Casting Stones

By Brent Bentrim
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As usual, Bob Veres wrote a very insightful article last week questioning whether advisors who jumped[1] out of the market sometime before November - and in some cases before September - of 2008 were skillful or lucky. Veres' article dovetails with a recent article about research by Sebastein Page and his colleagues (*Why Diversification is Failing*), questioning claims by advisors espousing market timing strategies. Although it would be very helpful to see some actual verification of how these advisors used the economic and valuation data in 2008 to properly time the market, the reality is most at the moment look like geniuses.

As a mathematician and statistician, I have written about the shortcomings in the manner in which the financial services industry calculates risk and reward. In fact, since founding Carolopolis, our asset allocation strategies have rejected Modern Portfolio Theory (MPT) ideas, including mean-variance and correlation. Because we were aware events such as 2008 can and will occur, the option to 'jump' seems reckless and counterintuitive to our primary function of assisting clients in achieving their goals.

Using correct risk and return estimates can assist advisors in auditing their asset allocation strategies and demonstrating their skill and value to clients in today's volatile environment.

Conceptualizing risk from an investor's perspective

Since Harry Markowitz first wrote *Portfolio Selection* in 1959, the investment industry has used the standard deviation of a set of returns as a proxy for risk. But, from a mathematical standpoint, standard deviation is a measurement of volatility and the calculation assumes returns are always normally distributed. Applying such methodology to the monthly returns of the S&P 500 would indicate a loss greater than 12.8% in a single month would have nearly no chance of happening, yet such declines have occurred 11 times since 1926. Because MPT concludes that events as 2008 are so improbable they only occur

[1] Veres defines 'jumped' as reducing client equity exposure to 20% or less.

once a century, is it any wonder that advisors claim this crisis was unique, unprecedented or unforeseeable?

Since standard deviation is not a measure of risk, we cannot identify risk with it. In fact, standard deviation flies in the face of how investors perceive risk – volatility on the upside is reward and volatility on the downside is risk. When posed the question, investors consistently rank risk as:

1. Not being able to achieve a goal;
2. Losing principal; *and finally*
3. Not beating the market

In *Portfolio Selection,* Markowitz recognized the lack of ability of standard deviation to provide accurate insight. He alluded to the use of semi-variance as far superior to his mean variance approach, but the computational methods necessary for the semi-variance approach were nearly impossible in the 1950s. Semi-variance or downside risk only considers observations below the mean. While standard deviation provides measures of volatility, semi-variance looks only at the negative fluctuations of an asset. By neutralizing all values above the mean, semi-variance estimates the loss that a portfolio could incur.

Semi-variance would have indicated a loss of 37.68% for a given 12 month period was not unexpected before 2008. Today, a monthly pullback of 10.99%, as indicated by semi-variance, is well within the normal range for the S&P 500.

A third measure of risk - downside deviation - allows us to customize asset allocation and manager selection decisions to clients' goals. While semi-variance calculates the downside risk based on the average returns of an asset, downside deviation considers returns below a fixed level – the investor's Minimal Acceptable Return (MAR). The investor's MAR is the absolute annualized return that must be reached in order to achieve a specific goal.

One great benefit of downside deviation is in verifying expected returns. Many financial planning and asset allocation programs use the average annual return of the S&P 500 to illustrate future returns and success probabilities. From 1970 to 2007 the average annual return of the S&P 500 was 8.78%; however, 45% of the time returns were less than that and the actual returns (annualized) were 7.72% - a full 106 basis points lower than the average return. Over 30 years, that could ruin a retirement income plan!

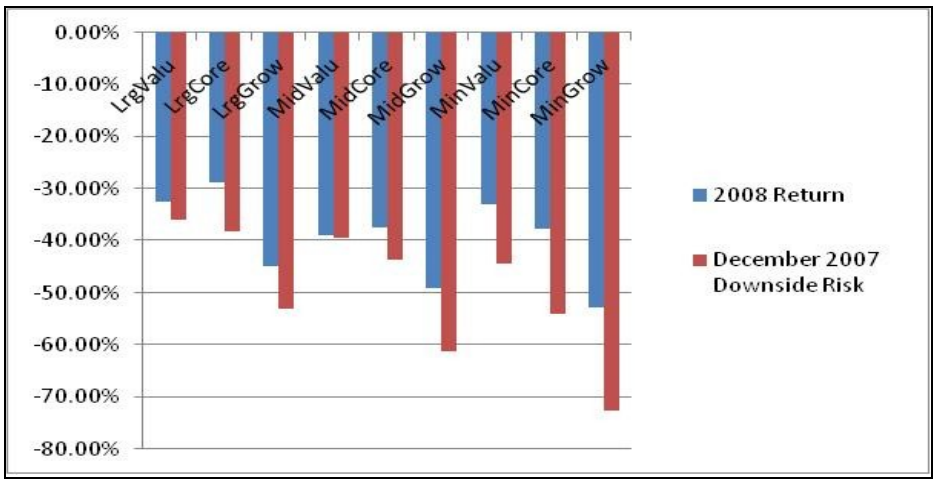
Identifying risk

Today, indexing has become synonymous with passive investment strategies instead of its intended utility of dividing the investment universe into meaningful

segments. By segmenting or 'indexing' every equity, both domestically and foreign, we can begin to understand characteristics and risk levels of various investment styles.

