon written down by high losses. The wrinkle is that losses of that magnitude are likely to trip the cum loss trigger and prevent the deal from stepping down.

b) *BBB/BBB- is "high and dry" above the waterline* - In a low-loss scenario, a stepdown is also desirable because of the early principal payment, and since the reduction of credit support does not materially increase the probability of writedown. The BBB's payment window and average life are significantly shorter when a deal steps down. In this case, the BBB's interests lay with the senior-most Mezz tranches. (The BBB can never properly be thought of as aligned with the AAA, since structurally the AAA enjoys special treatment, such as exclusive principal payment during the lock-out period).

c) *BBB/BBB- is at or near the waterline* - In a moderately high-loss scenario, a stepdown may not be desirable, because although the bond will receive principal at the stepdown, so will the subordinate piece, therefore lowering the credit subordination of the remaining balance and increasing the probability of default. Another way of looking at this scenario is that principal is paid off to the OC holder, which can never be reclaimed for use as protection against future losses. In the non-stepped down case, principal is only paid to bonds above the BBB stack, preserving its cash subordination. Even if a writedown never happens, a stepdown in combination with realized losses could erode current support to the point of a ratings downgrade.

Sampling the Subprime Universe

To examine the effects of the trigger and stepdowns, we selected recent vintage deals which have stepped down and which meet the characteristics of the "plain-Jane" non-wrapped subprime deal. Using complete vintages past their stepdown dates means restricting ourselves to 2003 and prior deals. We want deals with BBB or BBB- mezz bonds and those with stepdown triggers. We'd also like to exclude bonds which are reverse turbo, or otherwise do not pay in accordance with the rest of the mezz structure; restricting ourselves to the INTEX "MEZ" bond type approximates this latter requirement. In the end, we are left with 250 subprime deals meeting our criteria, with either a BBB or BBB- mezz bond.

2000-2003 Deal Stepdown Summary

The first order of business is to determine how often triggers pass, at what month they pass if they do, and deal condition at stepdown. Table 1 (below) shows aggregate stepdown stats. Deal structures containing BBB/BBB- mezz bonds have become far more popular post-2001, reflecting a move away from monoline wrap deals (no mezz bonds) in favor of senior/sub structures.

Table 1: 2000-2003 Deal Stepdowns

Vintage	Deals	% Deals Stepped Down	Avg Stepdown Months	Deal Factor	AAA Factor	Seniors Paid Down by Stepdown
2000	8	75%	38.8	0.2338	0.1374	0%
2001	14	71%	35.5	0.2691	0.0857	50%
2002	68	85%	36.2	0.1690	0.0267	53%
2003	160	90%	35.5	0.1852	0.0374	53%
	250	87%	35.8	0.1871	0.0404	51%

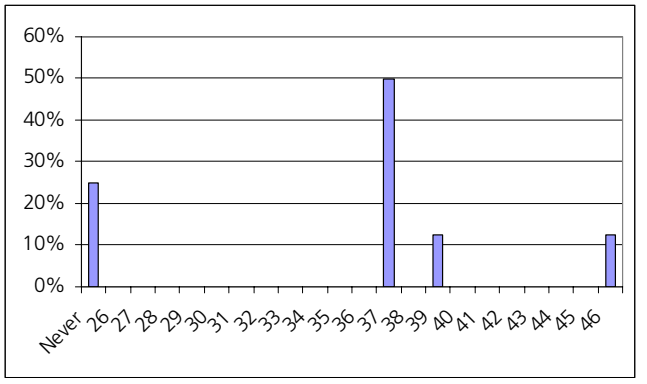
Source: UBS, INTEX

Historically, deals are much more likely to step down than never to step down. In 2001 (worst vintage of our sample), 2/3^{rds} of deals stepped down, and overall, >80% of deals in our sample pass their triggers. Of the deals that stepped down, the average months to stepdown has been dropping, averaging >36 months. [*NOTE*: 87% of stepdown triggers passing doesn't equal to 13% failing. Many deals pass at stepdown, but fail subsequently. A deal may even pass again at a later point. The first stepdown is the most critical; it's the point at which the most extra subordination has been built up, and will be released as principal.]

The second notable statistic is that 50% of the deals completely pay off the seniors prior to stepping down. In many (but not all) structures, a stepdown may take place immediately upon the retirement of the senior tranches. Note that not only will the lockout period contribute to the early retirement of the seniors, but excess spread also accelerates AAA paydowns.

