



Defaulted Dollars and the Credit Spread/Guarantee Fees of Fixed Rate Mortgage Loans

This issue presents the projected defaulted dollars of 30-year fixed-rate mortgage loans and the corresponding credit guarantee fees. Further, the breakeven credit spread is calculated for the default risk of the loans.

The projected default and prepayment experiences are given by the Dunskey-Ho default-prepayment model. It is a multinomial log-it model that incorporates the competing risks of default and prepayment. In particular, the model takes the combined effects of the interest rate call option and the home value put option of the mortgagor into consideration. (See Dunskey-Ho (2007) Journal of Fixed-Income, March) The valuation model is based on the two-factor Ho-Lee interest rate model.

The results are presented in Figure 1. The results are based on a \$100 par loan and the projected cash flows of the defaulted dollars are simulated over a range of FICO scores (400 - 850). The defaulted dollar is defined as the conditional default rate on the outstanding principal amount, taking the prepayment into consideration. The recovery rate is assumed to be 90%. The result shows that lower FICO score is positively related to the defaulted dollar, as expected. However, the dramatic non-linear relationship is surprising. The result further shows that the default dollars peak at a relatively short time, approximately the fourth year. Note that the characteristics of the mortgage loan are described in Table 1.

FIGURE 1

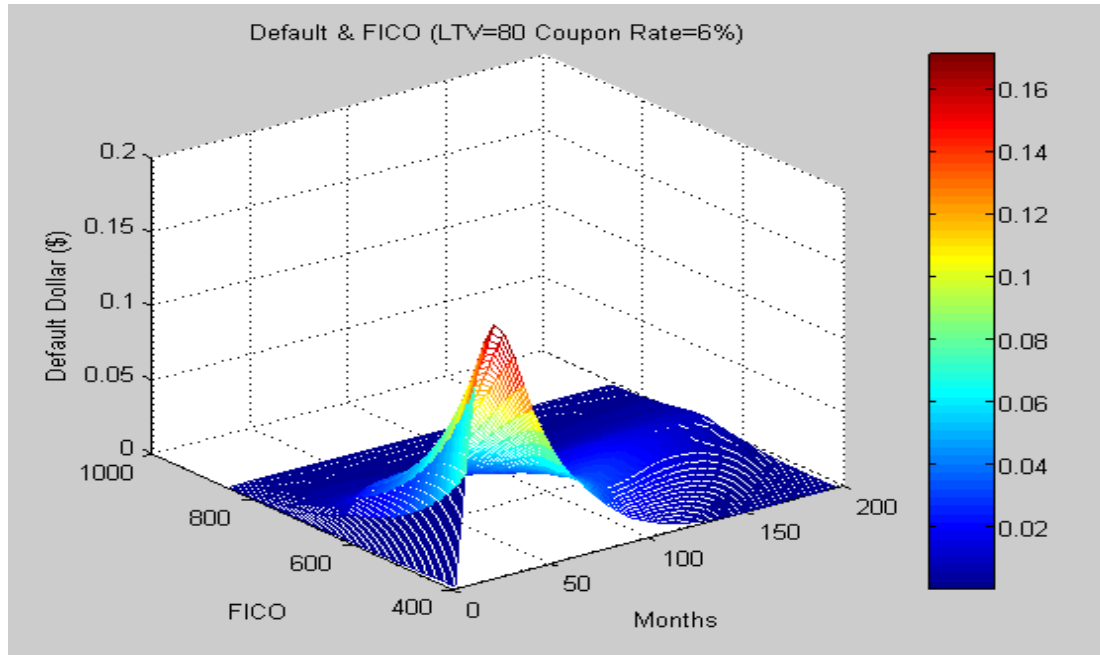
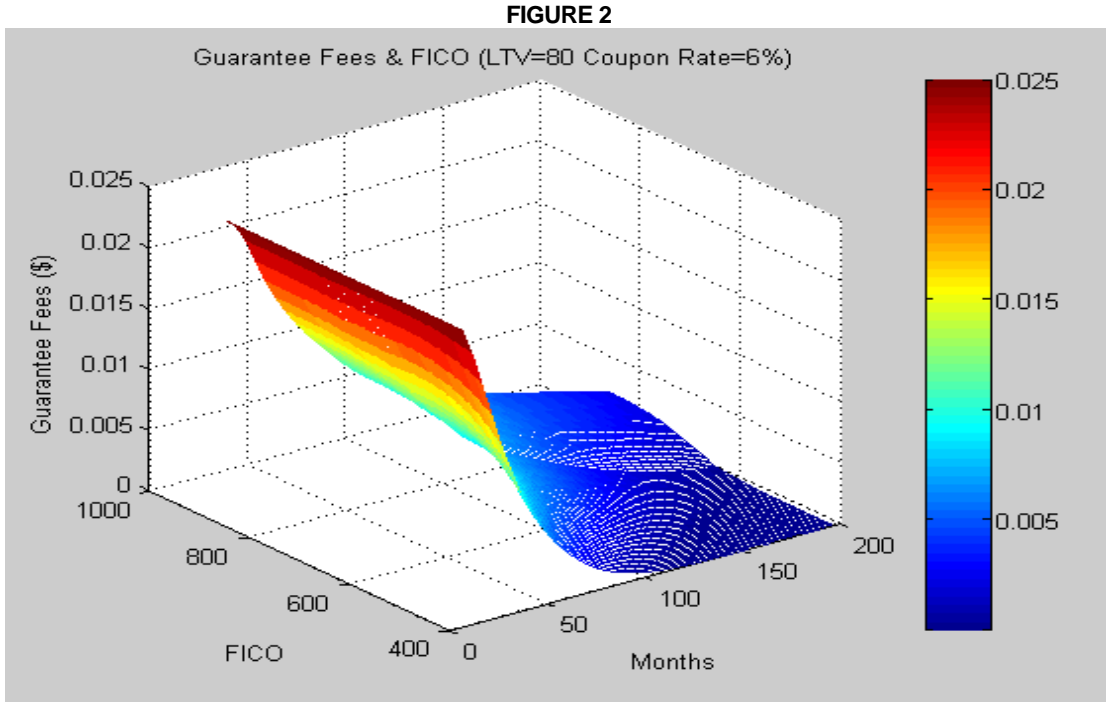


