



February 24, 2016

Weekly Post: 30 Year Fixed Rate Mortgage Loan Rate Sheet

Dear Clients-

Last week I discussed the importance of loan production in the current banking environment, originating loans at competitive rates and meeting customers' needs. I also discussed loan pricing strategy. The strategy I discussed uses a **Mortgage Loan Rate Sheet** that covers a broad range of mortgage products where the loan rates ensure profitability while taking interest rate, liquidity and credit risks into consideration. The ability to offer a broad range of loan products enables you to maintain your customers' relationships, increase loan production, create customized loan types with higher margins and hence increase risk-adjusted profitability.

This loan rate strategy may require an appropriate loan origination process, expanding customer relationships, and regulatory approval. This week, I will first focus on non-conforming 30 year fixed rate loans and I will extend the analysis to other products in the following weeks.

Challenges

- What are the primary considerations in setting the loan rates for high LTV or low FICO loans?
- How to manage the interest rate risk of a 30 year fixed rate loan when interest rates can rise significantly?

Solution

While there are many factors that affect the appropriate loan rate, here I consider three important factors:

- Loan-to-value ratio (LTV)
- FICO score
- Recovery ratio.

Recovery Ratio

Consider a \$100,000 mortgage loan. When the loan becomes non-performing resulting in foreclosure, the property is repossessed and sold. If the total income from the sale of the property, net of all the costs associated with the foreclosure, such as legal fees and maintenance cost, is \$85,000 then the recovery ratio is 85%. The net loss rate is 15%.

Based on historical numbers, typically loans originated in rural and metropolitan areas have recovery rates of 65% and 85% on average. Of course, the recovery rate depends on the specific borrower, loans and market conditions. These averages can be used as a guide. One important market factor is the current LTV. When the property value falls significantly, then clearly the recovery ratio would fall. The financial crisis of 2008 saw the recovery ratio in many cases fall to zero.

FICO Score and LTV

While the loan rates should be higher for lower FICO scores and higher LTV, you need to quantify the relationships among these factors. The increase in loan rate is not constant for every 100 point drop in FICO



score or every 10% increase in LTV. These relationships are more complex, and are determined by financial models. These models are referred to as a prepayment-default model and are included in the Mortgage Analytics Platform, FHFA and are used in THC Valuations.

Prepayment-Default Model

The Performing Loan Module is explained in the Mortgage Analytics Platform as follows:

“ Performing Loan Module – the primary function of this module is to project monthly loan level prepayment and 90-day delinquency probabilities on performing and modified performing loans. Loans enter into this module if they are current, less than 90 days delinquent, or forecasted to cure from a delinquency during the simulation. The prepayment and delinquency equations are functions of borrower characteristics, loan characteristics, home values and other economic variables. Multiple pairs of prepayment and delinquency equations collectively cover several loan products and modified loans guaranteed or owned by the Enterprises.”

Further details are provided in our co-authored paper, cited below and available on the FHFA site.

Valuing Fixed Rate Mortgage Loans with Default and Prepayment Options

Robert M. Dunskey and Thomas S.Y. Ho

Journal of Fixed Income

vol. 16, no. 4 (Spring 2007):7–31

"Mortgage loan valuation inclusive of both the credit and interest rate risk is important to all market participants—investment bankers, investors, originators, servicers, and regulators. The authors develop a model (using a multinomial logit equation to specify the mortgagors’ behavior and a two-factor arbitrage free interest rate model) to specify the interest rate movements of the valuation of mortgage loans on the balance sheets of banks."

Numerical Example

The prepayment-default model can be used to specify the Loan Rate Sheet as the guide to quote mortgage rates to customers. The loan rate sheet will of course be institutional specific. In particular, the recovery ratios will depend on the internal credit risk management process of the institution.

