Appendix F – Economic Forecast

For the fiscal year 2000 Actuarial Review of the MMI Fund, Deloitte & Touche was required to estimate the economic value of the Fund as of each fiscal year-end for 2000 through 2007. Since the value of the Fund at any time is dependent upon the present value of future cash flows, we rely upon a forecast of various economic factors. The baseline forecast series is provided by DRI/McGraw-Hill (DRI) and is from the November 2000 forecast of the U.S. Economy. We make use of the following economic factors from the DRI forecast that are projected through the 4th quarter of calendar year 2010:

- Rate on fixed rate, 30-year mortgages
- Rate on fixed rate, 15-year mortgages
- Yield on 52-week U.S. Treasury bills
- Yield on 10-year U.S. Treasury note
- Yield on 30-year U.S. Treasury bond
- Civilian unemployment rate
- Change in personal income
- Annual house price appreciation
- Number of mortgages for existing homes
- Number of mortgages for new homes

The value of each factor for fiscal years 2001 through 2010 under a baseline scenario is provided in Exhibit F.1.

The economic factors that have the greatest impact on the value of the Fund are the rate on 30- and 15-year, fixed rate mortgages, the yield on the 52-week Tbill[1], and house price appreciation rates. The rate on mortgage loans directly affects the level of conditional claim rates and conditional prepayment rates through our claim rate and prepayment rate models (see *Appendix A, Conditional Claim and Prepayment Rate Models*). The change in house price appreciation rates affects the level of claims and prepayments through the probability of negative equity, and the loan-to-value ratio predictor variables in our conditional claim and prepayment models.

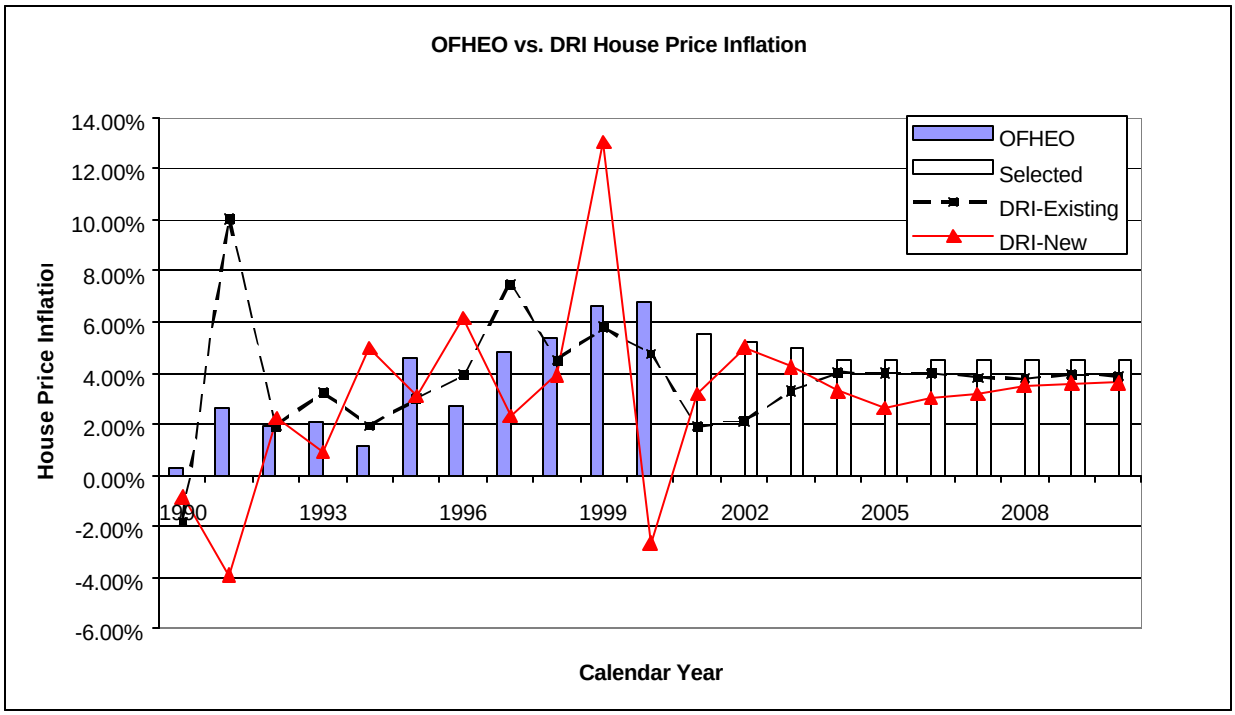
It is important to consider the source, or basis, of the economic factors used in developing the regression data sets (see *Appendix E, Data Transformation*) and those used in the forecast. In particular, any inconsistency that may arise when transitioning from historical to prospective data can cause an inaccuracy in the estimated claim and prepayment rates. Based on a review of the various economic factors used in our models, it came to our attention that there was an inconsistency between the house price appreciation rates used to develop the regression data and those used in the forecast. Our source for historical house price appreciation levels, for the period 1975[2] through second quarter 2000, is the OFHEO house price index. Graph F.1 compares the relationship between house price inflation based on the OFHEO house price index