Table 1: Properties of the series of MBSs

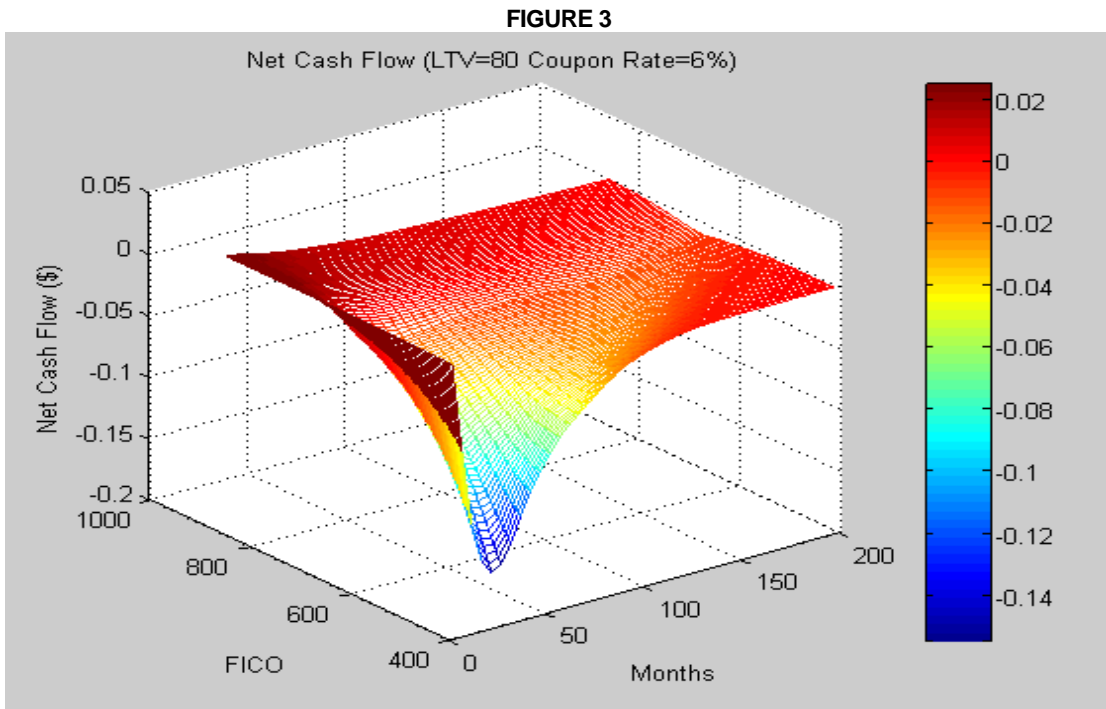
Coupon (%)	Principal (\$)	LTV (%)	Recovery Ratio (%)	WAOLS (\$)
6.00	100	80	90	250000

The default risk can be covered by a credit insurance premium based on a rate on the outstanding principal amount. Such an insurance contract is in essence an interest-only contract or a mortgage servicing right. The rate can be

viewed as the required credit spread. Note that the guarantee fees are affected, not only by the default rate, but also by the prepayments. Figure 2 below shows the projected guarantee fees of the mortgage loan over a range of FICO scores (400 – 850). As expected, the weighted average life of the fees is shortened as the credit deteriorates.