Because index providers are not homogenous, advisors must carefully select their approach to indexing. Asset classes should be mutually exclusive (with no security overlap) and exhaustive (the entire universe should be included). "Core," or the securities between value and growth, should be treated as a distinct style.

Because Russell, Wilshire and S&P do not meet such criteria, our style analysis is based on Ron Surz' Indices. Examination of Surz index data reflects the current market pullback was not unforeseeable in terms of severity[2].



While investors and advisors have been rattled by the recent market downturn, it has yet to become as severe as modeled. The blue bars represent the actual returns by style in 2008, and the red bars illustrate the estimated downside risk of each style as of December 2007. So, while Small Growth was down nearly 54%, estimates show that -72% was indeed possible.

I am not claiming we knew 2008 was going to be bad, but risk was evident before the markets tumbled. Such insight therefore impacted our asset allocation decisions prior to 2008.

Through our work assisting RIAs in performing audits of their client portfolios, it is clear that while advisors are told *to* diversify, rarely are they taught *how* to diversify. More often than not, we see portfolios that are equally weighted across investment styles because it is the simplest solution to a complex problem requiring graduate level math and statistical knowledge. For example, recognizing the downside risk of Small Cap Growth in any given 12 month period is enough to make us avoid the style all together, regardless of whether it is currently an 'outperforming' style.

[2] At this point, both the 1973/4 and 1981/2 recessions caused much greater pullbacks.

ADVISOR PERSPECTIVES

Evaluating Portfolio Allocations

Style Analysis identifies the investment styles (e.g., growth versus value, large cap versus small cap) within a portfolio, in order to calculate its risk and reward characteristics. When evaluating a portfolio, a copy of the investor's Investment Policy Statement (IPS) is beneficial.

Because the underlying holdings of mutual funds are less transparent, Returns-Based Style Analysis (RBSA), developed by Nobel Prize winner William Sharpe, uses the manager's historical monthly returns to find a blend of passive indices that replicates the manager's performance. Done correctly, RBSA is highly accurate in determining a mutual fund's effective style.

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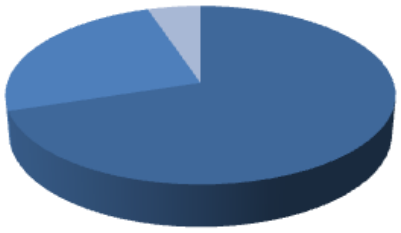
STYLE ANALYSIS OF SMITH BARNEY TARGET ALLOCATION



SMITH BARNEY POLICY

SMITH BARNEY POLICY STYLE ANALYSIS

Index	Target Value	LCV	LCC	LCG	MCC	SCC	Foreign	IB	SB	HY	REIT	$
S&P 500	$ 824,483.56	32.77%	23.14%	28.10%	14.35%	1.64%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lehman Govt	$ 294,458.41	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	72.82%	27.18%	0.00%	0.00%	0.00%
90 Day Treasury	$ 58,891.68	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.52%	0.00%	0.00%	98.46%
	$ 1,177,833.65	22.94%	16.20%	19.67%	10.05%	1.15%	0.00%	18.21%	6.87%	0.00%	0.00%	4.91%

Often an IPS will mix index providers as well as combine styles with sectors, so using a single classification system more easily allows advisors, trustees and investors to see where security overlap is occurring. The above portfolio was using S&P 500, Lehman Government Bond and Money Market as it 'policy' allocation. Although various index providers are not homogeneous, they are

transparent. It is easy enough to take the underlying holdings of Russell or S&P Indexes and reclassify them using Surz indexes.

This is a critical process when evaluating asset allocation strategies. Many advisors, trustees and consultants fail to recognize that when Russell and S&P separate their indexes into value and growth, a problem occurs. Since neither index provider recognizes 'core,' they assign securities without strong growth or value characteristics to *both* indexes, effectively causing a problem known as multi-collinearity[3] and rendering many risk and return calculations invalid. Little differentiation would be evident between styles, hampering allocation decisions.

At this point, we know the effective mix of the portfolio by style and can evaluate the IPS with regard to the investor's MAR, in this case 8%:

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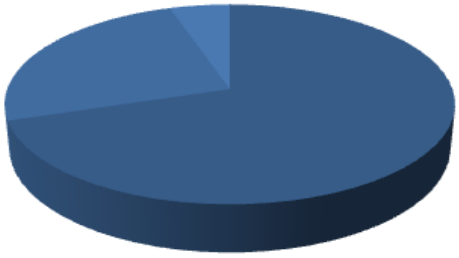
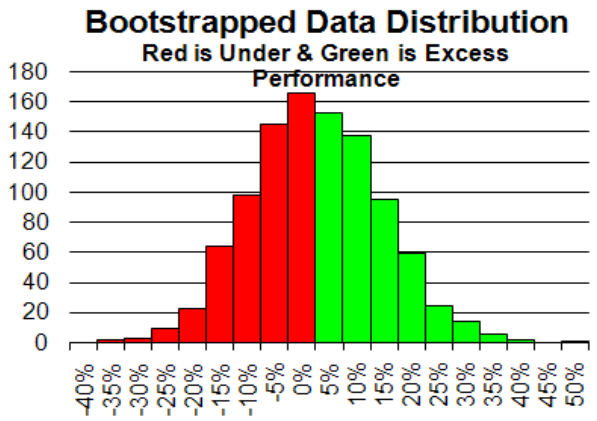
OMEGA 1.00