[1] The yield on the 52-week Treasury bill plus 2.50% serves as a proxy for the commitment on adjustable rate mortgages.

[2] The OFHEO house price index series is readily available for the period 1980 to current. We made a special request of OFHEO for the period 1975 through 1979.

and the DRI forecast of existing and new home sales for the period 1990 through second quarter, 2000 – the DRI forecast, along with our selected baseline house price appreciation series, is continued beyond second quarter 2000 to fourth quarter of 2010.

Graph F.1



The DRI house price series shows a large drop in the level of house prices for the periods 2001 and 2002 – this is particularly odd given that under the DRI baseline economic scenario other major economic indices are relatively stable. In fact, on an inflation adjusted basis, the DRI house price series reflects a negative growth in real house price levels. Table F.1 provides the actual DRI house price series for existing homes, new 1992-style homes, and new homes. On this table, we also show our selected house price series for the baseline scenario along with the all-urban consumers CPI excluding food and energy.

Table F.1

Fiscal Year	DRI-Existing	DRI-New 1992	DRI-New	Selection	CPI
2000	4.22	6.00	4.63	N/A	2.53
2001	2.98	-1.50	0.91	5.5	2.31
2002	1.74	0.60	5.32	5.1	1.90
2003	2.98	2.17	4.44	5.0	2.06
2004	3.95	3.07	3.53	4.5	2.53
2005	4.03	3.02	2.72	4.5	2.81
2006	3.98	2.98	2.89	4.5	3.04
2007	3.90	2.70	3.17	4.5	3.15
2008	3.74	2.68	3.42	4.5	3.18
2009	3.93	2.80	3.60	4.5	3.26
2010	3.88	2.75	3.58	4.5	3.31

We believe that our selected house price series represents a more realistic view for a baseline economic scenario. Our long-term selection of 4.5% for the baseline house price inflation is based on the OFHEO actual average for the period 1985 through second quarter 2000[3]. The slighter higher selections of 5.5%, 5.1%, and 5.0% for fiscal years 2001 through 2003 are based on more recent experience with house price inflation. For the period 2001 through 2010, our average nominal and real house price appreciation rates are 4.71% and 1.96%, respectively. Table F.2 shows the actual OFHEO nominal and real house price appreciation rates for various periods since 1985.

Table F.2

Time Period	Nominal House Price Inflation	Real House Price Inflation
1985 through 2Q 2000	4.51%	1.32%
1990 through 2Q 2000	3.34%	0.39%
1995 through 2Q 2000	4.94%	2.57%
1997 through 2Q 2000	5.71%	3.73%
Average of Averages	**4.63%**	**2.00%**

Several comments are in order based on the average shown in Table F.2 and our selected house price appreciation series.

