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 2008 Actuarial Review of the MMI Fund. This year, the MMI Fund was severely tested with the current economic environment, and it passed the NAHA-mandated 2 percent minimum capital ratio requirement under the base-case projections. To understand the possible deviations of the economic values and capital ratios of the MMI Fund with respect to the base-case economic forecasts, several sensitivity analyses were conducted and are presented in this section. While these scenario analyses do not describe all possible outcomes, they do provide insights into the relative importance and magnitude of the impact of each selected factor on the performance of the MMI Fund. Among these 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 these analyses is to test the sensitivity of the economic value of the MMI Fund in response to possible alternative economic developments. The selected scenarios are those we believe to be relevant in considering possible impacts on the MMI Fund's economic value. These sensitivity analyses include

- Extended housing recession
- Higher interest rates
- Higher claim loss-severity rates
- Continued endorsement of loans with downpayment assistance from non-profit organizations
- Less pessimistic economic scenario

We used the July 2008 quarterly economic forecasts from Global Insight, Inc. for our base-case actuarial analysis. The forecasted series include the OFHEO national house price index, Freddie Mac 30-year fixed-rate mortgage commitment rate, and 10-year and 1-year Treasury rates. In addition, as discussed in Section II, we assumed that future loss-severity rates would be similar to the level of loss severity experienced 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 replicates the projected MMI Fund performance under the base-case scenario shown in Exhibit II-1. Under the base-case scenario, the current forecasted economic value of the MMI Fund is $12.908 billion and the estimated current capital ratio is 3.00 percent and the projected capital ratio for FY 2015 is 2.90 percent, both of which exceed 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 FY 2009 through FY 2015. The economic values and capital ratios of the MMI

Fund over FY 2008 through FY 2015 under alternative scenarios are presented in Exhibits V-2 to V-6.

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**
2008	12,908	3.00	154,240	429,634	-3,643	
2009	15,823	2.52	280,404	626,968	2,384	532
2010	20,491	2.30	331,092	891,329	3,999	669
2011	26,597	2.28	357,002	1,165,450	5,192	914
2012	33,807	2.39	364,405	1,416,798	5,957	1,254
2013	41,179	2.53	359,606	1,626,564	5,710	1,662
2014	49,030	2.71	364,344	1,809,316	5,810	2,041
2015	57,512	2.90	382,138	1,981,451	6,055	2,427

A. Extended Housing Recession

The house price appreciation rate is the most important economic factor influencing mortgage insurance claim rates. Under the extended housing recession scenario, we investigated the impact on the MMI Fund performance by assuming that the FY 2008 housing recession forecasted by Global Insight, Inc. will last for one more year through FY 2009 – and then return to the baseline forecast level starting in FY 2010. In other words, the FY 2009 house price appreciation is projected at negative 9.14 percent, compared to the base-case scenario value of negative 0.96 percent. Also recall that the FY 2008 house price appreciation is negative 9.14 percent for both the base scenario and this alternative scenario. The two consecutive years of deflating house prices in this alternative scenario are both in excess of negative 9 percent, and the cumulative house price appreciation in this scenario over FY 2008, FY 2009, and FY 2010 is in excess of negative 18 percent, near depression levels, while in the base case it is about negative 11 percent over these three years. This is a very stressful scenario.

Exhibit V-2 indicates that, compared to the baseline scenario, the economic value of the FY 2008 MMI Fund would decrease by $3.133 billion from its base-case value, and the capital ratio for FY 2008 would be reduced to 2.28 percent. The impact lasts through FY 2015 and would reduce

the FY 2015 capital ratio by as much as 0.45 percentage points. The most significant result of this scenario is that the capital ratio falls below the NAHA-mandated 2 percent level in FY 2009 through FY 2012, reaching as low as 1.45 percent in FY 2009.

