Section V: MMI Fund Sensitivities - Performance under Alternative Scenarios

This section reports the results of the sensitivity analyses we performed as part of the FY 2007 Actuarial Review of the MMI Fund. To understand the possible deviations of the economic values and capital ratios of the MMI Fund with respect to the economic forecasts and some key assumptions in the base-case scenario, several sensitivity analyses were conducted and are presented in this section. Although these scenario analyses do not describe all possible outcomes, they provide insights into the relative importance and magnitude of the impact of each selected factor on the performance of the MMI Fund. Among those parameters and economic factors, one of the most critical factors is the future economic conditions that may prevail during the remaining life of FHA's currently existing portfolio. Essentially, the purpose of this analysis is to test the sensitivity of the economic value of the MMI Fund in response to possible negative economic developments. The selected scenarios are those we believe may have the most significant impacts on the MMI Fund's economic value. These sensitivity analyses consist of:

- Extended housing recession
- High interest rate with extended housing recession
- High claim loss-severity rates
- Continued high concentration of loans with gift letters from non-profit organizations

We used the August 2007 quarterly economic forecasts from Global Insight, Inc. to serve as the base-case scenario of our actuarial analysis. The forecasted series include the OFHEO national house price index, FHLMC 30-year fixed-rate mortgage commitment rates, and 10-year and 1-year Treasury rates. In addition, we assumed that future loss severity rates would be similar to the rates observed for FY 2006 claim terminations, by loan type, judicial foreclosure requirements, and whether downpayment gifts from non-profit organizations were received. Details of the methodology and support for the selection of the assumed values of these economic variables are provided in Appendix D.

Exhibit V-1 displays the projected MMI Fund performance under the base-case scenario. The current forecasted economic value of the MMI Fund is $21.277 billion and the estimated current capital ratio is 6.40 percent, which exceeds the NAHA-mandated capital ratio of 2 percent. Exhibit V-1 also shows the predicted economic values and capital ratios for the MMI Fund from FYs 2008 through 2014. The economic values and capital ratios of the MMI Fund over FYs 2007 through 2014 under alternative scenarios are presented in Exhibits V-2 to V-4.

Exhibit V-1

Projected MMI Fund Performance for the Base-Case Scenario ($ Millions)						
Fiscal Year	**Economic Value of the Fund**	**Capital Ratio (%)**	**Volume of New Endorse-ments**	**Insurance in Force**	**Economic Value of Each New Book of Business**	**Investment Earnings on Fund Balances**
2007	21,277	6.40	52,193	332,293	-406	
2008	22,748	6.67	50,149	341,012	390	1,082
2009	24,706	6.83	58,381	361,566	849	1,108
2010	26,796	6.86	65,658	390,544	892	1,199
2011	29,053	6.87	72,556	422,986	936	1,321
2012	31,492	6.91	77,773	455,984	985	1,454
2013	34,251	7.01	86,237	488,420	1,167	1,592
2014	37,405	7.25	92,439	515,698	1,410	1,744

A. Extended Housing Recession

The house price appreciation rate is the most important economic factor that influences mortgage insurance claim rates. Under the extended housing recession scenario, we investigated the impact on the MMI Fund performance by assuming that the FY 2007 housing recession forecasted by Global Insight, Inc. will last for 3 more years – FYs 2008 through 2010 – and then return to the baseline level starting in FY 2011. Exhibit V-2 indicates that, compared to the baseline scenario, the economic value of the FY 2007 MMI Fund would decrease by $2.18 billion from its base case value, and the capital ratio of FY 2007 would be reduced to 5.75 percent. The impact lasts through FY 2014 and would reduce the FY 2014 capital ratio by as much as 1.36 percentage points. This can be explained by the change in the level of claims due to higher probabilities of negative equity as mortgage borrowers are faced with a more stressed housing economy.

