Asset Allocation: Dynamic versus Static

If market risk and diversification opportunities are constant through time, static asset allocation is a reasonable strategy; otherwise it isn't.

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Last Updated: 11/01/2009

Introduction

Asset allocation is a method for controlling the risk and return profile of a portfolio. It is the primary method used by professional investment advisors and endowment managers to create strategic portfolio allocations. Like professional money managers, investors managing their own wealth must decide whether to use a static allocation approach or a dynamic allocation approach. An example of a static approach is maintaining 50% wealth allocated to equity and 50% to fixed income (bonds) through time. A dynamic approach means the target asset allocation changes through time. Below we build an argument for dynamic asset allocation and then compare a dynamic approach to a 50% equity 50% fixed income static allocation portfolio.

The Dynamic Nature of Market Risk

Volatility, a well accepted measure of risk, increases the risk of loss and decreases a portfolio's growth rate. Exhibit 1 shows the VIX (a measure of the volatility of the S&P 500 index) between 2004 and 2009.

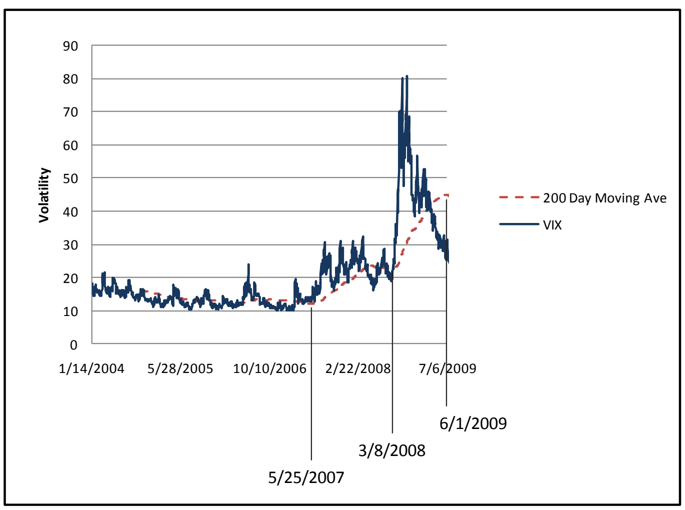

Exhibit 1

The solid blue line shows the VIX and its 200 day moving average (dashed red curve) between 2004 and 2009.

From Exhibit 1, we can see that if there is a goal to have a portfolio where the risk does not change uncontrollably through time, dynamic asset allocation is necessary. Otherwise portfolio risk will ebb and flow with the risk in the market. Between 5/25/2007 and 3/8/2008, prior to the financial collapse, the 200 day moving average of volatility doubled. An investor maintaining risk control in their portfolio would have responded to this increased volatility by paring back equity exposure to right the risk in their portfolio, prior to the financial collapse. An investor following a static asset allocation strategy, assuming some equity exposure, would have allowed the risk in their portfolio to grow, and likely would have rebalanced more wealth into riskier assets just prior to the collapse[1]. Exhibit 1 clearly shows that to maintain risk control, you need to monitor risk through time and balance your portfolio accordingly.

Return Relationships Change

The changing correlation among asset classes is a second reason that allocations should be dynamic. The volatility and risk in a portfolio depends on how asset classes are correlated. Holding wealth in asset classes with low correlation reduces portfolio risk and increases the benefit of diversification. When assets have zero correlation they move independently. When the correlation among assets is high they move in tandem, and when correlation is negative they tend to move in opposite direction of one another. Diversifying across highly correlated assets does not reduce risk much, because assets with high correlation behave similarly–they rise and fall together. Because the value of diversification depends on correlation, it is possible to improve the value of diversification by monitoring correlation. But, just as the volatility in the market changes with time, so does the correlation between different asset classes, as shown in Exhibit 2.

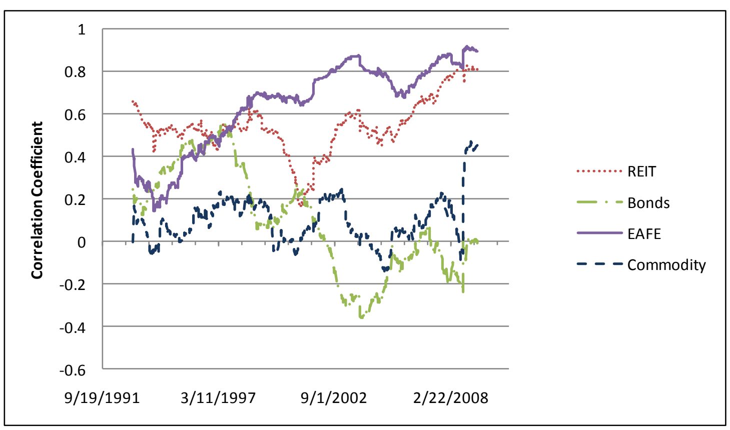

Exhibit 2

Exhibit 2 shows the correlation of different asset classes to the Russell 3000, a measure of the broad US equity market.

