



Capture Ratio as a Tool to Measure Investment Performance

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We examine the concepts of up-capture and down-capture, two widely used statistics for measuring investment performance. Our research indicates that each one on their own is an ineffective tool to accurately describe investment performance. However, the use of the Capture Ratio, the relationship between up-capture and down-capture, provides a much more useful tool.

The development of the Modern Portfolio Theory led to a complete change in the way that investments and portfolios were analyzed. Since then, investors have become increasingly more sophisticated in the analytical and statistical tools that they use when conducting due diligence on potential investment strategies. While the statistics derived from Modern Portfolio Theory such as alpha, beta, Sharpe Ratio, standard deviation, etc. have become part of the basic investor tool box, there have been additions in recent years to help investors gain a more thorough understanding of the potential risks and rewards associated with different investments.

Up-Capture and Down-Capture

Two concepts which have recently gained increased investor acceptance are the up-capture ratio and the down-capture ratio. The increasing adoption of these tools in the investment community is due in part to the ability of these ratios to provide important investment insight and because they are intuitive and easily understood by investors.

Up-capture compares an investment's performance against its benchmark during periods when the benchmark's performance is positive, while down-capture compares the investment's performance against the benchmark during periods when the benchmark's performance is negative. A value of 100% for either ratio implies that the investment fully captures, or matches, the benchmark return during the period evaluated. A value of greater than 100% indicates that the investment captured more return than the benchmark (this is a positive for up-capture, however, a negative for down-capture). A value less than 100% means the investment captured less return than its benchmark (this is a negative for up-capture, however, a positive for down-capture).



Up- and down-capture ratios are commonly used to determine how much an investment participates in the upside or downside of the market. Theoretically this can help determine if a given investment is more aggressive or defensive in nature, which would help determine the type of investor for which that investment is appropriate. Another common use of these ratios is for investors who make tactical allocations to an investment based on their expectation of future market performance.

Even though a method of evaluating potential investments may be widely used, it is still important to determine if it helps investors identify good investments and avoid bad ones. To help answer that question we analyzed the up- and down-capture ratios for 3,009 US equity mutual funds. We limited our study to funds with a ten year track record as of August 31, 2009 and to those that belonged to one of the nine major core Morningstar Style Boxes. We compared the ranks for each fund's 10-year return against the rank of their 10-year up-capture and down-capture ratios.

Table 1
Correlation Relative to Category Performance Rank

	Up-Capture	Down-Capture
Large Growth	0.05	0.59
Large Blend	0.16	0.65
Large Value	0.36	0.43
Mid Growth	-0.09	0.70
Mid Blend	-0.14	0.60
Mid Value	0.56	0.32
Small Growth	-0.21	0.67
Small Blend	-0.12	0.60
Small Value	0.11	0.60

Source: Morningstar, August 31, 2009

As shown in Table 1 the results of our study proved surprising, indicating that the current usage of these ratios should not be expected to lead to superior investment decisions. Across all nine of the style boxes, there was no instance of a strong connection between a highly ranked up-capture or down-capture ratio and strong performance. In all but one case, the down-capture ratio showed a stronger positive correlation to performance than up-capture, but even these correlations were too low to be considered statistically significant over such a long time period.



