

## ABR Dynamic Funds' Portfolio Construction Series: Part 13

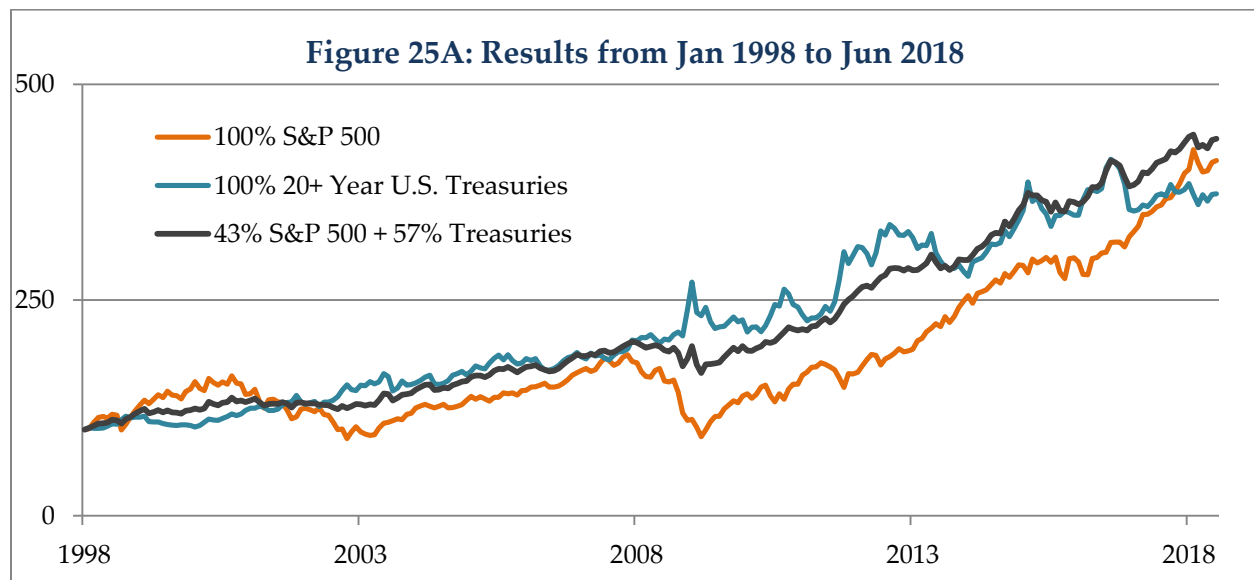
### *How a low beta can mask a high correlation*

A low beta has become a key indicator for selecting alternative investments. However, a low beta can come from one, or both, of two sources: a low correlation or a low volatility. **As we illustrate in the “low correlation” section below, a low beta due to a low correlation has been very useful. However, we show in the “high correlation” section that a low beta due to a combination of a high correlation with low volatility has been detrimental to portfolios.** Therefore, it is important to look past a low beta and identify the reason for it.

#### **Low Correlation**

Alternative investments with low correlations have provided meaningful diversification to portfolios. The following example is provided to illustrate the value of a low correlation using well-known investments. It is not meant to endorse a portfolio of only equities and long-dated U.S. treasuries at current valuations.

The correlation of the S&P 500 to 20+Year U.S. treasuries over the past 20 years has been -0.29. As a result, the S&P 500 and 20+ Year U.S. treasuries could have been combined into a portfolio that was far superior to either one on its own. Over the past 20 years, the allocations that produced the highest Sharpe ratio were 43% S&P 500 along with 57% 20+ Year U.S. treasuries.



