

Are GMO's Predictions Prescient? Using them to predict Vanguard's Mutual Fund Returns

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Abstract

Each month, GMO publishes on the web its predictions of the real rate of return for various asset styles over the next seven years. Its web library also retains its quarterly predictions, dating back to the end of the second quarter of 2000. I ask whether these predictions are useful guides for asset selection. My technique is to compare the predictions with the performance of the Vanguard mutual funds that invest in these styles.

1. Introduction

Each month, GMO publishes on the web its predictions of the real rate of return for various asset styles over the next seven years. Its web library also retains its quarterly predictions, dating back to the end of the second quarter of 2000. I ask here whether these predictions are useful guides for asset selection. My technique is to compare the predictions with the performance of the Vanguard mutual funds that invest in these styles in order to determine whether these predictions serve as useful guides for Vanguard investors. Throughout, we adjust for inflation, so all returns are real.

The GMO web site (<http://www.GMO.com>) has been the subject of several recent threads of conversation on the Vanguard Diehards discussion group.¹ I ask whether the GMO long term predictions are useful guides for asset allocation.

¹ To access these conversations go to <http://www.morningstar.com>, then "Discussion," then "Vanguard diehards" and search for keyword GMO. One recent thread is #56282. Some discussants have expressed skepticism, some have argued that the GMO predictions are for long periods and do not apply for short periods, one has argued that for investors to depart from constant weights for various asset classes is dangerous, and one has noted that GMO sells a mutual fund based on its asset class projections, GMO Benchmark Free Allocation III (GBMFX), a fund which was established only in July 2003. The methodology behind the GMO predictions is discussed in Jeremy Grantham's letter of July 2004, available on the same web site.

Thanks for helpful comments go to Bill Bernstein, John Seater, and the participants in the Vanguard Diehards thread # 56771 on the Morningstar web page, <http://www.morningstar.com>. Figures 5 and 6 were suggested by Russell, whose last name I don't know. As of February 6, 2007 there were 69 comments stimulated by an earlier version of the paper.

2. What I did

The early quarters of the GMO web site predicted ten year returns. Later the web site shifted to seven year returns. Early on only a few asset styles were predicted. Subsequently, GMO incorporated additional styles. I focus on the styles which GMO provided predictions for over the entire period, and which correspond to mutual funds available to Vanguard investors.

The five GMO equity classes are U.S. Large Cap, U.S. Small Cap, International Large Cap, International Small Cap, and Emerging Markets. The corresponding Vanguard mutual funds are 500 Index, Small Cap Index, Developed Markets Index, International Explorer and Emerging Markets Index.

The three GMO bond classes are intermediate U.S. government bonds, U.S. inflation protected securities, and U.S. short term treasury bonds. The corresponding Vanguard funds are Intermediate Bond Index Fund, Inflation Protected Securities Fund, and Short-Term Treasury Fund.

I gathered GMO predictions from the GMO web site and I gathered three month performance statistics and inflation statistics from the Morningstar Principia Pro disks. Since GMO produces its predictions in January, April, July, and October, I assumed that Vanguard investors allocated their funds at the first business day of the months following the release of the predictions: February, May, August, and November.

I calculated real quarterly returns for the Vanguard funds: February-April, May-July, August - October, November - January.

For the equity funds, I constructed five sequences. The first ranked sequence assumes that the investor invests in the equity class with the highest return prediction from GMO. The second ranked sequence assumes that the investor invests in the equity class with the second highest return prediction from GMO and so forth. I did the same for the three bond styles.

The predicted GMO returns were constructed by converting the GMO predicted returns to quarterly returns. The quarterly return is given by $(1 + \text{predicted annual return})^{.25} - 1$. The GMO average return for each sequence is the rate of return on what an investor would have accumulated on November 1, 2006 with a start date of July 1, 2000 if his real return had been that predicted by GMO. To reckon with transaction costs, I subtracted the expense ratio, converted to a quarterly basis, for the corresponding Vanguard investment class (non-Admiral class) mutual fund.

The realized returns are those of the corresponding mutual funds.

3. Results

Exhibit 1 shows the predicted and realized returns for the equity funds and the bond funds. The correlation between the predicted and realized returns for all assets is 0.781. For equities it is 0.939. For bonds it is 0.824. These are down from the values of June 2008. The ranking of predicted and realized returns are identical for four out of five equity funds. In each case but one, GMO was too optimistic, with predicted return exceeding realized return.

Exhibit 2 graphs the returns discussed in Exhibit 1, and serves to assess the closeness of fit of the two sequences. E1 and B1 denote the # 1 ranked equity sequence and #1 ranked bond sequence respectively, with lower ranked equity and bond sequences denoted by E2 through E5 and B2 through B3. Three points lie above the diagonal, and five lie below it. This indicates that GMO has been slightly too pessimistic over the period. This reverses previous assessments, before asset prices fell in 2008.