During a market downturn having wealth spread across asset classes with low correlation reduces the chance of loss, while having wealth spread across asset classes with high correlation does very little to

[1] This assessment is based on equity prices dropping more than bond prices during the referenced time period. To achieve the target allocation, an investor would have to increase equity exposure given it has fallen relative to fixed income.

mitigate loss. Just like volatility, correlation must be watched closely over time, and the portfolio adjusted to extract the most value from diversification.

Comparing Dynamic Allocation to Static Allocation

To gain a sense of how dynamic asset allocation can enhance performance we compare a portfolio based on Portfolio Research's 7.5% target volatility model portfolio to a 50% stocks, 50% Fixed Income static asset allocation portfolio. Figure 3 shows the hypothetical growth of $100,000 for each of the two portfolios.

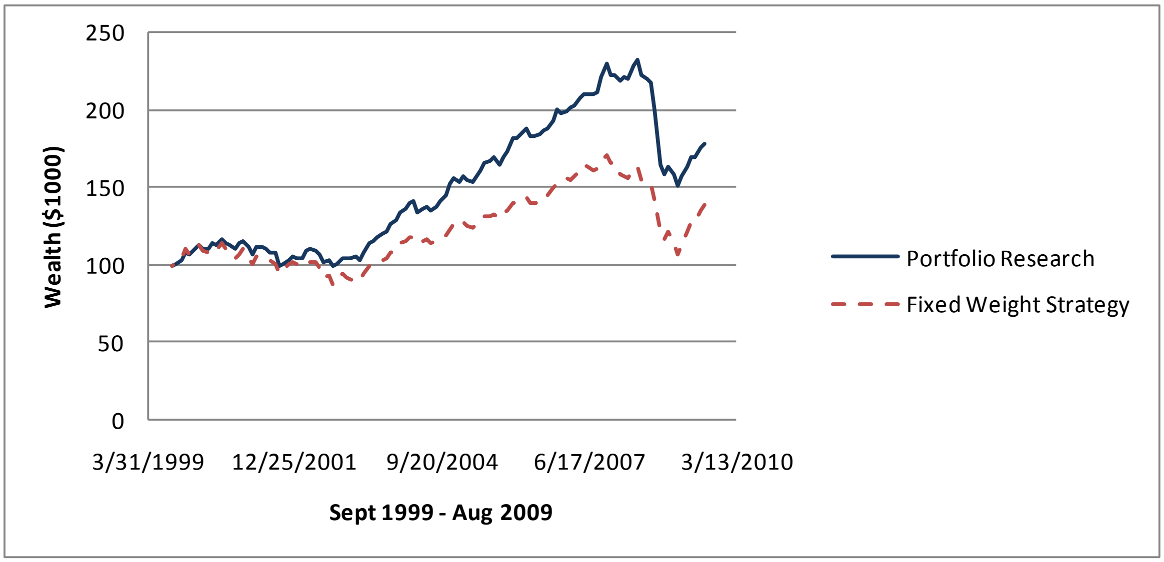

Exhibit 3

Exhibit 3 shows the yield of $100,000 invested in the 50 – 50 strategy (dashed red line) and Portfolio Research's 7.5% target volatility model portfolio (solid blue line). The fixed weight strategy uses: 22.5% S&P 500, 10% Russell Mid Cap, 5% Russell Small Cap, 10% EAFE (Developed Int. Eq.), 2.5% Emerging Markets, 40% Lehman Aggregate Bond, and 10% Cash Equivalents.

Exhibit 4 characterizes the historical performance of these two hypothetical portfolios over the same timeframe used in Exhibit 3.

	Portfolio Research	Fixed Weight
Return	6.4%	4.3%
Volatility	8.4%	8.7%
Sharpe Ratio	0.375	0.123
Best Year	29.5%	24.1%
Worst Year	-23.5%	-25.2%

Exhibit 4

Table showing the performance of two hypothetical portfolios over the time period of 1992 – 2009.

We can see from Exhibit 4 that the historical volatility of these two portfolios are similar, however the growth rate of the Portfolio Research portfolio is 2.1% higher. This improvement in the growth rate translates to significant additional wealth and also a higher Sharpe Ratio. The wealth generated by an investment of $100K in the Portfolio Research portfolio is $82.4K and $48.2K for the fixed weight strategy. The dynamic strategy achieves this higher performance by maintaining risk control and by keeping the portfolio efficient[2] over the entire investment horizon.

Conclusion

Dynamic asset allocation makes sense from both a risk perspective and a growth perspective. Specifying risk tolerance and then creating a portfolio that targets this risk is good practice. Otherwise, the risk to your wealth changes unpredictably with the market. Portfolio Research refers to this as risk control. In order to accomplish this objective, volatility and correlation must be monitored, and the portfolio balanced accordingly. When the correlation among assets is low there is an opportunity to seek higher returns with risk control from diversification; however, when correlations rise, portfolio risk also rises, and the portfolio must be adjusted. Because markets change, dynamic allocation is necessary to maintain risk control and an efficient portfolio.

[2] An efficient portfolio has the property that to increase expected return more risk must be assumed.