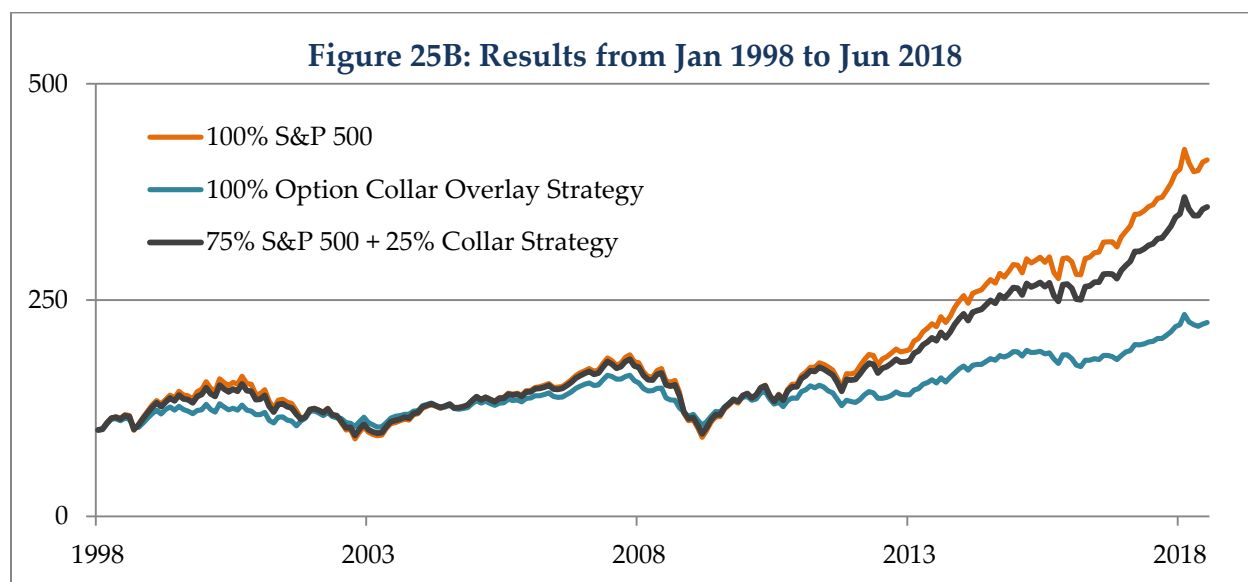
Data Source: Bloomberg

**The diversified portfolio wasn't just a little bit better; it was a lot better. Consider the following risk figures, as well as the return, and remember that this portfolio could have been leveraged up to the same level of risk as the S&P 500, producing a much improved return.** Recall that volatility is risk; for more on this topic, please see [Installment 4](#) in this series on portfolio construction.

1998 - Jun 2018	S&P 500	20+ Year U.S. Treasuries	43% S&P 500 + 57% Treasuries
<b>Return</b>	7.15%	6.64%	7.46%
<b>Volatility</b>	14.79%	11.90%	7.86%
<b>Max Drawdown</b>	51%	21%	18%

## High Correlation

Alternative investments with high correlations have not provided meaningful diversification. To illustrate, the following example shows an options collar overlay strategy (from installment 11). It had a high correlation of +0.90 to the S&P 500 over the past 20 years. We have repeated the same exercise as in the low correlation section above.\*



Data Source: Bloomberg

This time the highly correlated so-called “alternative” was not meaningfully able to improve the Sharpe ratio, even though it had a reduced beta. Unlike in the low correlation section above, leveraging this blended portfolio up to the same level of risk as the S&P 500 would not have improved the portfolio’s return. **The collar overlay strategy’s high correlation along with its lower volatility may have resulted in a low beta calculation, but it was detrimental to portfolios. It simply tied up extra capital without improving results.**

1998 - Jun 2018	S&P 500	Collar Overlay Strategy	75% S&P 500 + 25% Collar
Return	7.15%	4.02%	6.41%
Volatility	14.79%	10.41%	13.49%
Max Drawdown	51%	35%	47%

## Looking Past Beta

Beta should not be used as a proxy for correlation when selecting diversifying investments. Investors should look past a low beta to the reason for it. A low beta could be the result of a low correlation or of a low volatility. We have demonstrated the benefit of a truly diversifying strategy with a low beta due to a low correlation. We have also demonstrated the detriment of a “diversifying” strategy with a low beta due to a high correlation and lower volatility.

**A high correlation with a low volatility was the worst of both worlds. It generally just resulted in expensive beta and could have been recreated with simple core allocations.** We have covered some of these strategies in the ongoing “Fooled by the Wrapper” subseries. For more on this topic, please see [Installment 2](#), [Installment 5](#), and [Installment 11](#).

On the other hand, **an alternative with a low correlation and high volatility has been useful to a portfolio. High volatility in a component of a portfolio did not mean the overall portfolio had to have a high volatility. It just meant less of that component was required to achieve the same diversifying effect on the portfolio. That freed up more capital for other investments.** For more on this topic, please see [Installment 6](#) and the below excerpt from ABR's white paper on portfolio construction. The excerpt discusses the shortcomings of so-called alternatives that can easily be mimicked with core exposures, especially with reduced amounts of core exposures. It will be familiar to readers who have been following this series on portfolio construction.

Finally, the formula for the beta of hypothetical investment "ABC" explicitly shows the two possible sources of a low beta (highlighted), which we have explored above:

$$\text{BETA}_{(ABC)} = \text{CORRELATION}_{(ABC \text{ TO BENCHMARK})} * ( \text{VOLATILITY}_{(ABC)} / \text{VOLATILITY}_{(BENCHMARK)} )$$

### Excerpt from ABR's white paper on portfolio construction

Perhaps most importantly, the proxies for typical forms of many of these "alternative" strategies use *reduced amounts* of core exposure to achieve results similar to the "alternative" strategies. This feature, while touted by some managers as a benefit in the form of volatility reduction, is actually quite detrimental to investors.

For example, consider an "alternative" that always moved half as much as equity behavior (0.50 beta), in the same direction as equity behavior (1.00 correlation). This hypothetical alternative:

- Tied up twice as much capital as direct exposure to the equity behavior it mimicked.
  - That capital should have been hard at work elsewhere. Diluting exposure to equity, or any other, behavior only serves to tie up more capital and require more leverage to reach the target exposure level.
- Provided no diversification value whatsoever to the equity behavior it mimicked.
  - It lost every time equity behavior lost, totally eliminating the only free lunch in investing.
- Generated a diluted return compared to the equity behavior it mimicked.
  - Diluted equity returns may have been a luxury investors could afford in a raging bull market, but what if future S&P 500 returns are much lower? How will investors feel about diluting already low returns?

We wish to note that this example should not be taken to mean that all forms of option overlay strategies are bad. The ones that carry the features just discussed may be, but that is not intended as a criticism of the ones that do not.

\*Technically, the optimization called for 100% S&P 500 and 0% Collar Overlay strategy to maximize the Sharpe ratio. However, because the correlation is so high, the allocations make almost no difference to the Sharpe ratio. We, therefore, used 75% S&P 500 and 25% Collar Overlay Strategy for the sake of the illustration.

*Next Week's Preview: Convertible bonds haven't offered much diversification.*