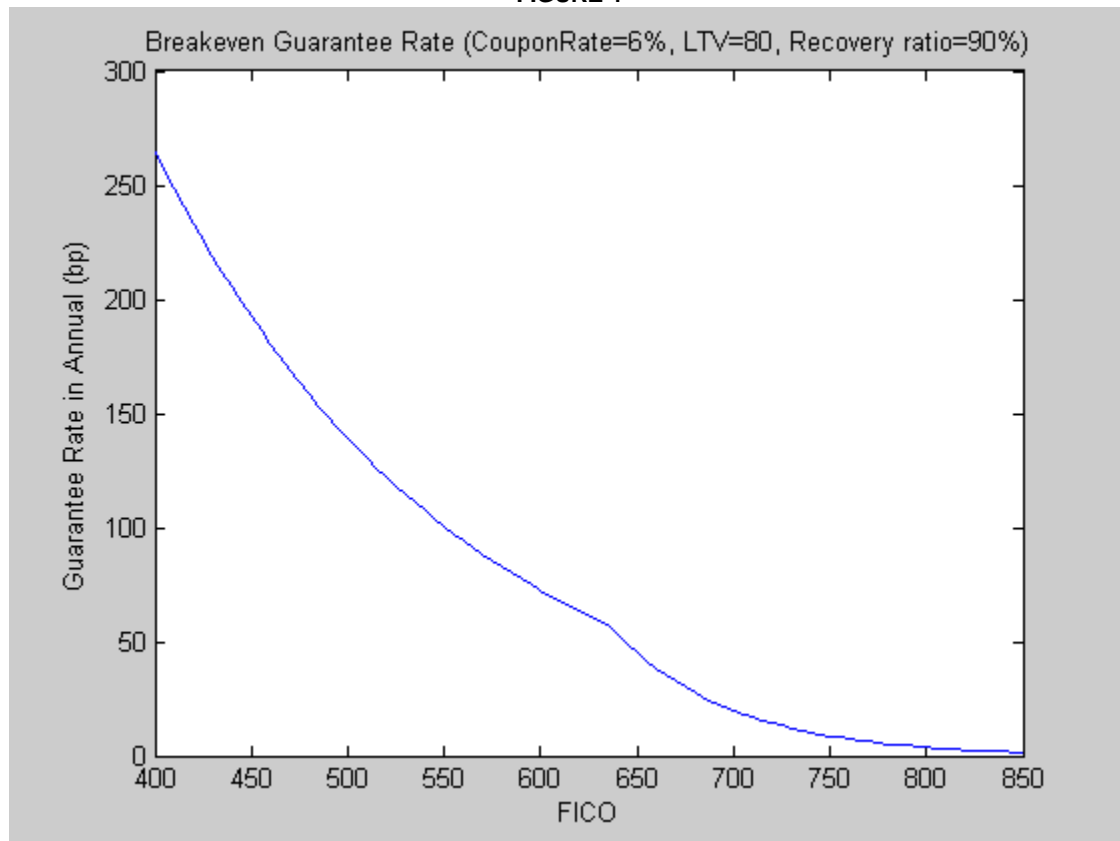
The guarantee fees net of defaulted dollars are as presented in Figure 3 below. Based on the model assumptions, the losses are significant.



Finally, using THC mortgage valuation models, we determine the breakeven guarantee rate for the mortgage loan over the range of the FICO scores (400 – 850). The results are presented in Figure 4 below. The results show that

the credit spread rises significantly when the FICO score falls below the FICO national average of approximately 670 which demonstrates significant risk.

FIGURE 4



Conclusions

The simulation results suggest that the mortgage defaults have a significant impact on the loan mortgage value. This issue focuses on the credit risk, as measured by the FICO score. However, other credit risk measures can also affect the mortgage loan valuation. The study of the credit risk of mortgage loans is particularly important, given the current large supply of sub-prime mortgages.

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