

AD&CO. Update – December '07

The Road to Recovery

By Rob Landauer

2007 will not soon be forgotten by mortgage market participants. It has been a trying year for originators, investors, dealers, rating agencies and the firms that support them. Those of us old enough to be employed in the mortgage industry in the 1990's need to assure our younger brothers and sisters in the business that brighter days are ahead. History has shown time and time again that markets never trend in one direction and troughs are inevitable. We are a resilient and creative industry which will rebound in 2008 and beyond. It is our hope that pending legislation, various industry initiatives and a more rigorous analytical approach will lead to a saner and productive market.

AD&Co. is working hard to ensure we provide the models and analytical tools that our clients need to effectively navigate the road to recovery. We are constantly analyzing the performance of our prepayment and LoanDynamics™ Models to ensure they capture the most recent performance of agency, jumbo prime and sub-prime loans. Declining home price appreciation, slowing housing turnover, availability of credit, and a looming recession all impact the rate at which borrowers will prepay, become delinquent or default. Rest assured that our modelers and support team are constantly analyzing the impact these factors will have on model performance and that we are available to discuss our findings and ideas with you at any time.

For now, the AD&Co. family would like to take this opportunity to wish our clients and friends a very happy, safe and healthy holiday season and prosperous 2008. We greatly appreciate the trust you place in our products, services and personnel and look forward to working with you in the New Year and beyond.



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Prepayment Update – December '07

