



Judging Fund Performance: Part 2

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In a recent article, I discussed ways to examine mutual fund performance, with special emphasis on being aware of risk and concentrations in specific sectors:

<http://www.quantext.com/FundRiskReturn.pdf>

The focus of this article was that investors in mutual funds need to critically examine mutual fund holdings and total risk levels if they are have a solid understanding of exactly what they are investing in. In particular, many top-performing mutual funds appear to achieve their high returns by taking on substantially more risk than the broad style class against which they are benchmarked. Fund managers have specific incentives to do this, as discussed in the article linked above.

Investors considering investing in a top-performing mutual fund to have access to the fund manager's talents would do well to look a little deeper. When you buy a mutual fund (not including index funds), you are paying a substantial fee to a fund manager to add value beyond what you could achieve by purchasing by buying a series of index funds and individual stocks. Research has shown that the vast majority of variations in mutual fund performance can be explained by the broad asset classes that the portfolio is invested in:

<http://www.stanford.edu/~wfsharpe/art/sa/sa.htm>

This does not mean that mutual fund managers are not skillful—determining the best asset allocation in a fund may reflect a manager's value. In practice, the heavy influence of asset allocation on fund performance means that an investor should be able to replicate most of the performance of a top-ranked mutual fund simply by matching the broad asset allocation of such a fund.

Investors are aware (hopefully) of the very low value of past performance of a mutual fund in predicting future performance. Nonetheless, investors tend to invest most of their mutual fund assets into the funds that have been out-performing in recent years.

Analyzing a portfolio of ETF's or index funds that broadly replicates a mutual fund will help investors to determine if they want the sort of asset allocation in a winning fund.

In the companion piece to this article (linked at the top of the article), I profiled two of the highest-performing mutual funds that are classified as ‘domestic large equity’ funds by Morningstar. As I discussed in that article, these funds have substantial concentrations in certain sectors—including 30+% in foreign equities. The two mutual funds used as examples in the last article, JSVAX and CGMFX, are the top two large cap blend funds in the ‘domestic equity’ category over the most recent three years and five years. These funds have generated annualized returns of about 26% per year for the last three years. There is no question that this is a lot of return, and far surpasses the returns generated by the S&P500—but looking at return without looking deeper misses the point.

I noted in my last article that these two funds are far more volatile (i.e. risky) than the S&P500. Both funds both have concentrations in international equities and basic materials, along with fairly heavy weight in mid-cap equities.

<http://quicktake.morningstar.com/Fundnet/Portfolio.aspx?Country=USA&Symbol=JSVAX&fdtab=portfolio>

<http://quicktake.morningstar.com/Fundnet/Portfolio.aspx?Country=USA&Symbol=cgmfx&fdtab=portfolio&t1=1184269234>

The first question that we want to ask is whether these top funds have beaten a portfolio of passive investments with roughly the same risk and similar sector allocations. To examine this issue, let’s look at some simple portfolios that could be made with ETF’s that cover the same broad sectors that are emphasized in the top-performing funds. These two mutual funds have substantial foreign investments, as well as sector concentrations in materials, energy, and utilities. To start the analysis, I have chosen a set of index ETF’s that cover these sectors:

ETF	Ticker
iShares S&P500	IVV
iShares Russell Mid-Cap	IWR
iShares EAFE	EFA
BLDRS Emerging Market	ADRE
iShares Materials Index	IYM
iShares U.S. Utilities	IDU
Energy Select SPDR	XLE

Universe of ETF's

It is of interest to see how easy it is to build a portfolio out of these ETF's that will match or out-perform JSVAX and CGMFX for a similar risk level. I started with a portfolio that was simply equally allocated to each of these ETF's.

Ticker	Beta	SD	Average Annual Return
JSVAX	144.3%	12.1%	26.1%
CGMFX	95.8%	19.5%	26.6%
Equal weight in each ETF	108.9%	10.0%	22.5%
ETF Portfolio 2	118.9%	11.6%	24.3%

Trailing 3-year Performance for Funds and ETF portfolios

When performance is assessed, we find that a portfolio that is simply equal-weight in the seven ETF's has generated an average annual return of 22.5% per year, but with a standard deviation (SD) that is considerably lower than either JSVAX or CGMFX (above). The performance of the equal-weight ETF portfolio, a totally arbitrary allocation, is quite close to these funds. By way of reference, IVV (the S&P500 index ETF) has returned 12.2% per year with a standard deviation of 7%. These results suggest that most of the performance advantage of these top funds over the S&P500 is via sector concentrations and high risk level.

