Comparing Portfolios with Different Asset Allocations

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Executive Summary

There are many possible asset allocations that can yield a portfolio with a specific balance of risk and return. After our recent articles analyzing some model portfolios proposed by financial advisors, I received a number of questions about whether specific portfolio components are required, as well as many questions challenging my specific allocations. These are important questions. Strategic asset allocation cannot tell you if energy will continue to outperform or whether to invest in any specific foreign funds. Strategic asset allocation models such as Quantext's Portfolio Planner are designed to generate baseline projections for future risk and return on individual assets and to capture how these assets will work together in a portfolio. Certain sectors will tend to look good together in a portfolio because of their portfolio effects. Monte Carlo models have two principal functions in financial planning. First, a Monte Carlo model helps its users to determine the balance of risk and return that will maximize the probability of reaching future financial goals. Second, a Monte Carlo model allows users to project future risk and return on specific portfolios. There are very often many possible portfolios that will yield the specific risk-return balance that an investor has chosen. In this paper, we show a series of simple portfolios that produce the same risk-return balance. The choice between these equivalent portfolios depends on individual investor preference and outlook.

Explaining Strategic Allocation

We have been receiving considerable correspondence about some of the model portfolios that we have discussed in various articles published on ETFInvestor.com and also via the Quantext website. Many of the questions focus on individual allocations---such as why some portfolios have so much energy exposure or others have so little foreign allocation. These discussions sometimes obscure a critical point. Strategic asset allocation is only partly about choosing sectors or stocks that you want to invest in. Strategic asset allocation is specifically focused on how best to construct a portfolio out of the range of assets that you want to consider. Ultimately, two portfolios with the same risk and return profile are equivalent---regardless of what is in the portfolio. Let's make this point more concrete. We recently wrote an article that examined three model portfolios proposed by Agile Investing, an advisory firm. When we ran these three portfolios through our Monte Carlo portfolio model (Quantext Portfolio Planner), we obtained the following projections for the expected annual return and standard deviation in return:

	Projected Annual Return	Projected Annual Standard Deviation in Return
Conservative Growth	7.24%	8.26%
Moderate Growth	8.39%	10.34%
Aggressive Growth	9.45%	12.71%
S&P500	8.30%	15.07%

*Projected results from **Agile Investing** portfolios*
(http://www.quantext.com/AgilePortfolio.pdf)

These results were obtained with an assumed future return on the S&P500 of 8.3% per year, with a standard deviation of 15.07% (a conservative but realistic estimate). These portfolios from Agile Investing had some concentrated investments in commodities, gold, and an energy-focused Master Limited Partnership (MLP). Our analysis of the portfolio suggested that these three portfolios looked quite reasonable and made good use of diversification effects across the portfolios. From the perspective of Strategic Asset Allocation (SAA), this means than the investors in these portfolios are getting about as good a return for the risk that they are carrying as one might reasonably expect. This does not mean that any of these portfolio are appropriate for any individual, but rather that it will be hard to get substantially more return on any of these portfolios without

taking on more risk. That does not mean that you need to invest in these specific assets to accomplish these results. In fact, it should be possible to achieve very similar results with a small number of generic funds.

Simplified Universe of Investments

In a paper from December of 2005, we looked at a wide range of iShares ETF's and at the range of performance variables of different members of this fund family. Based upon that analysis, we have identified a small group of ten ETF's that have a long history (by ETF standards) and provide the ability to create a wide range of low-cost portfolios with nicely optimized risk-return balances:

Ticker	Style
IVV	S&P500
IJJ	Mid-Cap Value
IWN	Small Value
EFA	Foreign Large Blend
IEV	Europe Stock
EWS	Pac/Asia ex-Japan
IYH	US Healthcare
IDU	US Utilities
SHY	Short Gov. Bond
TLT	Long Gov. Bond

Simplified Universe of Investments

These ETF's provide good diversification opportunities and cover a broad spectrum of opportunities. This 'universe' of investment choices allows some focus by market capitalization, with an emphasis on value stocks. We have some international choices, some bonds. There are also two sector focused funds: healthcare and utilities. These two sectors have some very attractive feature for sector concentration. From a fundamental standpoint, both healthcare and utilities provide products that are somewhat immune to the economic cycle—people need their products when they need them, and people are reluctant to cut back on either healthcare or electricity. In the parlance of economists, both of these sectors have fairly 'inelastic demand.' Warren Buffett has also recently

expressed his sentiment that utilities represent a good asset class—and I am always happy to be in alignment with Mr. Buffett:

http://www.berkshirehathaway.com/letters/2005ltr.pdf

These fundamental factors are not, however, why healthcare and utilities are the only two sector-specific funds in this simplified investment universe. When we run all of the ten ETF's through the Quantext Portfolio Planner (QPP), having specified the use of the last three years of data, we obtain the following projections for Beta and standard deviation in annual return:

Fund or Stock Ticker	Beta	Standard Deviation (Annual)
IVV	102%	15%
IJJ	125%	21%
IWN	144%	25%
EFA	107%	20%
IEV	122%	22%
EWS	84%	21%
IYH	56%	16%
IDU	60%	19%
SHY	0%	3%
TLT	-7%	20%