A Look at Sub-Prime Prepayment Speeds

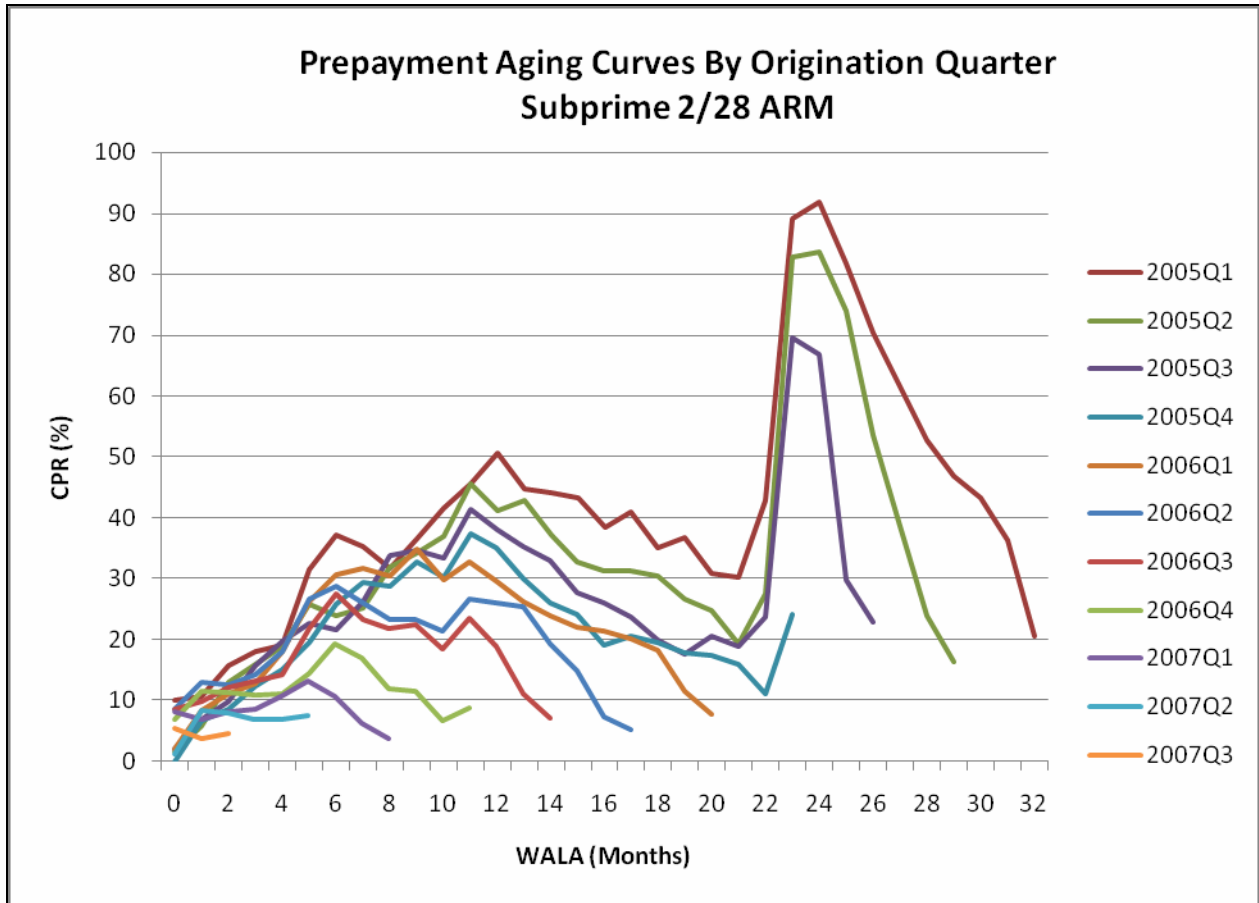
By Sanjeeban Chatterjee

In this article we look at prepayment speeds for sub-prime loans by quarter of origination starting from 2005Q1. It is common knowledge that prepayment speeds for sub-prime loans have slowed down. This article shows the magnitude of the slowdown and some interesting trends.

We obtained data for this study from Intex. The prepayment speeds indicate total terminations, which include voluntary and involuntary prepayments. Prepayments are recorded whenever the balance becomes zero regardless of the reason.

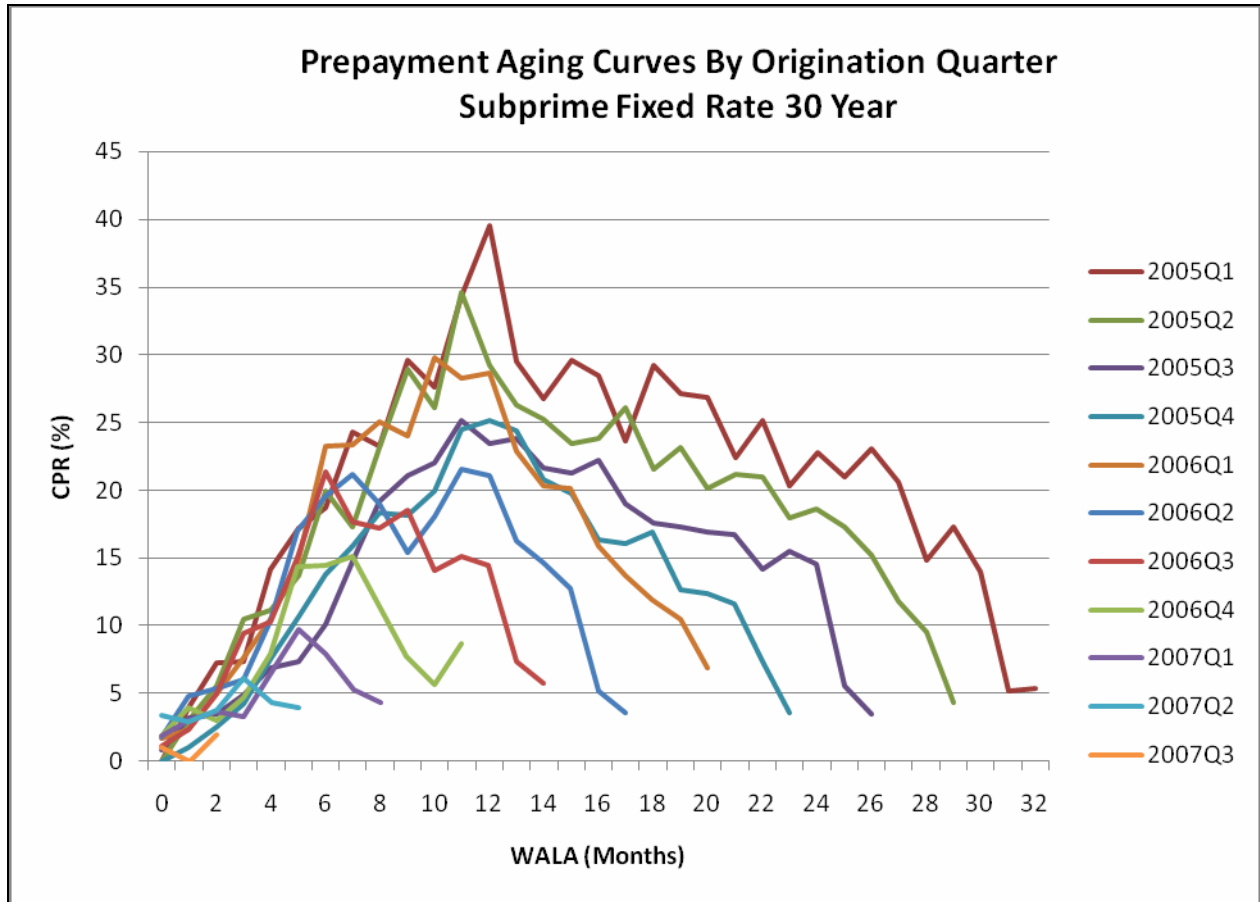
In Chart 1 we see that speeds have slowed down considerably as we go from 2005Q1 to 2007Q3 originations. Not only have the peak reset speeds gone down but so has the 12-month hump, the time when some of the credit-curing typically happens. For example, after 12 months the 2005Q1 vintage prepaid at 50 CPR while the 2006Q3 vintage prepaid at only 20 CPR. This is a 60% slowdown in speeds. Also, the 2005Q1 vintage had peak reset speeds over 90 CPR while the 2005Q3 vintage prepaid at 70 CPR (a 20 CPR drop). This indicates that in 2007 sub-prime ARM borrowers could not refinance efficiently when their rates reset after 2 years. And after making timely payments for a year borrowers were probably having a harder time getting better terms on their loans.