Exhibit V-2

Projected MMI Fund Performance with Extended Housing Recession Scenario ($ Millions)						
Fiscal Year	**Economic Value of the Fund**	**Capital Ratio (%)**	**Volume of New Endorse-ments**	**Insurance in Force**	**Economic Value of Each New Book of Business**	**Investment Earnings on Fund Balances**
2007	19,100	5.75	52,193	332,295	-1,300	
2008	19,246	5.65	50,149	340,924	-825	971
2009	20,024	5.53	58,381	361,866	-160	938
2010	21,471	5.48	65,658	391,891	476	971
2011	23,465	5.50	72,556	426,319	935	1,059
2012	25,623	5.55	77,773	461,625	984	1,174
2013	28,086	5.66	86,237	496,232	1,168	1,295
2014	30,925	5.89	92,439	524,795	1,409	1,430

B. High Interest Rates with Extended Housing Recession Scenario

In this scenario, the housing recession experienced in FY 2007 under Global Insight's forecast will continue for FYs 2008 through 2010, just as in the previous scenario. In addition, we assumed an interest rate shock of 300 basis points higher than the Global Insight's forecast for FYs 2008 through 2010, and then rates return to the baseline levels in FY 2011. This compound effect of more adverse interest rates and housing recession was the most severe scenario considered for this Review.

From the previous scenario, it is clear that the assumed extended housing recession leads to a higher claim rate. The high interest rate scenario interacts with the extended housing recession in the following way. As interest rates go up, prepayment rates go down. As fewer loans are prepaid, more loans remain in the Fund and are therefore subject to the risk of claim. Even where the conditional claim rate does not increase, the cumulative claim rate increases, causing the lifetime claim loss to increase.

Exhibit V-3 displays the results from this scenario. Holding the extended housing recession constant (by referring to the results above), the impact of higher interest rates is mainly on the higher IIF in future years due to slower prepayment rates. The next three books of business from FY 2008 to FY 2010 will be originated with higher initial interest rates. When the rate drops suddenly in FY 2011, most good-quality loans would be refinanced, while remaining borrowers

are unable to refinance, presumably due to lower credit quality or the lack of borrower equity. This adverse-selection effect shows strongly in the negative economic values of the FY 2008 to 2010 books of business.

As a result, the capital ratio for FY 2007 would be reduced to 5.97 percent and the FY 2014 capital ratio of the MMI Fund falls to 5.31 percent. Nevertheless, the capital ratio still remains above the NAHA-mandated 2.00 percent level through FY 2014.

Exhibit V–3

Projected MMI Fund Performance under High Interest Rates with Extended Housing Recession Scenario ($ Millions)						
Fiscal Year	**Economic Value of the Fund**	**Capital Ratio (%)**	**Volume of New Endorse-ments**	**Insurance in Force**	**Economic Value of Each New Book of Business**	**Investment Earnings on Fund Balances**
2007	19,829	5.97	52,193	332,295	-1,033	
2008	18,443	5.25	50,149	350,985	-2,394	1,008
2009	17,452	4.58	58,381	380,745	-1,889	899
2010	17,074	4.09	65,658	417,270	-1,225	847
2011	18,852	4.39	72,556	429,495	937	842
2012	20,780	4.76	77,773	436,251	984	944
2013	22,998	5.03	86,237	457,018	1,168	1,050
2014	25,579	5.31	92,439	481,539	1,409	1,171

C. High Claim Loss-Severity Rates Scenario

The loss-severity rate is defined as the portion of the unpaid principal of a claimed loan that is not recovered through the disposition of the foreclosed property. Under the high loss-severity scenario, loss-severity rates are assumed to be 5 percentage points higher than under the baseline for each of the product types for all future years. Such a development would be of critical importance because losses on claims comprise the largest expense to the MMI Fund. Although the loss rate on FHA claim cases has shown a general trend of decreasing over FY 2000 to FY 2003, loans terminating during the period from FY 2004 through FY 2006 experienced loss-severity rates higher than those of the previous three years. In the base-case scenario, we assumed that the loss-severity rate will be similar to the level of the FY 2006 period. However, due to the forecasted weakening of the housing market, there exists the possibility that the loss-

severity rate could exceed the FY 2006 experience. This potentially high loss-severity scenario is designed to investigate the impact if loss rates rise further.

The higher level of loss-severity rates produces lower economic values and capital ratios for FY 2007 through FY 2014 as shown in Exhibit V-4. An increase in the loss-severity rate by 5 percentage points would decrease the capital ratio for FY 2007 to 5.98 percent and the FY 2014 capital ratio to 6.53 percent. For the seven-year period, the projected capital ratio is still above the 2.00 percent level required by NAHA.

