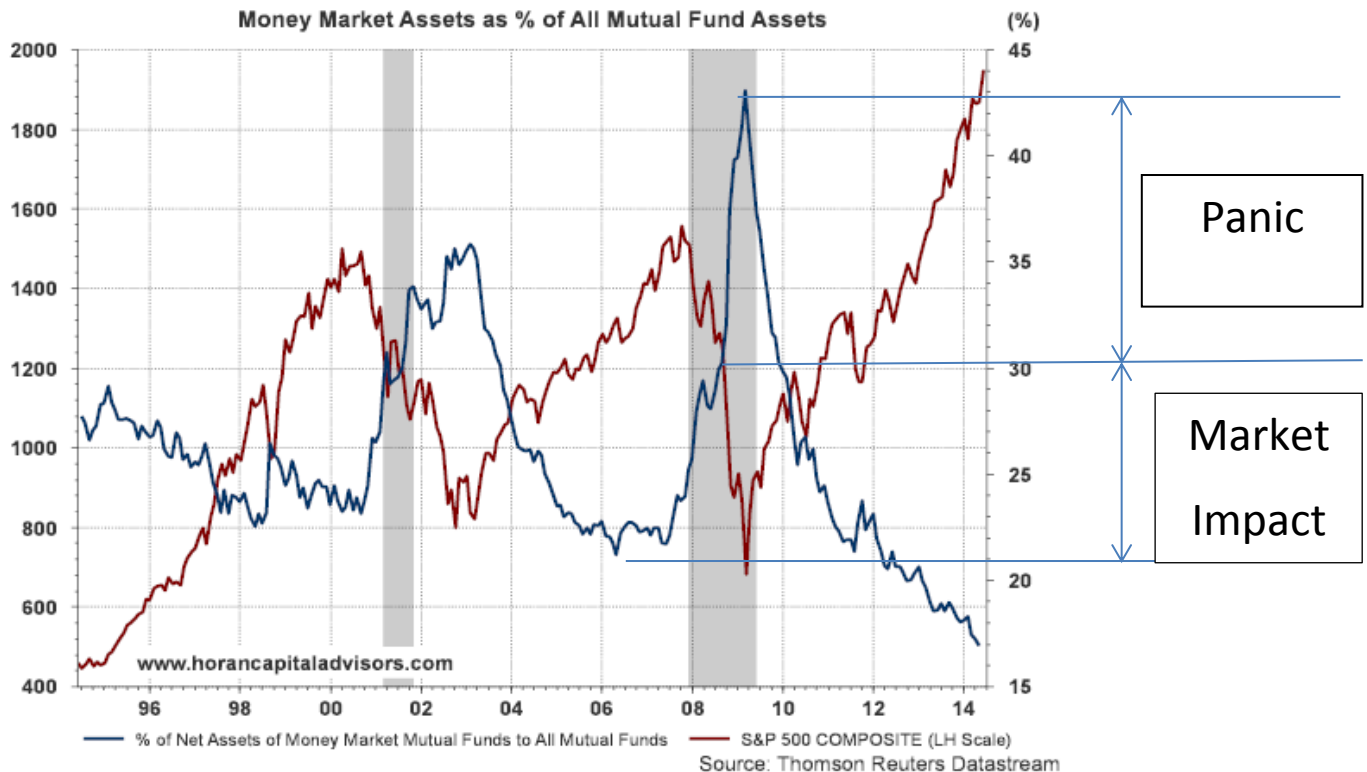


Defense Wins Championships!

When you think of the great sports dynasties the majority have one thing in common, they had a great defense. You think of the Steelers four Super Bowls wins anchored by their defense “the steel curtain”, the San Antonio Spurs smothering man-to-man defense or the pitching of the San Francisco Giants that helped win 3 of the last 6 MLB championships.

Defense in investing can be thought of as controlling downside risk. We believe that defense in the investing world is the ability to preserve capital by controlling downside risk. Let’s take a look at investor behavior during the last two major market drawdowns 2000-2003 and 2007-2009. During both periods the market decreased over 40%, red line. According to data from Thomson Reuters Datastream the percentage of money market assets versus total mutual fund assets, blue line, tended to increase as the market declined and slowly was reinvested as the market improved, see exhibit 1 below. What we believe this indicates is **that investors are loss instead of risk averse**. As the Dalbar studies have indicated over the years, investor behavior has resulted in dramatically lower returns versus market indices. Therefore, a different investment approach may be required to gain investor confidence so as avoid major downdrafts while participating as fully as possible during recoveries.