Chart 1



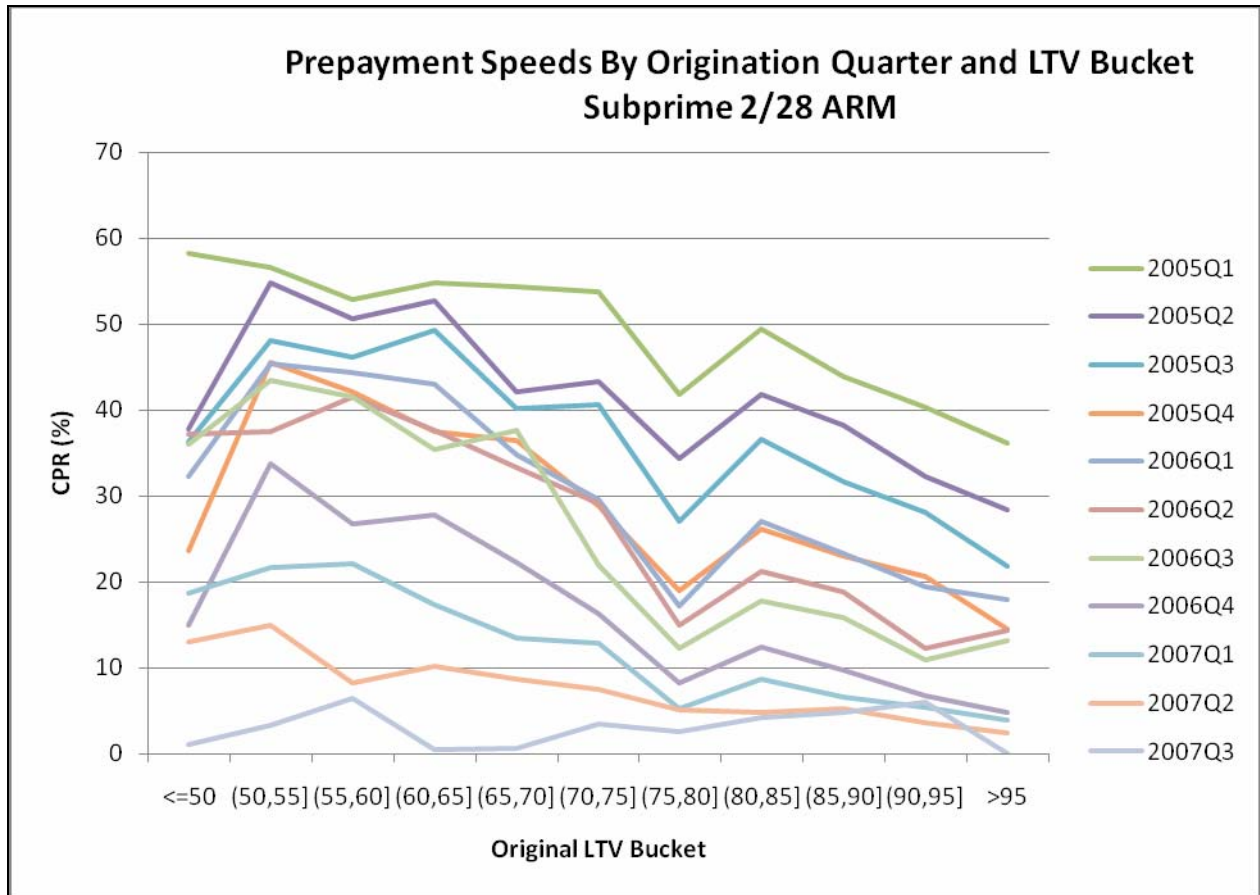
We see a similar trend in the sub-prime 30-year fixed rate sector. Speeds slowed down as we go from 2005Q1 to 2007Q3 origination (shown in Chart 2).