The Capture Ratio

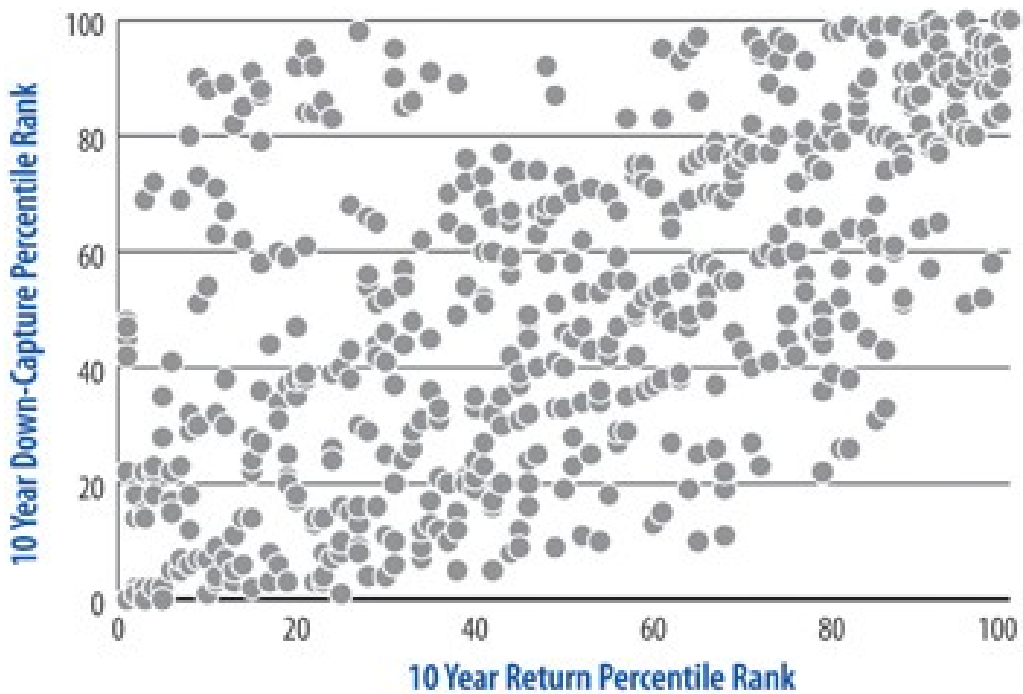
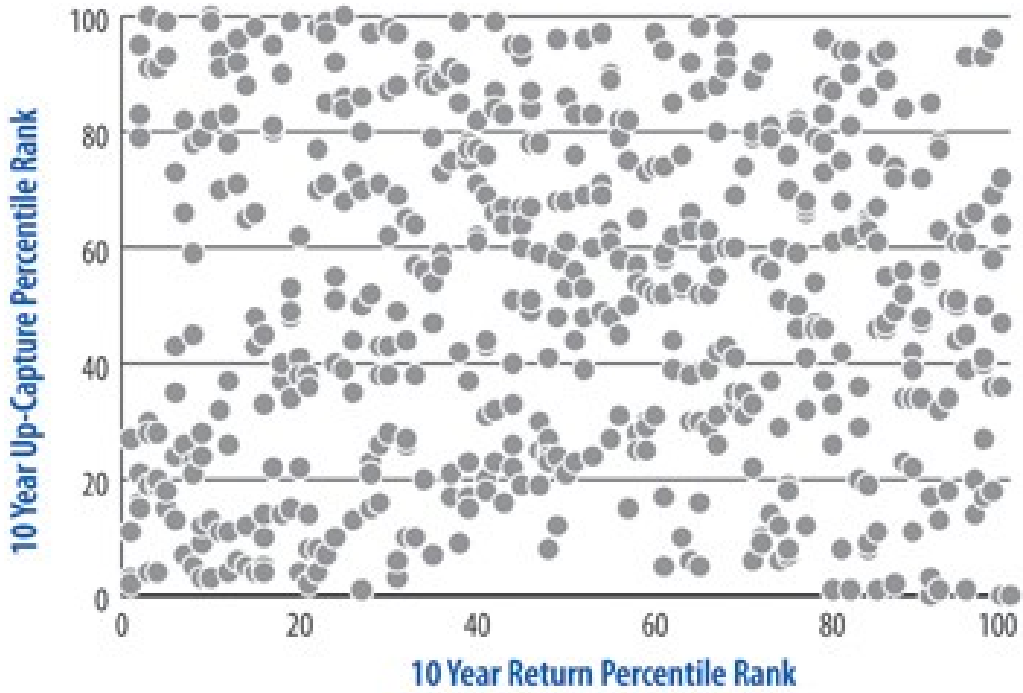
Since our analysis showed no apparent correlation between each ratio and performance, we conducted further research to determine if these two ratios used in conjunction with each other would show a stronger relationship to performance. To do this, we calculated the Capture Ratio for each fund (the Capture Ratio is calculated by dividing the up-capture ratio by the down-capture ratio). For comparative purposes when analyzing multiple investments using the Capture ratio, a higher value is preferred. As can be seen in Table 2, using the Capture Ratio leads to very different results with regard to the correlation to performance for the period. Across all nine style boxes, correlations were significantly higher, with an average of 0.97 which implies a very strong positive relationship between attractive Capture Ratios and good performance. We acknowledge that this correlation is not accidental; it is expected given the way in which the Capture Ratio is calculated.

Table 2
Correlation relative to category performance rank

	Capture Ratio
Large Growth	0.98
Large Blend	0.99
Large Value	1.00
Mid Growth	1.00
Mid Blend	0.94
Mid Value	0.96
Small Growth	0.99
Small Blend	0.96
Small Value	0.94

Source: Morningstar, August 31, 2009

This relationship is more clearly demonstrated visually. Figure 1 depicts the entire universe of 661 large cap growth funds used for this analysis. The vertical axis represents the 10-year performance rank of each fund and the horizontal axis represents the 10-year up-capture rank for each fund. Any relationship between these two values would result in a linear pattern, which is not the case.