- Since our cash flow models project all books of business to termination, we make projections through year 2036, and since our economic forecast stops at 2010, we hold the economic indices for years 2011 and subsequent at 2010 levels. Thus, our all-projection-year average nominal and real house price appreciation rates are 4.56% and 1.40%, respectively.
- The "average of averages" shown in Table F.2 implicitly gives more weight to the most recent periods, and we believe that for this very reason it is a relevant benchmark to compare our selection against.
- The period 1990 through 2Q 2000 is heavily influenced by the negative returns on housing experienced in the California market during the early 1990s.
- For the 2001 through 2010 period, the nominal and real house price appreciation rates forecast by DRI are 3.26% and 0.50%, respectively. For 2001, DRI projects real house price appreciation that is virtually zero to slightly negative, depending on whether it is a new or existing home – in short DRI anticipates a significant correction in house price levels. This appears to be inconsistent with most other indices in the DRI forecast. The baseline scenario projects a relatively stable economic environment characterized by low and stable interest rates, low unemployment rates, continued growth in personal income levels, and low to moderate levels of inflation.
- Recent house price appreciation rates from OFHEO and Freddie Mac have been 6.8% and approaching 8%, respectively. This indicates real house price appreciation rates in excess of 4.3% and 5.4%, respectively. We recognize that real rates of return on housing cannot continue at these levels. Accordingly, our highest real house price appreciation is for 2001 and 2002 at approximately 3.2%; for all other years we average a real house price appreciation rate of 1.3%. We believe that this "soft landing" scenario is the most

[3] See Office of Federal Housing Enterprise Oversight, House Price Index, Second Quarter 2000. Available on OFHEO's website at http://www.ofheo.gov/house/2Q00HPI.pdf

probable scenario and that it is more in-line with the other components of the DRI forecast.

Finally, we recognize that it is possible for a significant correction in house prices to take place over the next 12 to 24 months; we do not, however, believe this is the most likely scenario. To gauge the value of the Fund under a "stressed" house price appreciation scenario, we introduce an alternative situation where we show the value of the Fund under lower house price inflation levels.

Alternative Economic Scenarios

Traditionally the Fund has been valued using a *Recession* and *Pessimistic* scenario where the definition of these economic situations was provided by DRI. Exhibits F.2 and F.3 provide the values of the various economic factors for these scenarios – the corresponding Fund value is shown in the *Value MMIF under Alternative Economic Scenarios* section of this report. In the same section, we also provide DRI's definition or rationale of these alternative scenarios.

We do not believe that the DRI Recession and Pessimistic scenarios are effective in showing the Fund in a "stressed" economic state. There are two primary reasons for this: first, interest rates are lower under the alternative scenarios, which results in new books of business with lower interest rates and therefore lower ultimate claim level over their life span, and second, DRI does not vary their house price appreciation series under the alternative scenarios. We believe that a more meaningful "stress test" is achieved by examining the value of the Fund under the following two scenarios.

- A scenario that imposes an interest rate spike where mortgage rates shift up 125 basis points for fiscal years 2001 through 2003 followed by a return to the baseline scenario levels for years 2004 and subsequent.
- A scenario where house price inflation is 1.50% for fiscal year 2001 and 2002, followed by 2.0% for fiscal year 2003, 3.0% for 2004, and 3.5% for all future years.

The value of the Fund under these alternatives is provided in the section of this report appropriately titled *The Value of the MMIF under Alternative Economic Scenarios*.