Exhibit 3 graphs the cumulative equity values in real dollars, starting with one dollar, through time. It shows the substantial cumulative losses suffered by the owners of these funds through the end of 2002 and beginning in 2007. It also shows that the GMO most highly ranked style combination did not dominate the others until the beginning of 2002, suggesting limits to the trust one should put in the GMO predictions as a tool for short-run prediction.

In exhibits 3 through 6 brighter colors denote the bond and equity classes that GMO predicted to perform best, and darker colors denote the classes that GMO predicted to perform worst.

Exhibit 4 graphs the cumulative bond values through time. It shows that from the middle of 2002 onward, the bonds predicted to do better had a higher cumulative real return.

Exhibits 5 and 6 replicate exhibits 3 and 4, except that the vertical axis is presented in log scale. This presentation is useful because the real rate of return between two points is proportional to the slope of the curves in these exhibits. The real return on all of the bond funds has been positive.

4. Conclusion

The GMO predictions are prescient enough to be a useful input into investment decisions. Investors should be grateful to GMO for providing this free service.

I am grateful to William J. Bernstein for looking at the calculations presented in the January 2007 version of this paper. His reaction was “in 2000, the valuations of different equity classes was about as widely spread out as historically been the case, so predictions based on them were most likely to be correct.” He added that now [January 2007], valuations are a lot more narrowly spread, so style picking is not going to be so successful going forward. The GMO predictions support this. In June 2000 the spread

between the highest and lowest GMO equity class predictions was 10.6% per year. On September 20, 2008 the spread of the GMO predictions for the same five equity classes was only 1.8% per year. Similarly the bond spread has fallen from 1.9% to 1.3%.

Exhibit 1. GMO Predicted Real Returns and Vanguard Realized Real Returns 7/31/2000-10/31/2008 (% per year)		
Asset	GMO prediction	Vanguard Result
Equity Rank 1	5.51	5.99
Equity Rank 2	2.92	-1.02
Equity Rank 3	1.97	-2.97
Equity Rank 4	0.01	-4.94
Equity Rank 5	-1.29	-4.92
Bond Rank 1	2.15	3.12
Bond Rank 2	1.84	3.81
Bond Rank 3	1.29	1.01
Correlation for all assets		0.781
Correlation for equities		0.939
Correlation for bonds		0.824

