

Appendix D: Economic Forecasts

In order to measure the MMI Fund's soundness against future losses caused by either its current mortgage portfolio or its future books of business, the Fund's economic value had been analyzed under alternative economic scenarios by predicting future loan performance as well as the financial performance of the Fund. We began this analysis with the baseline case. The base-case economic scenario is extracted from the August 2004 forecast of the U.S. Economy published by Global Insight. The economic factors of the Global Insights forecast that are used in our analysis are:

- Three-month Treasury rate
- Ten-year Treasury rate
- One-year Treasury rate
- 30-year commitment rate, fixed-rate mortgage
- Average sale price of existing single-family homes

Data used in the baseline scenario are summarized in Exhibit D-1. The listed economic factors forecasted by Global Insight, Inc. are available only for the period of FY 2004 to FY 2014. We estimated the one-year Treasury rate by a regression based on the concurrent three-month and ten-year rates. The regression equation is:

$$\frac{r_{12,t}}{\ln(12)} = -0.51475 + 0.36395 \cdot \frac{r_{3,t}}{\ln(3)} + 0.515073 \cdot \frac{r_{120,t}}{\ln(120)} + \varepsilon_t$$

where $r_{s,t}$ is the s -month Treasury yield at time t , and ε_t is white noise. Basically, this equation assumes that the yield curve follows a log function $r_s = \alpha + \beta \ln(s)$ at any point in time t .

Utilizing monthly series data between 1982 and 2004 produces an extremely close-fitting relationship with an R-square equal to 0.9919. Based on Global Insight forecast series for three-month and ten-year rates, together with the coefficients obtained from the regression equation, we then created the forecast series for one-year Treasury rate for FY 2004 and beyond.

Alternative Economic Scenarios

To conduct sensitivity analysis of the Fund's economic value, four alternative scenarios were used to assess the financial viability of the Fund. The selected scenarios are summarized as follows:

1. **Low House Price Appreciation Scenario** – We assumed that house price appreciation is 5 percentage points lower than the Global Insight forecast for FYs 2005 through 2007, then returning to base-case levels in FY 2008.

2. ***Low House Price Appreciation Combined with High Interest Rate Scenario*** – The assumption on house price appreciation is the same as in scenario 1. We further assumed that all three interest rates are 300 basis points higher than Global Insight forecast for FYs 2005 through 2007, then return to the baseline levels in FY 2008.
3. ***High Regional House Price Dispersion Scenario*** – We assumed the regional dispersion rate is twice the historical average for FYs 2004 and beyond. This is one of the alternative scenarios where the forecasted economic series used are the same as base-case scenario. That is, this scenario provides insights into the impact of the increasing regional dispersion rate, compared to the regional dispersion rate in the base-case scenario.
4. ***High Claim Loss Severity Rates*** – We assumed loss rates on claimed mortgages to be 40 percent instead of 35 percent in the baseline level. Notice that this alternative scenario also retains the same forecasted series as the baseline scenario. In other words, this sensitivity analysis is to investigate the pure impact of the change in loss rates.

The projected performance of the MMIF Fund in response to selected scenarios above is provided in Section V of this actuarial report.

Exhibit D-1

Economic Forecast (Base Case Scenarios)					
Fiscal Year/Quarter	National House Price	3-Month Treasury Rate (%)	10-Year Treasury Rate (%)	1-Year Treasury Rate (%)	Commitment Rate on 30- Year Fixed- Rate (%)
2004, Q1	218.97	0.92	4.02	1.27	5.61
2004, Q2	236.30	1.07	4.60	1.55	6.13
2004, Q3	242.01	1.52	4.43	1.88	5.99
2004, Q4	237.38	1.76	4.68	2.15	6.21
2005, Q1	241.86	2.03	4.96	2.44	6.49
2005, Q2	245.92	2.46	5.19	2.85	6.64
2005, Q3	249.83	2.88	5.43	3.26	6.90
2005, Q4	243.83	3.23	5.63	3.61	7.08
2006, Q1	247.72	3.27	5.58	3.63	7.08
2006, Q2	251.84	3.25	5.53	3.60	7.01
2006, Q3	256.20	3.25	5.49	3.58	6.95
2006, Q4	250.66	3.25	5.48	3.58	6.93
2007, Q1	255.42	3.24	5.48	3.58	6.92
2007, Q2	260.37	3.24	5.50	3.58	6.94
2007, Q3	265.50	3.24	5.51	3.59	6.97

(continued on following page)

Economic Forecast (Base Case Scenarios)					
Fiscal Year/Quarter	National House Price	3-Month Treasury Rate (%)	10-Year Treasury Rate (%)	1-Year Treasury Rate (%)	Commitment Rate on 30- Year Fixed- Rate (%)
2007, Q4	260.25	3.24	5.54	3.59	6.99
2008, Q1	265.50	3.24	5.62	3.61	7.04
2008, Q2	270.83	3.46	5.96	3.88	7.28
2008, Q3	276.25	3.68	6.14	4.12	7.51
2008, Q4	270.79	3.91	6.24	4.33	7.64
2009, Q1	276.24	4.14	6.33	4.54	7.72
2009, Q2	281.77	4.36	6.40	4.74	7.74
2009, Q3	287.40	4.59	6.47	4.96	7.82
2009, Q4	281.75	4.82	6.55	5.17	7.90
2010, Q1	287.50	5.05	6.67	5.39	8.00
2010, Q2	293.40	5.07	6.63	5.39	8.03
2010, Q3	299.46	5.07	6.60	5.39	8.02
2010, Q4	293.79	5.08	6.59	5.39	8.02
2011, Q1	299.99	5.09	6.58	5.39	8.01
2011, Q2	306.34	5.09	6.57	5.40	8.02
2011, Q3	312.82	5.10	6.57	5.40	8.05
2011, Q4	307.03	5.10	6.56	5.40	8.06
2012, Q1	313.56	5.11	6.55	5.40	8.05
2012, Q2	320.16	5.12	6.54	5.40	8.04
2012, Q3	326.82	5.12	6.52	5.40	8.03
2012, Q4	320.60	5.13	6.51	5.41	8.02
2013, Q1	327.23	5.13	6.51	5.41	7.99
2013, Q2	333.95	5.14	6.50	5.41	7.98
2013, Q3	340.76	5.14	6.49	5.41	7.98
2013, Q4	334.16	5.15	6.49	5.42	7.98
2014, Q1	341.04	5.15	6.49	5.42	7.97
2014, Q2	348.04	5.15	6.49	5.42	7.97
2014, Q3	355.17	5.15	6.48	5.42	7.98
2014, Q4	348.36	5.15	6.48	5.42	7.98