Projection Using Trailing 3-Year Results

These projections are generated by the Monte Carlo portfolio simulation, assuming that the future average return on the S&P500 is 8.3% per year, with a standard deviation (SD) of 15.07%. In building a portfolio that really takes advantage of offsetting risks between different assets, you need some assets that have low values of Beta. Bonds have the very lowest values of Beta (see above), but healthcare (IYH) and utilities (IDU) have very low Beta's for stocks. There are a number of features of these projected statistics that are worth mentioning. First, we expect that IVV would have Beta equal to 100% and SD exactly equal to the S&P500. The fact that we see Beta that is slightly different from

100% is simply a result of statistical variability in returns over the period. Beta and SD are both measures of risk and we see that the small cap fund (IWN) has higher Beta and higher SD than the mid-cap fund (IJJ), etc. Similarly, IJJ has higher Beta and SD than the S&P500 fund, IVV.

Sample Portfolios

To create a reference case, we first ran simple portfolio of 60% stocks and 40% bonds, using the S&P500 (IVV) as our proxy for stocks:

Portfolio Stats	
Average Annual Return	Standard Deviation (Annual)
7.61%	9.91%
Historical Data	
Start: 2/1/2003	End: 1/31/2006
Average Annual Return	Standard Deviation (Annual)
11.41%	5.93%
Historical Beta: **59.60%**	

60% IVV / 20% SHY / 20% TLT

The *Portfolio Stats* table shows the projected future performance and the *Historical Data* shows the performance over the past three years. This creates the reference 60/40 case that many portfolio managers use. By including bonds, we have given up some upside, but we also have substantially less volatility. Not that this very simple 60/40 portfolio falls in between the **conservative** and **moderate** Agile portfolios for projected risk and return. If we wish to replicate the risk/return balance of the conservative Agile portfolio, we can get very close by going to a 40% IVV / 60% bond portfolio:

Portfolio Stats	
Average Annual Return	Standard Deviation (Annual)
7.18%	8.37%
Historical Data	
Start: 2/1/2003	End: 1/31/2006
Average Annual Return	Standard Deviation (Annual)
8.92%	5.20%
Historical Beta: **38.53%**	

40% IVV / 30% SHY / 30% TLT

Conversely, we find that we match the risk and return *Aggressive* Agile portfolio if we simply allocate fund equally to all ten choices:

Portfolio Stats	
Average Annual Return	Standard Deviation (Annual)
9.83%	12.68%
Historical Data	
Start: 2/1/2003	End: 1/31/2006
Average Annual Return	Standard Deviation (Annual)
19.59%	7.90%
Historical Beta: **79.21%**	

Equal allocation in all 10 iShares ETF's

Further, if you happen to like foreign funds but are bearish on owning more energy exposure than you have via your broad market ETF's, you can also capture essentially the

same risk and return by re-balancing, with no exposure to an energy sector-specific fund. Without spending much time on 'tuning' the portfolio, for example, we come up with the following:

Fund Name	Percentage of Funds
IVV	10.0%
IJJ	10.0%
IWN	10.0%
EFA	15.0%
IEV	10.0%
EWS	15.0%
IYH	10.0%
IDU	0.0%
SHY	10.0%
TLT	10.0%

More foreign / no energy focus portfolio

This portfolio also replicates the projected risk/return balance of the Aggressive Agile portfolio quite closely:

Portfolio Stats	
Average Annual Return	Standard Deviation (Annual)
9.90%	13.29%
Historical Data	
Start: 2/1/2003	End: 1/31/2006
Average Annual Return	Standard Deviation (Annual)
20.03%	8.12%
Historical Beta: **82.84%**	

*Projections and History for the **More foreign / no energy focus portfolio***

Building Your Best Portfolio

So what's the point of all this? Asset allocation does not dictate what goes into your portfolio, and you can often exclude entire asset classes without limiting the range of risk-return outcomes that you obtain. If you start with a universe of possible investments (stocks, bonds, funds), the set of investment choices needs only to be broad enough to allow you to find the risk-return balance that meets your needs. I happen to like both energy and healthcare because I believe in them on a fundamental basis and they allow for good portfolio effects. I have very light exposure to foreign markets because I simply do not understand them very well, and their portfolio effects are not particularly good. Being more specific, investing in foreign indices may allow you place bets on currency swings, but it does not provide any unique opportunities for diversification---unless you are focusing on diversifying away currency exposure. Again, that is beyond my area of expertise.

Markets show us the level of uncertainty in future performance of an asset or asset class through volatility (risk). Risk and return go hand in hand. Portfolio theory tells us that there are a wide variety of portfolios that can generate a specific risk-return balance. For the individual investor, the key issue is to determine the risk-return balance that you need to take on to meet your financial goals (which can only be done properly with Monte Carlo simulation), and then to design a portfolio that aligns your fundamental views with achieving effective asset allocation. In summary, if you want a portfolio with the risk-return characteristics of the *Aggressive* Agile portfolio, for example, you may still prefer to use the ten equal-allocations into ETF's that we showed earlier---it all depends on what you want to invest in.

More information on Quantext Monte Carlo planning tools, as well as a free trial, is available at: http://www.quantext.com/gpage3.html