Chart 2



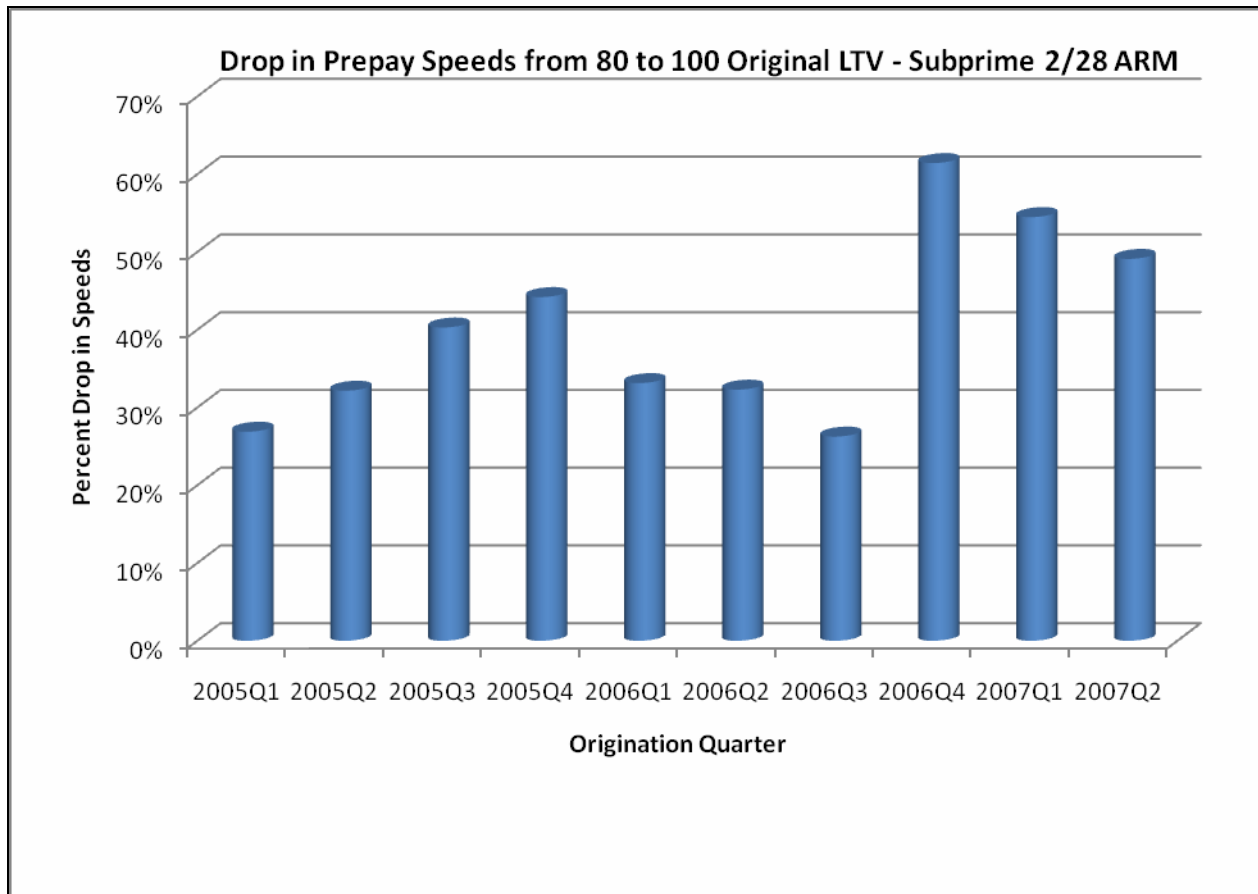
The next issue we look at is whether there is a differential in speeds for loans with high Original LTV. Chart 3 shows prepayment speeds by Original LTV bucket. We see that for all vintages, speeds go down for loans with Original LTV > 80%. The question is by how much?