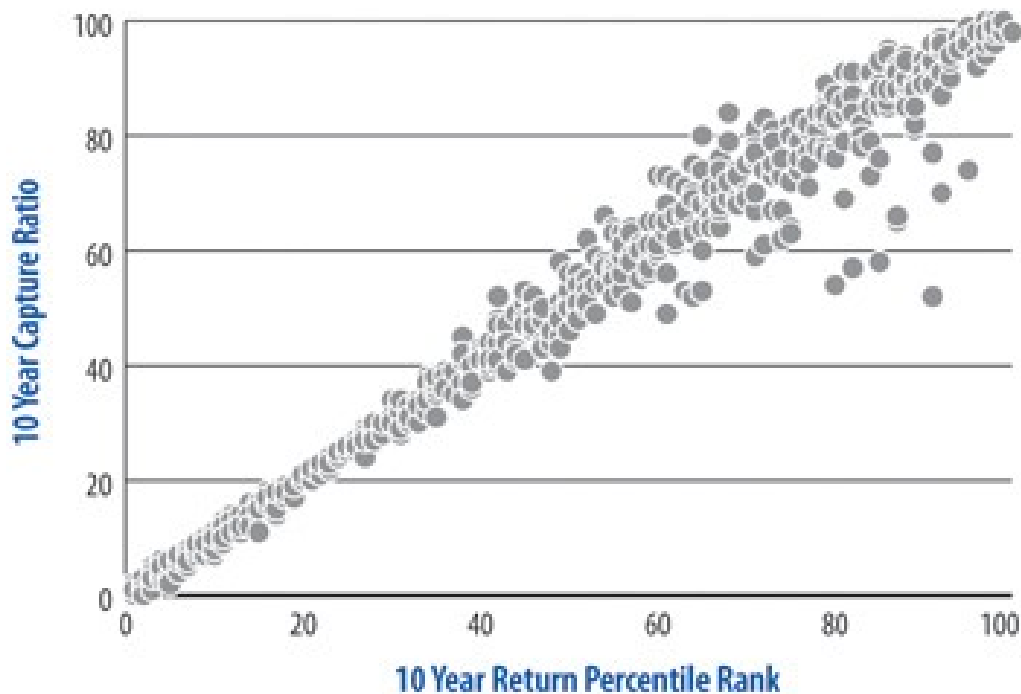


Figure 2 shows the relationship between the return and the down-capture of the large-cap growth universe. Much like Figure 1, there is no clear relationship, but the clustering of dots is indicative of the higher correlation between down-capture and return (0.59) compared to the much lower correlation of up-capture and return (0.05).

Figure 3 illustrates the relationship between the 10-year Capture Ratio and 10-year performance for the same group of large-cap growth funds. A clear linear relationship exists between these two values. This makes intuitive sense since in essence the Capture Ratio reflects an investment's relative net overall performance over a period of time which normally includes both up and down markets.

To summarize, these findings make a very compelling case for the use of the Capture Ratio as opposed to either up-capture or down-capture alone when analyzing investments. This ratio is also very useful in comparing investments with different absolute values for their up-capture and down-capture ratios, since it normalizes those values putting all of the investments on a common scale.

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Upside Capture Ratio measures a manager's performance in up markets relative to the market (benchmark) itself. It is calculated by taking the security's upside capture return and dividing it by the benchmark's upside capture return.

Downside Capture Ratio measures manager's performance in down markets. A down-market is defined as those periods (months or quarters) in which market return is less than 0. In essence, it tells you what percentage of the down-market was captured by the manager. For example, if the ratio is 110%, the manager has captured 110% of the down-market and therefore underperformed the market on the downside.

Capture Ratio is Upside Capture divided by Downside Capture.

Alpha is a coefficient which measures risk-adjusted performance, factoring in the risk due to the specific security, rather than the overall market. A high value for alpha implies that the stock or mutual fund has performed better than would have been expected given its beta (volatility).

Beta is a quantitative measure of the volatility of a given stock, mutual fund, or portfolio, relative to the overall market, usually the S&P500. Specifically, the performance the stock, fund or portfolio has experienced in the last 5 years as the S&P moved 1% up or down. A beta above 1 is more volatile than the overall market, while a beta below 1 is less volatile.

Sharpe Ratio is a risk-adjusted measure developed by William F. Sharpe, calculated using standard deviation and excess return to determine reward per unit of risk. The higher the Sharpe ratio, the better the fund's historical risk-adjusted performance.

Standard Deviation is a statistical measure of the historical volatility of a mutual fund or portfolio, usually computed using 36 monthly returns. More generally, a measure of the extent to which numbers are spread around their average.

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