

The background of the slide is a blurred image of a document, likely a financial report or a list of securities. It contains various numbers, including integers, decimals, and fractions, such as 117/16, 665/32, 167/4, 183/8, 173/8, 121/2, 103/8, 177/2, 187/8, 209/8, 271/4, 209/8, 183/8, 29/8, 117/16, 783/8, 173/8, 183/8, 29/8, 117/16, 783/8, 173/8, 183/8, 29/8, 117/16, 783/8, 173/8, 183/8, 29/8. The text is out of focus and appears to be part of a larger table or list.

*Asset Allocation and the All-ETF Portfolio*

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I often hear from investors who want to build a portfolio that is more effective than simply buying a generic set of broad-based index funds. If you read my articles, you will note that I believe that individual stocks are an important part of getting the highest returns for a specific amount of portfolio risk. That said, buying a fairly small number of individual stocks exposes the holder to an increased level of ‘company specific’ risk. This magnitude of this problem varies, depending on the expertise of the investor and where he/she wants to invest. Many investors want to start by focusing on ETF’s and other low-cost index funds and this will, of course, diminish the impacts of stock/company specific risk.

Let’s imagine that you want to build a portfolio of ETF’s but want to do something better than just following a generic ‘pie chart.’ What does it mean to do something better than the pie chart approach? First, you want to see if you can get more return for the total amount of risk in your portfolio—and that means that you have to be smart about diversification. Second, you may have some other broad themes in mind. One of the key themes that I think about is how coupled I want my portfolio to be to the S&P500, for example. In this article, I show a portfolio of ETF’s and one CEF that captures considerable diversification effect and I will explain how I built it.

Let’s imagine that an investor starts with the three constraints/themes described above. First, he wants to build a portfolio which is not strongly sensitive to the S&P500. Second, he wants an all-ETF portfolio. Third, he wants to exploit the available diversification benefits effectively. These three guidelines help to narrow the world of possible assets. The portfolio that I developed to meet these requirements is shown below:

ETF/CEF	Ticker	Weight
iShares MSCI Japan Index	EWJ	10%
iShares MSCI Malaysia Index	EWM	5%
iShares Cohen and Steers REIT	ICF	5%
iShares Natural Resources Index	IGE	5%
iShares Global Healthcare	IXJ	5%
iShares Dow Jones U.S. Energy	IYE	5%
iShares Dow Jones Transport Index	IYT	10%
iShares Dow Jones U.S. Telecom	IYZ	10%
Utilities Select Sector SPDR	XLU	15%
iShares Lehman TIPS Bond	TIP	25%
BlackRock Corporate High Yield Bond	COY	5%

***Sample ETF portfolio***

This portfolio has some country-specific ETF's (EWJ, EWM). Energy-focused ETF's are well-represented via IGE and IYE and having both of these is not really necessary—it is a bit arbitrary. Thirty percent of this portfolio is in bonds—with most of that in an inflation-indexed bond fund (TIP) and the remaining bond exposure in a high-yield bond fund (COY). There is a fairly concentrated exposure to utilities (XLU). There is obviously considerable focus in this portfolio on materials and industrials—this is a 'boring' portfolio. Despite being boring, this portfolio has some very nice features that are perhaps best shown by looking at the correlations between its components:

	Portfolio	EWJ	EWM	ICF	IGE	IXJ	IYE	IYT	IYZ	XLU	TIP	COY
EWJ	41%	100%										
EWM	53%	3%	100%									
ICF	59%	9%	32%	100%								
IGE	66%	30%	42%	7%	100%							
IXJ	48%	32%	22%	55%	10%	100%						
IYE	63%	19%	40%	6%	98%	10%	100%					
IYT	46%	18%	17%	37%	21%	9%	17%	100%				
IYZ	50%	-3%	32%	45%	17%	27%	16%	37%	100%			
XLU	53%	3%	22%	16%	25%	20%	27%	-21%	0%	100%		
TIP	9%	-1%	-19%	8%	-22%	13%	-20%	-38%	-27%	48%	100%	
COY	38%	-32%	23%	37%	5%	3%	11%	7%	53%	37%	4%	100%

***Trailing three-year correlations in monthly total returns (through 5/31/2007)***

The correlation coefficient measures the degree to which returns tend to move together between assets—and we have also included a column for the correlation between each portfolio component and the total portfolio (Portfolio). These statistics are very useful in portfolio construction and this is why this *correlation matrix* is standard output from Quantext Portfolio Planner. If you are not familiar with the idea of correlations, this article provides a primer:

<http://etf.seekingalpha.com/article/18817>

The lower the correlation between portfolio components, the more effectively diversification is working for a portfolio---and the higher the return you will be able to get for a specific level of portfolio risk. The article linked above shows, for example, that the S&P500 and the NASDAQ have a correlation of 87%, so combining an S&P500 ETF like IVV with the NASDAQ-tracking QQQQ does not do much for your portfolio diversification. The correlation between the S&P500 and the international large-cap EAFE index is around 82%--slightly better in terms of the ability to diversify, but not much. Put in this context, we can look at the correlation matrix above and see that there are a lot of very low correlations between the assets in this portfolio.

