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Risk Modeling Bulletin Issue 6

Model Risks

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Accuracy of the financial models has to be monitored continually. The model results should be benchmarked with actual observations, discrepancies should be analyzed, and the models should be improved when appropriate. This feedback loop in monitoring the model risk is an important part of risk management. In this issue, we describe the return attribution process in Decisions. The analysis provides a detail breakdown of the change in the NPV value of the bank. The results can identify the risk sources to the models. Also, in this issue, we benchmark the predicted prepayments to the actual prepayment of a GNMA mortgage.

Feature Article: Return Attribution - Retrospective Analysis

A bank's NPV changes over each quarter. Research has shown that changes in the yield curve, OAS, and position size are the major factors that effect these changes. Consider the following result from Decisions. Table 1 reports the return attribution of the thrift benchmark over the first quarter of 2006. Figure 1 depicts the result. It shows that the yield curve shift causes a 4.2% NPV loss, and interest rate risk is the most significant factor affecting the NPV of the thrift in December, 2005.

TABLE 1: Thrift Benchmark Return Attribution (200512 - 200603 Cycle) % of 12/2005 NPV Value

NPV	Diff (chg in NPV)	Portfolio Revision	Yield Curve Shift	OAS Shift	Residuals
	0.2	0.3	-4.2	1.9	2.3

Return attributions can provide the banks valuable feedback information in their risk management. Senior management can identify the primary market factors affecting their shareholders' value, as the return attribution underscores the importance of the ALCO process.

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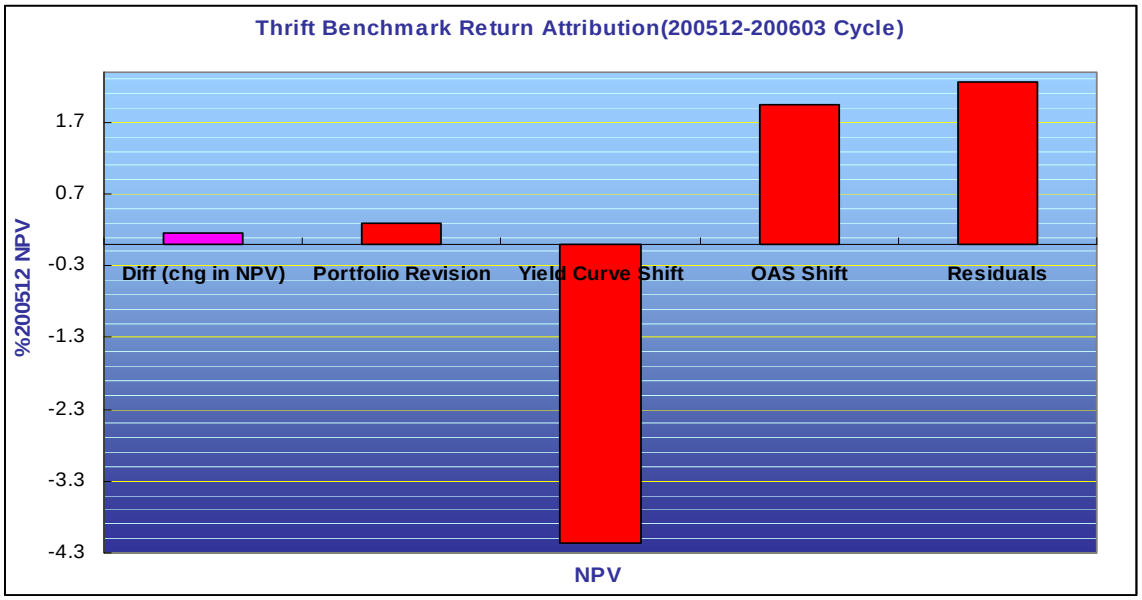
FIGURE 1



References

Return attributions should be used as part of the risk management process as explained in Ho and Lee The Oxford Guide to Financial Modeling Oxford University Press 2001, pp 551-553

Market Perspective: Prepayment Speed

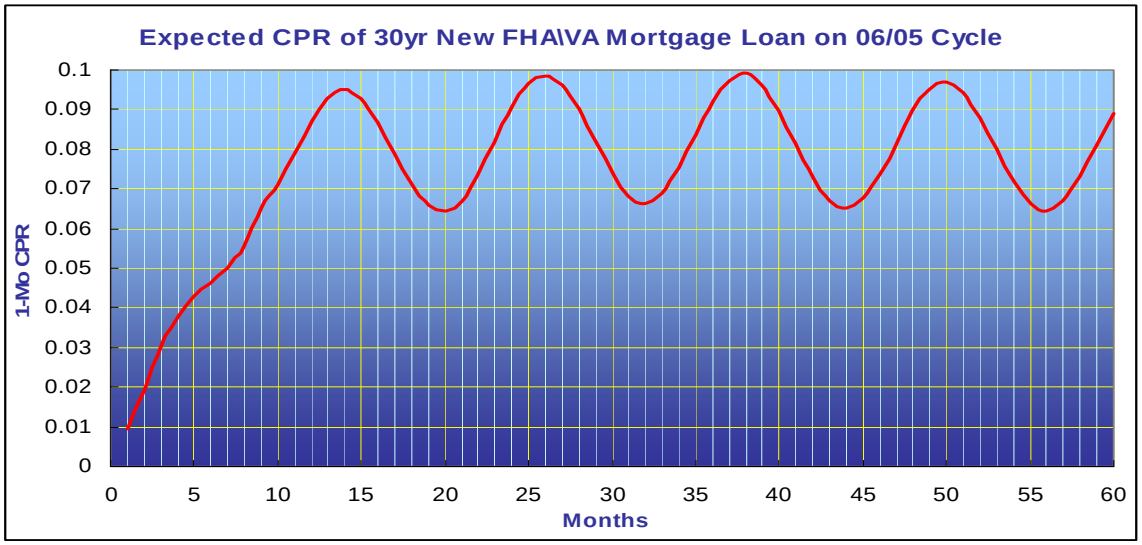
Mortgagors are allowed to prepay the mortgage in part or in whole at any time without penalty. When interest rate falls, the prepayment means a loss for the investors to the MBS backed on the mortgage. Prepayment speed varies from time to time, but how?

Consider the following simulation from Decisions. Table 2 reports the details of a current FHA\VA 30yr mortgage. Figure 2 shows the conditional prepayment rate movement based on the OTS model. The figure shows the seasoning effect of the mortgage in the first year and the impact of the seasonality effect.

TABLE 2: Details of a current FHA\VA 30yr mortgage

OAS(%)	WAC(%)	Start Date	Maturity
0.807	5.50	2005-06-30	2035-02-28

FIGURE 2



The model is compared with a current issue GNMA's actual CPR. The GNMA has a weighted average coupon rate 5.5 percent and weighted average life of 12 months.

1-Mo CPR	Actual		Projected					
Month	Jun		Jun	Jul	Aug	Sep	Oct	Nov
OTS Model	----		8.73	9.29	9.49	9.26	8.67	7.89
GNMA	8.4							

The results show that the recent prepayment behavior is somewhat slower than that predicted by the OTS model. This conclusion is also consistent with some Wall Street research prepayment projection. One reason may be that the GNMA prepayment tends to be slower. Another reason maybe the market is anticipating slower prepayment rate in the coming months.

For more details on prepayment risk and prepayment models see Ho and Lee The Oxford Guide to Financial Modeling Oxford University Press 2001 pp 343 - 349

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