Chart 3



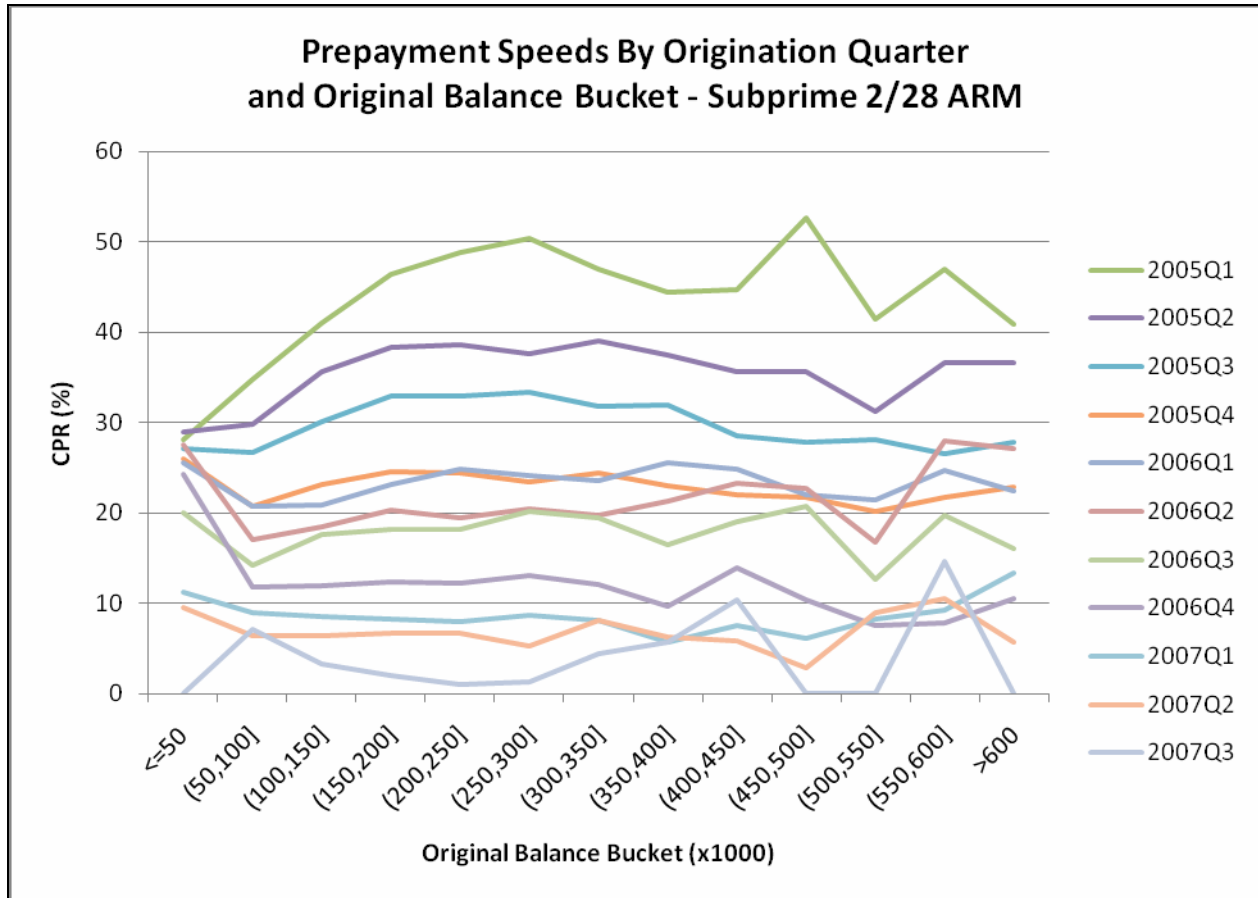
To address the above question we look at the change in speeds from 80 to 100 Original LTV and see some interesting trends (shown in Chart 4). On average, speeds dropped by about 30%. However, since 2006Q4, speeds have dropped by about 50% on average. This is a dramatic change which can probably be attributed to bad underwriting by lenders during that time period.