To come up with candidate ETF's for this portfolio, I screened for ETF's that have low values of R-squared (also written as  $R^2$ ). This type of screen is available on *Yahoo! Finance*, for example. Low- $R^2$  ETF's are not highly driven by the broader market---this is precisely what  $R^2$  measures. I ended up with a great deal of redundancy from this screening process---some of it was obvious, but some was not until I looked at the correlation matrix. After rejecting the ETF's that were too highly correlated with one another, I ended up with a much shorter list. My goal was to end up with a fairly small number of ETF's that yielded a high average return relative to the standard deviation in return (the measure of risk) for both the historical period and the forward-looking projections. In other words, I was trying to get a portfolio of ETF's that has a high risk adjusted return.

For a portfolio with a projected average annual return of around 10%, about the minimum risk you can realistically plan for is annualized standard deviation in return of around

10%. This is, of course, just a rule of thumb but Ray Dalio has also presented some fairly compelling evidence in favor of this rule of thumb:

<http://web.mit.edu/charvak/www/Science/Bridgewater/pmpt040105.pdf>

I have studied dozens of possible portfolio strategies and an expected 10% return for 10%-12% in standard deviation is about as good as it gets on a forward-looking basis.

So, along with my goal of building a portfolio that has fairly low  $R^2$  (relative to the S&P500), I also wanted a portfolio which would get close to this 1-to-1 ratio between average annual return and standard deviation.

The characteristics of the model ETF portfolio actually get pretty close to this level (see the table below). Note that the trailing historical performance of this portfolio is very good (*Historical Data* below). The average annual return is 14.9%, with a standard deviation of only 5%---almost a ratio of three for return to risk over the last three years. The recent years have exhibited very high return relative to risk for a wide range of asset classes and this has been one of the lowest volatility periods ever. It would be foolhardy to think that the future performance of this portfolio will look anything like the historical performance. Quantext Portfolio Planner (QPP) generates forward-looking projections of portfolio risk and return and these projections are summarized in *Portfolio Stats* (below). Lo and behold, the projected average return is 10.5% per year, with a standard deviation of 11.2% per year---for a ratio of 0.94.

Portfolio Stats	
Average Annual Return	Standard Deviation(Annual)
10.5%	11.2%
<b>Historical Data</b>	
Start: 6/1/2004	End: 5/31/2007
Average Annual Return	Standard Deviation (Annual)
14.9%	5.1%
Historical Beta: <b>50.0%</b> Historical Yield: <b>1.7%</b> Portfolio R <sup>2</sup> : <b>51.8%</b>	
Performance of S&P500 over historical period	
Avg Ann Return S&P500 (no dividends) 10.4%	
Annual Standard Deviation on S&P500 7.3%	

***QPP stats for the all-ETF portfolio***

This portfolio's main design features are:

- Comprised of all ETF's / CEF's
- Moderate R<sup>2</sup> (R-squared) of 51.8%---does not track the S&P500
- Moderate Beta of 50%
- Projected 10.5% per year in return for 11.2% in Standard Deviation (risk)

At first glance, there is nothing obvious in this portfolio that would look especially attractive---until you look at this portfolio quantitatively. Certainly the trailing performance looks pretty good—but it would be trivial to find a wide range of ETF portfolios with trailing performance as good or better than this one. Once you see the correlations, low R<sup>2</sup>, and projected performance, the qualities of this portfolio are made

manifest. Arriving at this portfolio required a certain amount of experimentation, but starting with a limited outlook on the candidates for the portfolio helps to limit the process—in this case I started with a requirement of low  $R^2$  and moderate Beta.

While I am not advocating this specific portfolio for anyone, the forward-looking projection of 10.5% per year in average return with a standard deviation of 11.2% represents a solid return relative to risk:

<http://etf.seekingalpha.com/article/21808>

As I noted earlier, I am not an advocate for all-ETF portfolios, but I know that plenty of investors simply prefer to invest only in funds so as to minimize the company-specific risks. This portfolio is an example of one that effectively exploits diversification effects to generate solid returns, while not being terribly sensitive to the gyrations of the S&P500. The process of getting this ETF portfolio is fairly mechanistic, albeit with some experimentation. Our research suggests that QPP's projections do a good job of accounting for diversification effects and projecting risk and return (<http://seekingalpha.com/article/38568>), so I feel that these projections are pretty reasonable. There is no question that this portfolio could be improved with some individual stocks. Further, it would be prudent to consider whether you want to have these levels of exposure to the specific sectors. I, for example, like having concentrations in utilities for a range of fundamental reasons. Others may not like this.

In summary, I have shown how an investor or advisor can build a candidate portfolio entirely out of ETF's (and one CEF) that could serve as the counter-point to qualitative policy portfolios. This approach to building a candidate portfolio is foreign to most investors and advisors. With the substantial body of research supporting the analytics within QPP, however, I feel that this approach is not a bad way to start to design portfolio allocations.

*Quantext Portfolio Planner is a portfolio management tool. Extensive case studies, as well as access to a free extended trial, are available at <http://www.quantext.com>*