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**
2008	9,775	2.28	154,240	429,618	-5,000	
2009	9,123	1.45	280,404	627,970	-1,055	403
2010	13,508	1.51	331,092	894,406	3,999	386
2011	19,302	1.65	357,002	1,168,941	5,191	603
2012	26,169	1.84	364,405	1,419,941	5,957	910
2013	33,165	2.03	359,606	1,629,969	5,710	1,287
2014	40,618	2.24	364,344	1,813,557	5,810	1,644
2015	48,684	2.45	382,138	1,987,243	6,055	2,011

B. Higher Interest Rates

In this scenario, we assumed an interest rate shock of 300 basis points higher than the Global Insight, Inc. forecast for FY 2009 through FY 2011, and then rates are assumed to return to the baseline levels in FY 2012. 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. The impact of higher interest rates is mainly on the higher IIF in future years due to slower prepayment rates. For existing books with low interest rates, the below market rates provide borrowers the incentive to avoid defaults even when there is negative equity in the house, thereby yielding lower claim rates. The capital ratio also increases by 1.10 percentage points over the base-case projection.

On the other hand, the next three books of business from FY 2009 through FY 2011 will be originated with higher initial interest rates. When the rate drops suddenly in FY 2012, 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 books over FY 2009 to FY 2011.

As a result, the capital ratio for FY 2009 falls to 2.03 percent and the FY 2015 capital ratio of the MMI Fund falls to 1.89 percent. Except for FY 2008 and FY 2009, the capital ratio drops below the NAHA-mandated 2.00 percent level from FY 2010 through FY 2015. In particular the capital ratio for FY 2011 drops as low as 0.48 percent.

Exhibit V–3

Projected MMI Fund Performance under Higher Interest 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**
2008	17,596	4.10	154,240	429,618	-1,846	
2009	13,411	2.03	280,404	660,491	-4,910	725
2010	9,669	1.03	331,092	942,653	-4,309	567
2011	5,945	0.48	357,002	1,227,779	-4,156	431
2012	12,214	0.88	364,405	1,388,894	5,989	280
2013	18,524	1.25	359,606	1,476,936	5,710	601
2014	25,252	1.59	364,344	1,589,815	5,810	918
2015	32,555	1.89	382,138	1,726,397	6,055	1,250

C. Higher Loss-Severity Rates Scenario

The loss-severity rate is defined as the percentage of the unpaid principal of a claimed loan that is not recovered through the disposition of the foreclosed property. Under the higher loss-severity scenario, loss-severity rates are assumed to be 5 percentage points higher than under the baseline scenario for each of the product types for all future years. Such an occurrence would be of critical importance because losses on claims comprise the largest expense item of the MMI Fund. In the base-case scenario, we assumed that the loss-severity rate will be similar to the level of the FY 2006 experience. In FY 2007 the reported loss rate was lower than in FY 2006, but in FY 2007 many claimed loans were not yet closed and thus not yet included in the loss-rate statistics. This phenomenon will also be likely during the depressed housing market of FY 2008. 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 higher loss-severity rate 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 2008 through FY 2015 as shown in Exhibit V-4. An increase in the loss-severity rate by 5 percentage points would decrease the capital ratio for FY 2008 to 1.97 percent and the FY 2015 capital ratio to 1.83 percent. For the entire seven-year forecasting period, the projected capital ratio is under the 2.00 percent level required by NAHA.

Exhibit V-4

Projected MMI Fund Performance with Higher 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**
2008	8,448	1.97	154,240	429,811	-7,727	
2009	9,415	1.50	280,404	627,599	619	348
2010	11,885	1.33	331,092	892,515	2,071	398
2011	15,772	1.35	357,002	1,167,624	3,358	530
2012	20,703	1.46	364,405	1,420,898	4,188	743
2013	25,665	1.57	359,606	1,633,372	3,944	1,018
2014	30,960	1.70	364,344	1,819,665	4,023	1,272
2015	36,649	1.83	382,138	1,997,674	4,156	1,533

D. Continued Endorsement of Loans with Downpayment Assistance from Non-Profit Organizations

Loans with downpayment assistance from non-profit organizations produced claim rates significantly higher than traditional FHA business. Furthermore, the recently enacted HERA terminates seller-financed downpayment assistance effective October 1, 2008. In the base-case scenario, we assumed that these rulings will be effectively enforced, eliminating loans that receive downpayment assistance from seller-funded non-profit organizations starting October 1, 2008. Our alternative scenario shows the situation of the Fund if these loans still account for 10 percent of the future books of business. The results are shown in Exhibit V-5. Under this alternative scenario, there is no impact on the FY 2008 economic value and capital ratio, but all

future books show significantly lower economic values so that the capital ratio falls below 2 percent in FY 2010 and barely recovers to above 2 percent in FY 2015.