Exhibit V-4

Projected MMI Fund Performance with High Claim Loss-Severity Rates ($ Millions)						
Fiscal Year	**Economic Value of the Fund**	**Capital Ratio (%)**	**Volume of New Endorse-ments**	**Insurance in Force**	**Economic Value of Each New Book of Business**	**Investment Earnings on Fund Balances**
2007	19,860	5.98	52,193	332,293	-726	
2008	21,057	6.17	50,149	341,012	188	1,010
2009	22,759	6.29	58,381	361,566	676	1,026
2010	24,560	6.29	65,658	390,544	697	1,104
2011	26,493	6.26	72,556	422,986	721	1,211
2012	28,576	6.27	77,773	455,984	758	1,326
2013	30,940	6.33	86,237	488,420	920	1,444
2014	33,665	6.53	92,439	515,698	1,149	1,575

D. Continued High Concentration of Loans with Downpayment Assistance

Loans with downpayment assistance from non-profit organizations produced claim rates significantly higher than traditional FHA business. The IRS issued a ruling in May 2006 prohibiting non-profit organizations from receiving financial contributions by home sellers and subsequently providing downpayment assistance to homebuyers.[1] HUD also issued a ruling in October 2007 that prohibits the endorsement of loans that receive contributions from any party that is financially related to the seller of the collateral housing. In the base-case scenario, we assume that these rulings will be effectively enforced; making loans that receive gift letters from seller-funded non-profit organizations phase out quickly. Our alternative scenario shows the

[1] Revenue Ruling 2006-27, 2006-21 I.R.B. 915 (May 22, 2006).

situation of the Fund if, for any reason, the recent high concentration in these loans continues into the future. Under this alternative scenario, there is no impact on the FY 2007 economic value and capital ratio. However, due to the higher projected claim rates of future books of business, the FY 2014 economic value will decrease by $5.198 billion and the FY 2014 capital ratio will decrease by 0.97 percentage points from their base case scenario levels.

Exhibit V-5

Projected MMI Fund Performance with High Concentration in Loans with Downpayment Gift Letters ($ Millions)						
Fiscal Year	**Economic Value of the Fund**	**Capital Ratio (%)**	**Volume of New Endorse-ments**	**Insurance in Force**	**Economic Value of Each New Book of Business**	**Investment Earnings on Fund Balances**
2007	21,277	6.40	52,193	332,293	-406	
2008	22,484	6.59	50,149	341,063	126	1,082
2009	23,857	6.60	58,381	361,726	277	1,096
2010	25,268	6.47	65,658	390,645	254	1,157
2011	26,757	6.33	72,556	422,686	243	1,246
2012	28,333	6.23	77,773	454,977	237	1,339
2013	30,129	6.19	86,237	486,457	364	1,432
2014	32,207	6.28	92,439	512,583	544	1,534

E. Summary

Exhibit V-6 reports the projected MMI Fund's capital ratio corresponding to the selected alterative scenarios: (1) base-case, (2) extended housing recession, (3) high interest rates with extended housing recession, (4) high loss severity, and (5) continued concentration in gift loans. In all five scenarios, the estimated capital ratios exceed the NAHA mandated capital ratio of 2.0 percent during FY 2007 to FY 2014.

Exhibit V-6

Projected MMI Fund's Capital Ratio by Scenario (%)					
Fiscal Year	**Base-Case**	**Extended Housing Recession**	**High Interest Rates with Extended Housing Recession**	**High Claim Loss Severity Rate**	**High Concentra-tion in Gift Loans**
2007	6.40	5.75	5.97	5.98	6.40
2008	6.67	5.65	5.25	6.17	6.59
2009	6.83	5.53	4.58	6.29	6.60
2010	6.86	5.48	4.09	6.29	6.47
2011	6.87	5.50	4.39	6.26	6.33
2012	6.91	5.55	4.76	6.27	6.23
2013	7.01	5.66	5.03	6.33	6.19
2014	7.25	5.89	5.31	6.53	6.28