Chart 4



Looking at prepayment speeds by original balance buckets, however, we do not see any clear trends.

Chart 5



In the next issue of *The Pipeline* we will discuss prepayment trends for non-agency prime loans. In subsequent issues we will also look at prepayment trends in other dimensions including FICO and HPA.

These are very interesting times and the industry is dealing with the events of 2007. At Andrew Davidson and Co., Inc. we are watching these events closely so that we can study the trends and make model updates and tuning recommendations accordingly.



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Valuation Commentary – November '07

Happy Holidays! + A Few Recommendations

By Alex Levin

Happy Holidays, dear friends, clients, and supporters! Like me, you probably prefer to read an article on a single topic that is presented simply and systematically. This month, however, I feel it is important to reflect on a few different topics. For those who use or plan to use the AD&Co. valuation and interest rate modeling products, the following discussions should be of interest:

[SATO Tuning for TBAs](#)

[More on Interest Rate Model Selection](#)

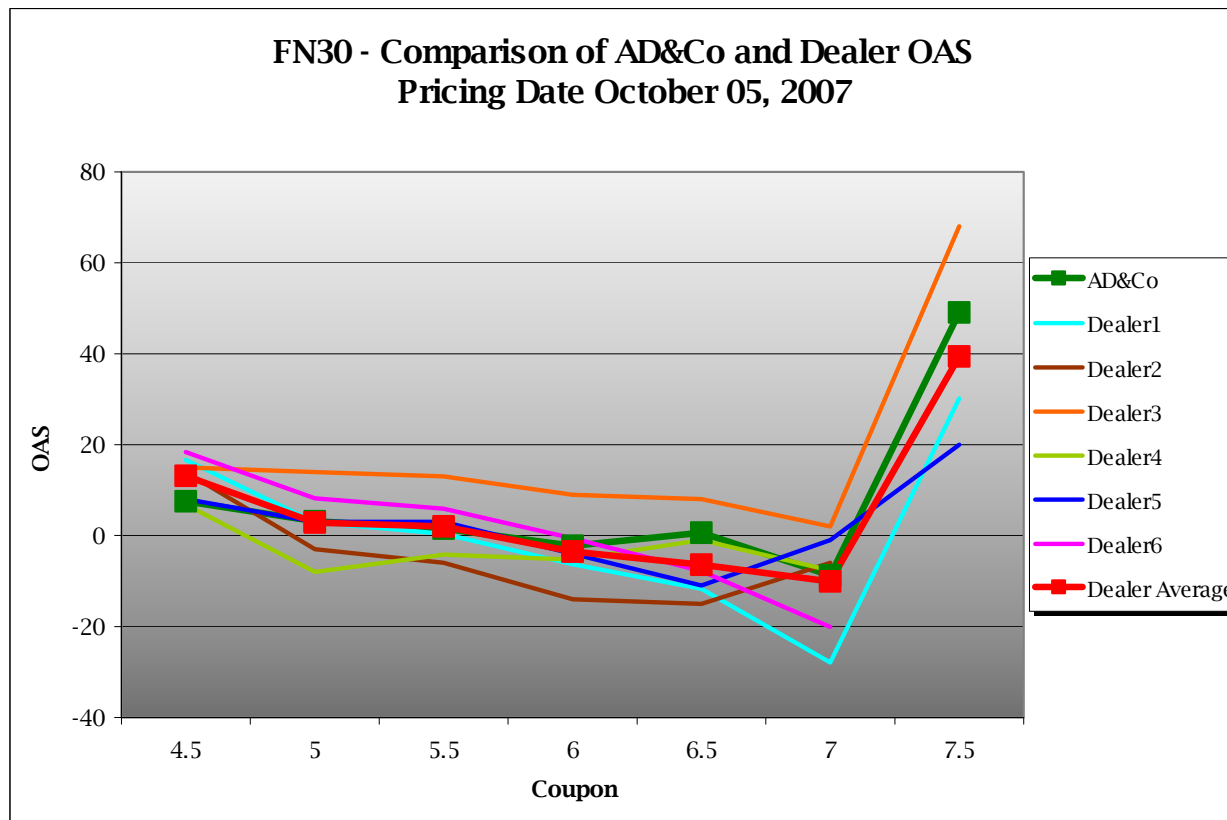
[Practical Monte-Carlo Recipes](#)