Exhibit V-5

Projected MMI Fund Performance with Continued Endorsement of Loans with Downpayment Assistance ($ 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**
2008	12,908	3.00	154,240	429,634	-3,643	
2009	13,867	2.21	280,404	627,035	428	532
2010	16,271	1.83	331,092	891,074	1,818	586
2011	20,190	1.73	357,002	1,163,811	3,193	726
2012	25,208	1.78	364,405	1,413,266	4,066	952
2013	30,290	1.87	359,606	1,620,739	3,843	1,239
2014	35,732	1.98	364,344	1,800,954	3,941	1,501
2015	41,607	2.11	382,138	1,970,590	4,106	1,769

E. Less Pessimistic Economic Scenario

Typically, scenario analyses portray more adverse conditions than the base case. However, given the severe house price forecast in the base case, it is appropriate to show the results of a less pessimistic economic scenario. This scenario takes the most recently realized OFHEO house price appreciation rate during the second quarter of FY 2008, of negative 1.44 percent, and repeats it for four subsequent quarters through the second quarter of FY 2009. Under this less pessimistic economic scenario, the FY 2008 house price appreciation rate will be about negative 5 percent, instead of the negative 9 percent forecasted in July 2008 by Global Insight, Inc. Exhibit V-6 indicates that, compared to the baseline scenario, the economic value of the FY 2008 MMI Fund would increase by $2.680 billion from its base-case value, and the capital ratio for FY 2008 would increase to 3.64 percent, and the FY 2015 capital ratio would increase from 2.90 percent to 3.10 percent.

Exhibit V-6

Projected MMI Fund Performance for the Less Pessimistic 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**
2008	15,588	3.64	154,240	428,817	-2,849	
2009	18,691	3.00	280,404	624,017	2,459	643
2010	23,480	2.64	331,092	888,192	3,999	790
2011	29,718	2.56	357,002	1,162,319	5,191	1,047
2012	37,076	2.62	364,405	1,413,993	5,957	1,401
2013	44,608	2.75	359,606	1,623,919	5,710	1,823
2014	52,629	2.91	364,344	1,806,355	5,810	2,211
2015	61,289	3.10	382,138	1,978,260	6,055	2,605

F. Summary

Exhibit V-7 reports the projected MMI Fund's capital ratio corresponding to the selected scenarios: (1) base-case, (2) extended housing recession, (3) higher interest rates, (4) high loss severity, (5) continued endorsement of downpayment assistance loans, and (6) the less pessimistic economic scenario. For the four adverse scenarios, there are 23 instances out of a total of 32 where the capital ratio falls below 2 percent. The lowest capital ratio is 0.48 percent for FY 2011 in the higher interest rate scenario.

It is clear from these scenario analyses that the MMI Fund's soundness depends critically on the future course of the economy and how FHA is able to avoid exposure to non-profit organization-funded downpayment assistance loans. Exhibit V-7 highlights the several outcomes where the capital ratio is less than the NAHA-mandated 2 percent: in all scenarios that are more pessimistic than the base case, the ratio would fall below 2 percent (but, it should be pointed out, do not fall below zero). The conclusion is that if future conditions are worse than assumed in this year's Review, the capital ratio of the MMI fund will likely fall below the 2-percent floor. Nevertheless, in all of these alternative scenarios, the economic value of the MMI Fund remains positive throughout the next seven years.

Exhibit V-7

Projected MMI Fund's Capital Ratio by Scenario (%)						
Fiscal Year	**Base-Case**	**Extended Housing Recession**	**Higher Interest Rates**	**Higher Claim Loss Severity Rate**	**Continued Downpayment Assistance Loans**	**Less Pessimistic Economic Scenario**
2008	3.00	2.28	4.10	**1.97**	3.00	3.64
2009	2.52	**1.45**	2.03	**1.50**	2.21	3.00
2010	2.30	**1.51**	**1.03**	**1.33**	**1.83**	2.64
2011	2.28	**1.65**	**0.48**	**1.35**	**1.73**	2.56
2012	2.39	**1.84**	**0.88**	**1.46**	**1.78**	2.62
2013	2.53	2.03	**1.25**	**1.57**	**1.87**	2.75
2014	2.71	2.24	**1.59**	**1.70**	**1.98**	2.91
2015	2.90	2.45	**1.89**	**1.83**	2.11	3.10