The table below illustrates the model loan rates, over a range of FICO scores, with LTV ranges from 120 to 60. The valuation is relative to the GSE TBA mortgage-backed securities pricing. The model assumes 25 basis points servicing cost and clean option-adjusted spread (the risk-adjusted profit) of 147 basis points. Further, the recovery ratios are 45%, 65%, 85%, and 100% for LTV 120, 100, 80, and 60 respectively.

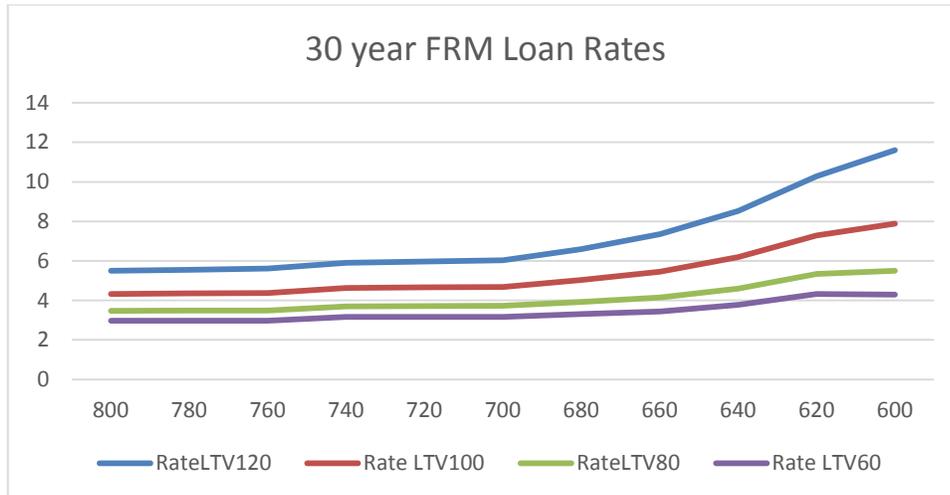
Loan Rate Sheet 2/21/2016

FICO	RateLTV120	Rate LTV100	Rate LTV80	Rate LTV60
800	5.501	4.320	3.476	2.978
780	5.553	4.355	3.479	2.978
760	5.612	4.378	3.489	2.978
740	5.899	4.625	3.698	3.172
720	5.962	4.656	3.708	3.172
700	6.028	4.682	3.724	3.172
680	6.598	5.025	3.923	3.310



660	7.352	5.451	4.143	3.432
640	8.525	6.189	4.605	3.775
620	10.279	7.288	5.331	4.325
600	11.610	7.886	5.495	4.290

The graph below shows that the loan rate increases faster as the credit deteriorates. The results show the importance in using an appropriate valuation model to determine the fair loan rates.



Interest Rate Risk Concern

Many banks and credit unions are concerned with “putting 30 year Fixed Rate Mortgages on the book” in case rates rise, resulting in locking into a low rate. However, in managing interest rate risk in your balance sheet, you should focus on the overall balance sheet. When you hold 30 year fixed rate mortgages, you would likely also be holding assets that are rate sensitive so that the balance sheet maintains the target duration.

The THC model also provides the loan duration. The interest rate risk management process enables you to monitor and manage your entire balance sheet risk exposures regulatory, monthly and quarterly. Therefore, the risk management process has taken not only the interest rate risk into consideration, but also model risk, credit risk, and liquidity risk.

Conclusion

Originating loans to customers is the business of community banks and credit unions. A loan rate sheet enables loan officers and senior management to offer a broader range of products for customers and also helps maintain customer relationships.

A Loan Rate Sheet requires the study of each loan type and the institution’s internal loan origination processes. This post discusses only one aspect: a 30 year fixed rate mortgage loan over a range of FICO scores and LTV ratios. I will extend this discussion to other products over the following weeks.

This Post discussed the specification of a Loan Rate Sheet in a few words, and as a result, many issues are oversimplified. Please feel free to contact me for any further discussion. Risk Officer App Loan Performance Analysis is available and can provide you a Loan Rate Sheet.

Regards,



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