SATO Tuning for TBAs

In the [July 2006 Pipeline article](#) I advocated the use of a lower SATO tuning (0.33) for fixed rate TBAs. This tuning reflected the general trend which started in 2002 and lasted throughout 2006: SATO was becoming less of a factor for agency pools. Alt-A borrowers had no trouble getting a mortgage or to improve it quickly by flowing into one of the many products offered by originators. One can't claim this anymore: due to the ongoing mortgage crisis, refinancibility has shifted down. Furthermore, since July of 2006, the age assumption for 6.5s and 7.0s (the ones we view as gauges of the refinancing risk) have extended from 4-5 to 9 months.

As a result, we found it reasonable to raise the SATO tuning significantly. To simplify, we will be using the SATO tuning of 1.0. Below we plot OAS graphs against a collection of dealers and their averages, as of October 5 of 2005; median WAC and WAM were employed for the AD&Co. results.

Exhibit 1. AD&Co. and dealer OAS (market assumptions for 10/05/2007)



Although AD&Co. is not aiming to replicate the market, it is clear that the AD&Co. OAS model operating with a SATO tuning of 1.0 is close to the market's average.

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More on Interest Rate Model Selection

The [“Conscientious Choice”](#) paper celebrated its 5th anniversary earlier this year. The paper was reproduced by the *Journal of Portfolio Management* in 2004; the subject was revisited again last year and submitted for one of upcoming Frank Fabozzi's publications. The main outcome—“Stay Normal!”—still seems very relevant (it is advisable for other purposes too). The normal model does not have to be a single-factor one though, and this is the current message.

Please re-read the [February 2005 Pipeline article](#) on the role and importance (or lack of it) of two-factor modeling. Provided that both the one-factor normal model (AKA the Hull-White model) and a normal multi-factor model are calibrated to the same set of vanilla options, the difference in value will only be measured for MBS that are convex to the curve's twist. In option theory jargon, we say that instruments have a “curve option.”