Economic Forecast - Baseline Scenario

Exhibit F.1

Fiscal Year	Commitment Rate on 30 Yr mortgage All Lenders	Commitment Rate on 15 Yr mortgage All Lenders	Adjustable Rate Proxy	Yield on 52 Week T-Bills	Yield on 10 year T-note	Yield on 30 Year Bonds	Volatility 30 Year Bonds	Unemployment Rate	Change in Personal Income	Consumer Price Index	Annual HPA*			# Mortgages (in millions)	
											Existing Homes	New 1992 Style Home	New Homes	Existing Homes	New Homes
2000	7.93	7.52	8.37	5.87	5.96	5.95	0.43	4.10	6.17	2.53	4.22	6.00	4.63	3.76	0.67
2001	7.59	7.20	8.29	5.79	5.76	5.80	0.42	4.13	5.93	2.31	2.98	(1.50)	0.91	5.03	0.87
2002	7.14	6.78	8.10	5.60	5.55	5.68	0.41	4.60	5.65	1.90	1.74	0.60	5.32	5.13	0.89
2003	7.02	6.66	8.12	5.62	5.56	5.72	0.41	4.39	6.10	2.06	2.98	2.17	4.44	5.28	0.92
2004	7.03	6.67	8.12	5.62	5.64	5.80	0.41	4.06	6.07	2.53	3.95	3.07	3.53	5.42	0.94
2005	7.12	6.76	8.16	5.66	5.80	5.94	0.41	4.00	5.85	2.81	4.03	3.02	2.72	5.56	0.94
2006	7.35	6.97	8.32	5.82	6.04	6.14	0.41	4.01	5.78	3.04	3.98	2.98	2.89	5.60	0.93
2007	7.48	7.09	8.39	5.89	6.17	6.27	0.42	4.19	5.80	3.15	3.90	2.70	3.17	5.63	0.93
2008	7.55	7.16	8.43	5.93	6.24	6.34	0.42	4.32	5.96	3.18	3.74	2.68	3.42	1.41	0.23
2009	7.59	7.21	8.46	5.96	6.28	6.39	0.42	4.36	6.09	3.26	3.93	2.80	3.60		
2010	7.63	7.24	8.50	6.00	6.32	6.44	0.42	4.30	6.29	3.31	3.88	2.75	3.58		

Note: The cash flow model projects out to 2037. We assume 2011 through 2037 economic indices are held at 2010 levels.
Source: DRI/McGraw-Hill, November 2000, U.S. Economy Forecast

Economic Forecast - Recession Scenario

Exhibit F.2

Fiscal Year	Commitment Rate on 30 Yr mortgage All Lenders	Commitment Rate on 15 Yr mortgage All Lenders	Adjustable Rate Proxy	Yield on 52 Week T-Bills	Yield on 10 year T-note	Yield on 30 Year Bonds	Volatility 30 Year Bonds	Unemployment Rate	Change in Personal Income	Consumer Price Index	Annual HPA*			# Mortgages (in millions)		Residential Fixed Investment
											Existing Homes	New 1992 Style Home	New Homes	Existing Homes	New Homes	
2000	7.93	7.52	8.15	5.65	5.96	5.95	0.43	4.10	6.16		4.22	6.00	4.63	3.58	0.68	
2001	7.56	7.18	8.30	5.80	5.72	5.76	0.42	4.36	5.82	2.34	2.98	(1.50)	0.91	4.57	0.80	(2.05)
2002	7.03	6.67	7.72	5.22	5.42	5.55	0.41	4.77	5.31	2.00	1.74	0.60	5.32	4.59	0.77	2.93
2003	6.65	6.31	7.20	4.70	5.19	5.35	0.40	4.77	5.52	1.89	2.98	2.17	4.44	5.91	1.02	5.69
2004	6.40	6.07	6.93	4.43	5.08	5.24	0.39	4.54	5.59	2.02	3.95	3.07	3.53	5.83	1.01	5.49
2005	6.42	6.09	7.03	4.53	5.21	5.35	0.39	4.17	5.68	2.20	4.03	3.02	2.72	5.45	0.94	4.01
2006	6.73	6.38	7.41	4.91	5.51	5.62	0.40	3.97	5.64	2.52	3.98	2.98	2.89	5.38	0.90	1.15
2007	7.03	6.67	7.73	5.23	5.80	5.90	0.41	3.98	5.64	2.80	3.90	2.70	3.17	5.43	0.90	0.20
2008	7.33	6.95	8.00	5.50	6.08	6.18	0.41	3.99	5.84	2.98	3.74	2.68	3.42	1.36	0.22	0.23
2009	7.70	7.30	8.33	5.83	6.44	6.55	0.42	3.99	6.07	3.17	3.93	2.80	3.60			(0.07)
2010	8.24	7.82	8.88	6.38	6.91	7.03	0.44	3.97	6.24	3.33	3.88	2.75	3.58			(0.31)