Exhibit 1 Money Market Assets as % of All Mutual Fund Assets



The industry preaches to stay fully invested with diversification as a means of loss mitigation. The issue is that there are few capital preservation investment strategies, such as QID's Rotation Strategies, to protect investors from extreme downside risk. As expected, during major economic events such as the bursting of the technology bubble in 2001-2003 and the mortgage meltdown of 2008-2009 most asset classes participated in the stock market carnage. Therefore, **the major benefits of diversification across asset classes failed investors when needed most.** The relationship between asset classes is known as correlation. Correlation ranges between -1 and +1, where the closer to one the more asset classes tend to move together and the closer to -1 tend not to move together. Asset classes that are near zero or negative are considered good diversifiers. For example, during the mortgage meltdown in 2008, asset class correlations to the stock market moved towards +1, see exhibit 2 below. The only asset class that maintained a negative or low correlation to the stock market was U.S. Treasuries.

Exhibit 2 Correlation to the S&P 500 Converged Towards One during Market Duress

Asset Class	Correlation 10/31/2007	Correlation 10/31/2008	Difference
Russell 2000 (IWM)	0.8	0.95	+0.16
MSCI EAFE (EFA)	0.81	0.95	+0.14
U.S. REITS	0.67	0.83	+0.16
U.S. Inv Gr Corp (LQD)	-0.04	0.66	+0.70
U.S. Hi Yld Cp (HYG)	.69	0.90	+0.21
Commodities (GSG)	-0.13	0.60	+0.73
Emerg Mkts Eq (VWO)	0.41	0.90	+0.49
Currency (DBV)	0.27	0.81	+0.54
U.S. Treasury (IEF)	-0.45	-0.15	+0.30

Source: Morningstar Direct

Controlling Downside risk must also be considered when selecting the managers for your portfolio. Investors have a tendency to select investments that have performed the best over the last couple of years. What worked in the past may not be necessarily what will work in the future. A study performed in 2005 by Rajiv Mallick, former Merrill Lynch Quantitative Manager Due Diligence Analyst, questioned the persistence of manager performance. The probability of maintaining a top two quintile ranking, top 40% of managers, over three year rolling periods on

average was low, see exhibit 3 below A fund that was in the top 40th percentile, top two quintiles, had less than a 20% probability of maintaining its top 40th percentile ranking the following three years. **The bottom line, do not chase yesterday's winners**

In addition, it was also pointed out that risk-adjusted measures were also questionable selection criteria due to the lack of sustainability of returns. **The factor that tended to have the most persistence, ability to predict future performance, was a measure of downside risk known as semi-variance that focused on probability of receiving a return less than zero.**

Therefore, it would appear that investors, advisors and asset managers must use a different measure to select or focus on managers with downside risk being a leading factor.

Exhibit 3 Persistence of Top Ranked U.S. Equity Funds

	Large-Cap			Mid-Cap			Small-Cap			Multi-Cap		
	V	B	G	V	B	G	V	B	G	V	B	G
4/5	15.6	6.7	4.3	16.1	4.4	6.3	14.3	19.1	3.6	13.4	15.1	10.3

Source: Rajiv Mallick

A Plan Participants savings rate, portfolio risk and equity allocation are also critical factors in controlling downside risk during retirement. We ran retirement studies for individuals with starting salaries from \$25,000 to \$250,000. The analysis indicated that a plan participant, including employer contribution, should save 6% or more, select a moderate risk portfolio and not to be too conservative with the equity allocation after age 65. Based on the U.S. longevity studies, the likelihood of one if not both spouses living into their 80's and 90's are increasing. We performed a sensitivity analysis of the probability of a plan participant's running out of money twenty years after retirement, age 85. We assumed two savings rates at 3% and 6% which combines participant and sponsor contributions. In exhibit 4 below, we note the expected assets at 10 and 20 years after retirement for a plan participant with a starting salary of \$50,000. At the 6% savings rate the forecasting model suggests there is only a 5% probability that one may run out of money. Whereas, at a 3% savings rate there appears to be a 95% probability of one running out of money as the projected cash flows are all negative. What was very clear from the sensitivity analysis was that **the more one makes the more one should save to ensure they may maintain their life style throughout their lifetime.**

Exhibit 4 Future Asset Level Estimate for a Participant with Starting Salary of \$50,000 and a moderate risk asset allocation.

Probability	95 th		50 th		5 th	
	10Yr	20Yr	10Yr	20Yr	10Yr	20Yr
3%	135.2	-928.5	-3.2	-1,098	-104.3	-1,299
6%	2265.6	1724.1	1262.2	268.6	635.5	-447.1

Source: Morningstar Direct

Assumptions: wage inflation rate average over the past 40 years of 3.88%. At retirement we used a base case asset allocation in line with industry standards of equity 20%, bonds 60% and cash 20%. Expense level at retirement was 60% of compensation.

The above are excerpts from an in depth report on Retirement available through Quantitative Investment Decisions, LLC prepared December 2015 at a subscription of \$930. In addition, a quarterly screen of managers that meet our quantitative factors is also available at an annual subscription of \$1200. The subscriptions can be ordered by emailing ron.santangelo@qidllc.com.