The February 2005 paper showed that most MBS will be priced within a close range, no matter how many factors are employed. This paradox stems from the fact that AD&Co., as well as others, model prepayments as a sequence of European payoffs. Pass-throughs' values are almost

“nailed” by rates and volatilities. However, some CMOs present notable exceptions. Here is a short list that investors and analysts should be concerned about:

(A) CMO classes that are much shorter or much longer than their collateral carry the curve option

- Short fixed-rate CMOs: induced curve put (+)
- Long fixed-rate CMOs: upsized curve call (-)

(B) Capped amortizing floaters carry the curve option (-)

(C) Many IO and inverse IO tranches contain features (A) or (B) above

In the above abbreviation, (+) means that a two-factor model increases the value, (-) means it decreases the value of CMO, for the same OAS and market conditions. If a CMO class is much longer than its collateral, the curve’s steepening (without change of the MBS current rates) extends the tranche’s life and impairs its value relative to the collateral. When the curve flattens or inverts, gains in discounting are limited by a shorter life. Therefore, on average, the CMO’s price profile will exhibit negative convexity to twist. Short classes behave in the opposite way and are positively convex. Similarly, valuation of caps found in floaters relies on the interaction between prepay speeds and the odds of hitting the cap. When the curve steepens, the cap moves into the money and applies to a larger surviving balance. The losses on resets won’t be offset by much smaller gains induced when the curve flattens or inverts.

Here is the action guide: When selecting the number of factors in an interest-rate model, ask yourself what type of instruments represents your main investment focus. If it is MBS pass-throughs (including ARM pools, IOs, POs, and MSRs), use the Hull-White model with confidence. And, if you license AD&Co.’s OAS model, you will take advantage of the blazing speed of backward induction. If most of the instruments are CMOs, I recommend you think and learn more about AD&Co.’s two-factor normal model. Calibrated to the same swaption matrix, this model may shed light on the true value hidden by single-factor modeling. And it won’t increase your processing time because, with CMOs, you are bound to Monte-Carlo anyway. AD&CO.’s OAS system supports 4 term structure models and lets you conduct your own tests and compare results.

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Practical Monte-Carlo Recipes

1. Gauge the accuracy. The AD&Co. OAS system reports an estimate of pricing accuracy. If you quote price and compute OAS, “RMSE” is the OAS accuracy. Otherwise, it is the price accuracy. The actual achieved accuracy is somewhat better; RMSE stands for simple sampling standard deviation of values, but it suits the purpose. Review your accuracy and processing time and adjust your set-up accordingly. Reduce the number of paths if the accuracy is redundant. Increase it if the accuracy is deficient.

2. Set a different number of paths for different Intex instruments. Run more paths for agency CMOs, less paths for non-agencies - not because of accuracy, but because of ability. In a typical

portfolio batch, setting 100 Monte-Carlo paths for non-agency CMOs may be the most one can afford. More paths can be used, say 500, for agency CMOs. The main reason for long processing is the nature of non-agency collateral and its heterogeneity. Even under the weighted averaged collateral aggregation mode, input fields like prepay penalty details or rate resets are not clustered. It leads to hundreds or even thousands of pieces of collateral.

Our OAS users can vary the path numbers and change them when going from one CMO to the next. This position-level assignment improves the efficiency of batch processing.

3. Shuffle the seeds. The AD&Co. OAS system lets you apply the same or different set of paths to various position lines. As pointed out in the [May 2007 Pipeline article](#), starting each position run from random seeds is a powerful and simple recipe. And if all we are interested in is compiling an aggregate report, we can reduce the workload by using just a few Monte-Carlo paths per position.

Random shuffling of path sets between consecutive positions creates enough randomness in the overall run. To illustrate this point, let us consider a portfolio made up of 1,000 identical positions. Running 2 random paths per position seeded randomly is equivalent to running 2,000 random paths, from the portfolio stand-point. In contrast, running 2 random, but the same, paths per position, is no different than running only 2 paths for the entire portfolio. The May 2007 *Pipeline* article shows that using this method when computing the expected losses in a sub-prime pool leads to an accuracy exceeding 1%. This is an improvement by a factor of 20 to 50 compared to the traditional method that employs the same set of paths for each position. Of course, for each instrument, computing the Greeks must employ the same seed as running OAS.

Unless positions need to be accurately valued against each other (e.g. asset versus hedge, specified pool versus TBA), using the same set of paths for every position is never advantageous. Even if positions are somewhat heterogeneous, using random seeding will be as accurate for each position and more accurate for the portfolio's summary than using the same-seeding.

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