INVESTMENT POLICY ANALYSIS VERSUS GOAL





INVESTMENT POLICY		ANNUALIZED RETURNS		RISK ADJUSTED MEASURES		DOWNSIDE RISK STATISTICS	
S&P 500	70%	Policy	8.15%	Sortino Ratio	-0.02	Downside Risk	8.20%
Lehman Gov't	25%	Target	8.34%	U-P Ratio	0.59	Average Underperformance	-9.20%
90 Day US T-Bill	5%	Excess	-0.19%			Downside Probability	51.00%
returns data obtained from Morningstar Inc.				UPSIDE POTENTIAL STATISTICS		99th Percentile	-29.80%
		21 years to Jan 1986		Upside Potential	4.80%	*Initial observations of 323 months extrapolated to*	
				Upside Probability	49.00%	*1,000 Bootstrapped years for all measures except*	
						annualized returns.	

[3] **Multicollinearity** is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated. In this situation the coefficient estimates may change erratically in response to small changes in the model or the data. Multicollinearity does not reduce the predictive power or reliability of the model as a whole; it only affects calculations regarding individual predictors. That is, a multiple regression model with correlated predictors can indicate how well the entire bundle of predictors predicts the outcome variable, but it may not give valid results about any individual predictor, or about which predictors are redundant with others.

This advisor's investment policy lags the investor's MAR by only 19 basis points; the portfolio should return 8.15% versus the investor's MAR of 8.34%. Based on monthly returns data (January 1986 to January 2008) the policy will outperform the goal 49% of the time by approximately 4.80%. However, its average underperformance is 9.20%. Calculating upside potential and downside risk statistics with the investor's MAR provides greater clarity than mean-variance optimization.

What is striking is that the estimated downside risk, in terms of calculated annual loss, in December 2007 was only 50 basis points greater than the actual 2008 performance[4]! Again, nothing here unprecedented or unforeseeable.

While each calculation above provides much greater insight into an investor's true risk position than standard deviation, a single function, developed by Con Keating and William F. Shadwick, sums up an advisor's ability to diversify towards an investor's goal: *Omega.*

Omega is the probability–weighted ratio of gains or losses at a given MAR. The MAR is defined as a 'loss threshold' - the level below which, for a specific investor, even a positive return would be a loss. For example, consider an investor who needs an 8% annualized rate of return to meet their retirement income goal. Achieving a 3.1% rate of return is not adequate (although considered 'risk free' by MPT) and is therefore assigned a 'loss' value. Omega goes beyond this by considering the severity of losses along with their probability. For a given return level, an asset (or portfolio) with a higher Omega is preferable to one of a lower value.

MAR is not an average or target return. It is an absolute minimum or hurdle that is determined by an investor's needs, goals and aspirations. We evaluate risk and return against MAR on a monthly basis, to isolate sources of over- and underperformance, since a large monthly excess return may be more indicative of luck than skill. Unlike the mean-variance approach that uses average returns and its standard deviation, Omega uses the actual returns, so no estimates or assumptions are contained within the data.

Omega can shed light on the investment sophistication or skill demonstrated by the advisors Veres describes in his recent contribution. If an investor needs to achieve an MAR of 8%, the 'jumpers' just *increased* their clients' risk of not achieving their goal – the Omega plummets to .31. And, if the investor's MAR was less than 8%, should they have been in the market in the first place?

[4] 2008 return for the investment policy was -29.32%

While I am certain many will argue with the logic of 'jumping' out of the market to preserve principal, my concern is when to 'jump' back in. Armed with a ton of economic, valuation and returns data, we have yet to find definitive signals indicating the end of a bear run, much less whether a recession will be V, U or L shaped.

An advisor can be graded as acceptable with an Omega of 1.00. In a volatile environment, this score also indicates that changes in the overall policy may be required to maintain an allocation to meet the investor's long-term goals. For each asset allocation strategy, we update all risk and return estimates monthly. Should the current recession become lengthy or Treasury interest rates maintain their near record lows, the Omega of an asset allocation strategy will decline. In order to achieve a client's MAR, in most cases advisors need to *increase* their clients' equity exposure.

Proper diversification towards an investor's goal is essential. Determining each investor's MAR is critical to separating rhetoric from reality and allows for advisors to be evaluated on the 'value-added' premise each espouse : allocating investor's assets to achieve their goals and the implementation of that strategy through specific investment choices.

Brent Bentrim is Managing Director and founder of Carolopolis Fiduciary Counsel. Please email him for a complimentary asset allocation audit.