* Annual HPA shown here is the same as under the baseline scenario. DRI/McGraw-Hill does not provide alternative scenario HPA series.
Note: The cash flow model projects out to 2037. We assume 2011 through 2037 economic indices are held at 2010 levels.
Source: DRI/McGraw-Hill, November 2000, U.S. Economy Forecast - Pessimistic Scenario

Economic Forecast - Pessimistic Scenario

Exhibit F.3

Fiscal Year	Commitment Rate on 30 Yr mortgage All Lenders	Commitment Rate on 15 Yr mortgage All Lenders	Adjustable Rate Proxy	Yield on 52 Week T-Bills	Yield on 10 year T-note	Yield on 30 Year Bonds	Volatility 30 Year Bonds	Unemployment Rate	Change in Personal Income	Consumer Price Index	Annual HPA*			# Mortgages (in millions)		Residential Fixed Investment
											Existing Homes	New 1992 Style Home	New Homes	Existing Homes	New Homes	
2000	7.93	7.52	8.15	5.65	5.96	5.95	0.43	4.10	6.17		4.22	6.00	4.63	3.58	0.68	
2001	7.91	7.51	8.56	6.06	5.97	6.01	0.43	4.63	5.62	2.71	2.98	(1.50)	0.91	4.57	0.80	(6.56)
2002	6.66	6.32	6.72	4.22	4.93	5.06	0.40	6.16	3.64	2.98	1.74	0.60	5.32	4.59	0.77	(8.61)
2003	6.05	5.74	6.02	3.52	4.78	4.94	0.38	5.75	6.21	2.06	2.98	2.17	4.44	5.91	1.02	15.11
2004	6.38	6.06	6.55	4.05	5.16	5.32	0.39	4.77	6.70	1.99	3.95	3.07	3.53	5.83	1.01	11.63
2005	6.78	6.43	7.08	4.58	5.53	5.68	0.40	4.37	5.73	2.44	4.03	3.02	2.72	5.45	0.94	2.05
2006	7.06	6.70	7.44	4.94	5.83	5.93	0.41	4.31	5.31	2.62	3.98	2.98	2.89	5.38	0.90	(0.12)
2007	7.19	6.82	7.57	5.07	5.96	6.06	0.41	4.36	5.34	2.72	3.90	2.70	3.17	5.43	0.90	0.22
2008	7.27	6.90	7.61	5.11	6.04	6.14	0.41	4.38	5.60	2.86	3.74	2.68	3.42	1.36	0.22	0.73
2009	7.47	7.09	7.79	5.29	6.22	6.33	0.42	4.39	5.76	3.07	3.93	2.80	3.60			(0.08)
2010	7.72	7.32	8.04	5.54	6.45	6.57	0.42	4.30	6.02	3.26	3.88	2.75	3.58			0.77

* Annual HPA shown here is the same as under the baseline scenario. DRI/McGraw-Hill does not provide alternative scenario HPA series.
Note: The cash flow model projects out to 2037. We assume 2011 through 2037 economic indices are held at 2010 levels.
Source: DRI/McGraw-Hill, November 2000, U.S. Economy Forecast - Pessimistic Scenario