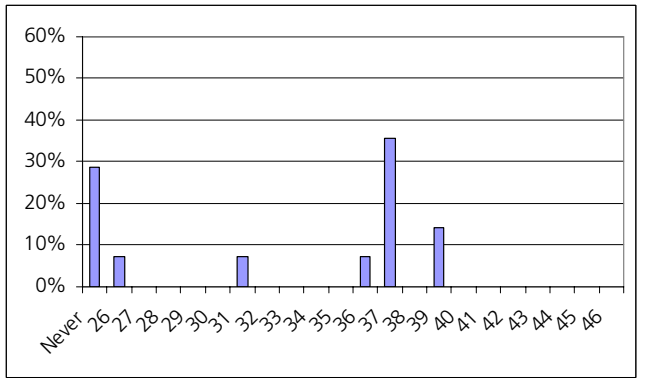
Figures 12 a-d (below) show that while 37-month stepdowns dominate, there's greater frequency of early stepdowns in later vintages. In 2000-2001 only a handful stepped down prior to the stepdown date. In 2002 and 2003 deals, a good number of deals stepped down in the 29- to 36-month range. That's due to fast prepays; paid-down seniors is the only way to step down prior to month 37.

Figure 12a: 2000 Stepdowns



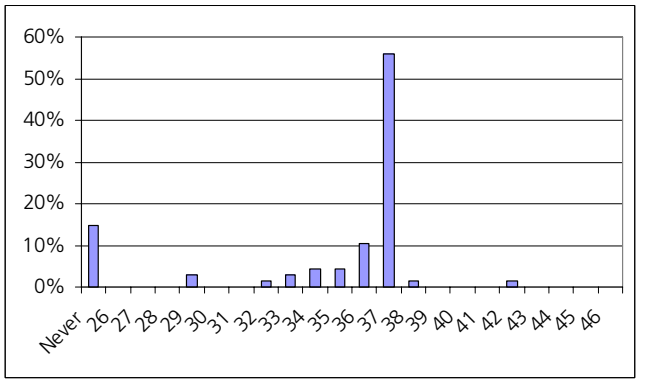
Source: UBS, INTEX.

Figure 12b: 2001 Stepdowns



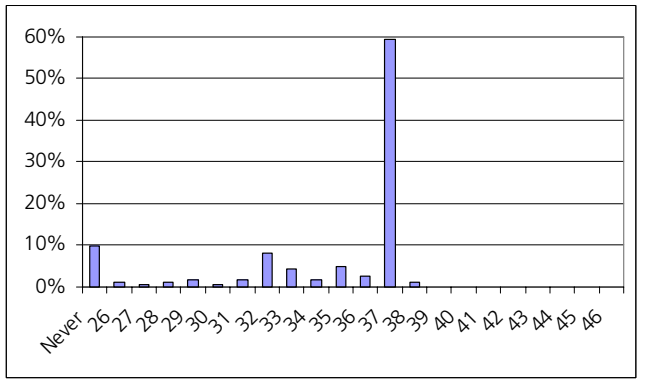
Source: UBS, INTEX

Figure 12c: 2002 Stepdowns



Source: UBS, INTEX

Figure 12d: 2003 Stepdowns



Source: UBS, INTEX

Stepdown & Credit Effects

The stepdown reduces both principal balance of the BBB/BBB- tranche and the subordination it enjoys. Table 2 (below) shows for each vintage the % of current balance paid to the BBB bondholder as principal following the step-down (6 months is given, to allow OC release to trickle up the capital structure). This is compared to the reduction in credit support. On average, the amount of credit support lost is much less than principal returned in most years (the ratio is 1:2).

To the investor long the cash bond, the stepdown statistics are reassuring. There is a high probability the deal will step down, and when it does, a large amount of principal is released to the BBB/BBB- holder, with a relatively smaller reduction in credit support. This caps the amount of writedowns to the balance left after OC release.

Table 2: Stepdown Effects—Balance & Credit Support

Vintage	Loss of Subordination	Principal Paydown
2000	0.2136	0.5345
2001	0.0448	0.2761
2002	0.3871	0.6936
2003	0.2855	0.5247
	0.2974	0.5570

Source: UBS, INTEX

But to the investor using the synthetic as a pure play to short the housing market, the stepdown is a problematic. It reduces the notional amount to half, so even if the reference security experiences a write down, the relative return will be proportionally diminished.

Summary

We've covered the rationale and mechanics of triggers and stepdowns, and their effect on credit subordination principal cashflows. We've also looked at recent available vintages, and determined that 85% of these deals stepped down (most on the stepdown date), and half had paid down the AAAs by stepdown. When the deals did step down, they released, on average, half of their principal and gave up 30% of their current subordination to reach target levels. *Most of this is good news to the BBB investor. Synthetic protection buyers may find their notional reduced at stepdown, well before writedowns are experienced.*

In a follow up article, we will apply some of the insights we've gained to the current environment, which is far less benign. Speeds are slower, HPA is much lower, and recent vintages are performing much more poorly. The common view is that write downs for mezz bonds are a real possibility in the near future; we'll explore probable scenarios under which this will happen.