**Exhibit 2. Real annual returns (%/year)
7/31/2000 through 10/31/2008**

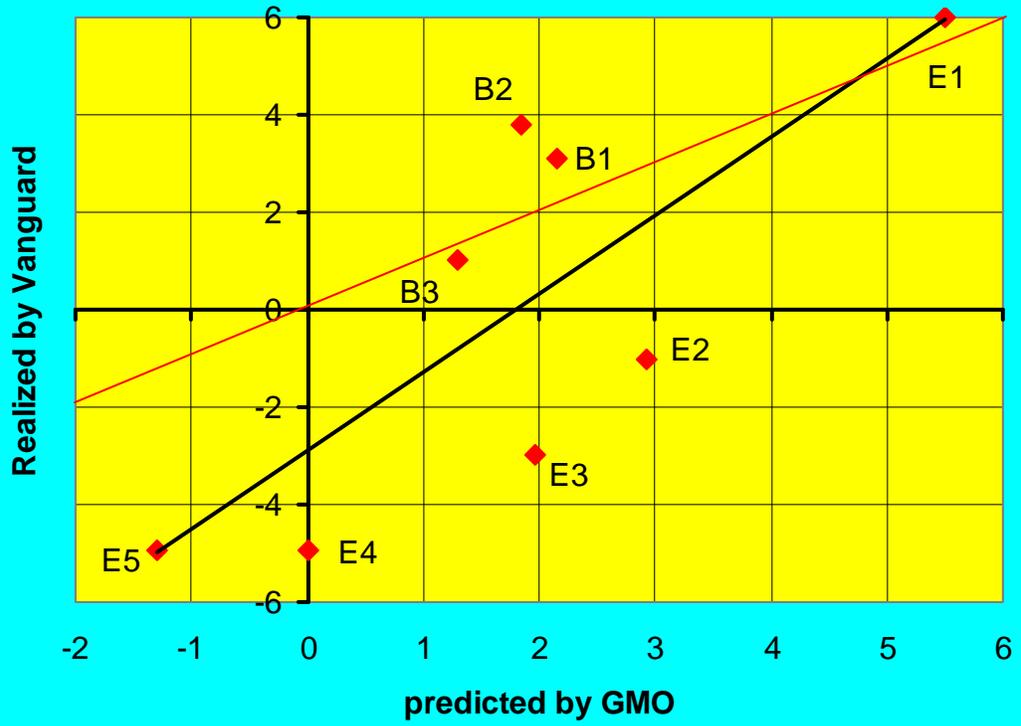
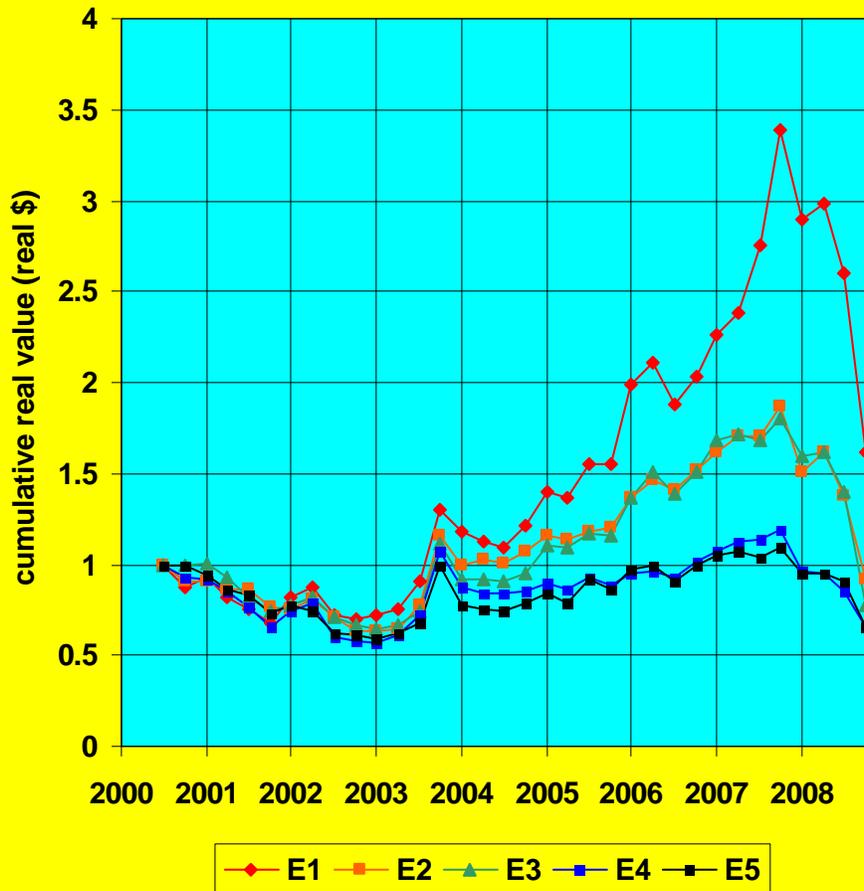


Exhibit 3. Cumulative real values of equity styles ranked 1-5 by GMO from 7/31/2000 through 4/30/2008



**Exhibit 4. Cumulative real values of bond styles ranked by
GMO from 1 - 3 from 7/31/2000 through 4/30/2008.**

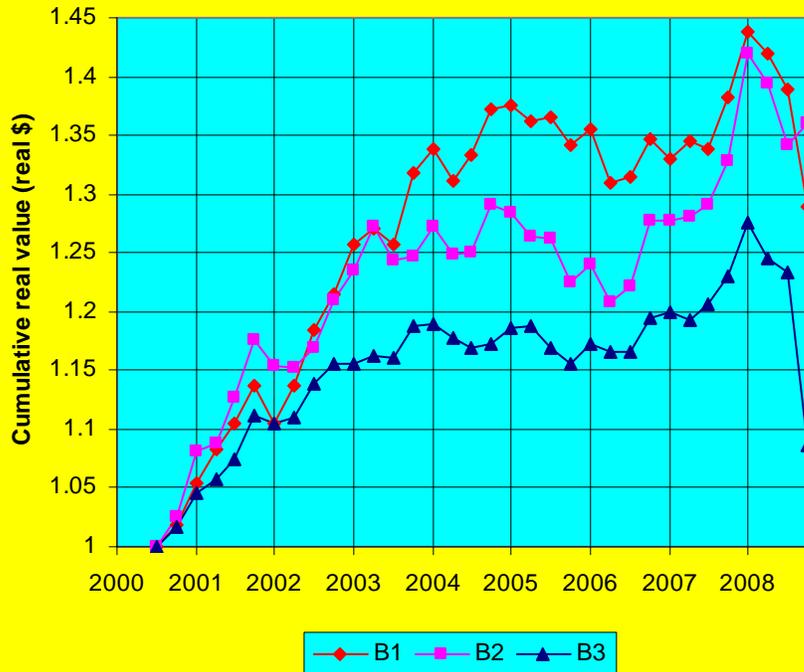


Exhibit 5. Exhibit 3 modified so the log of cumulative real value is on the vertical axis



Exhibit 6. Exhibit 4 in natural log scale.