There are three sectors in the set of ETF's with higher SD than the others: ADRE, XLE, and IYM. So, we might increase the allocations to these uniformly until we get something close to the observed risk levels for the top two funds. Let's call this adjusted portfolio *ETF Portfolio 2*:

Fund Name	Percentage of Funds
IVV	10%
IWR	10%
EFA	10%
ADRE	20%
IYM	20%
IDU	10%
XLE	20%

ETF Portfolio 2

With *ETF Portfolio 2*, I have increased the concentration in the two foreign-focused ETF's by bumping up ADRE to 20%. I have also increased the energy concentration to 20%. The previous performance table also shows how this portfolio has fared. With higher sector concentrations to materials and emerging markets, along with energy, this arbitrary portfolio has gotten even closer to the performance of the top funds, and the total risk (as measured by SD) is coming closer to JSVAX, but is still far below CGMFX.

It is now time to drill a little deeper still. CGMFX has 13.7% of its holdings in Telecom, 3.7 times the weight in telecom in the S&P500. Using Morningstar (via the link above), you can see that the largest telecom stock holding is in Vimpel Communications (VIP, at a weight of 7.8%) and the second largest telecom is Mobile TeleSystems (MBT at 5.1% of assets). MBT is the largest wireless provider in Russia and a number of ex-Soviet bloc countries. VIP is the second largest wireless provider in Russia.

JSVAX has 12% of its assets in Media, 3.5 times the weight of this sector in the S&P500. This concentration includes 5% of assets in Liberty Global (LBTYA), a provider of cable and satellite networks in a range of developed and developing economies. There is also a substantial 4.2% investment in Coventry Health Care (CVH).

CGMFX has a 36% allocation to materials and JSVAX has a 20% allocation to this sector. Both have about 40% in foreign stocks. With these broad allocations in mind, I analyzed a portfolio that generally replicates the asset allocation, including allocations to the four top-weighted stocks mentioned above:

Ticker	Percentage of Funds
IVV	5%
IWR	5%
EFA	5%
ADRE	20%
IYM	25%
IDU	10%
XLE	10%
VIP	5%
MBT	5%
LBTYA	5%
CVH	5%

ETF + four stocks portfolio

When I analyzed the trailing three-year performance of the ETF portfolio with the four individual stocks, the overall performance has converged even further:

Ticker	Beta	SD	Average Annual Return
JSVAX	144.3%	12.1%	26.1%
CGMFX	95.8%	19.5%	26.6%
Equal weight in each ETF	108.9%	10.0%	22.5%
ETF Portfolio 2	118.9%	11.6%	24.3%
ETF Portfolio + 4 stocks	120.6%	11.6%	26.5%

Trailing 3-year Performance for Funds and ETF portfolios (through June 2007)

We are now seeing the determinants of performance in these two funds quite clearly. About 2.2% of the total return appears to be due to a small number of concentrated stock picks. The vast majority of the risk/return profile of this portfolio is simply due to sector

weighting. One may wonder, of course, whether it is wise to have 10% or more of assets in wireless providers in Russia and nearby countries.

A portfolio that is evenly split between JSVAX and CGMFX has a trailing average return of 26.3%, with a standard deviation of 13.8% over the past three years. The **ETF portfolio + 4 stocks** portfolio (call it **ETF+4**, for short) has a trailing average return of 26.5% per year, with a standard deviation of 11.6%. **ETF + 4** has a correlation of 79% and 81% to JSVAX and CGMFX (respectively) over the past three years. This is substantial, but not as high as we might expect. XLE has a correlation of 81% to the **ETF+4** portfolio, for example, despite making up only 10% of the portfolio. We have not strived to maximize this correlation, but rather to broadly capture the risk and return of the two mutual funds. Further, JSVAX has annual turnover of 39% and CGMFX has annual turnover of 333%. With these levels of turnover, correlations to any static allocation will be limited for a three-year period.

We have been looking backwards in the analysis thus far. How about going forward? I have used Quantext Portfolio Planner (QPP) to generate projections for these two cases (see table below). I will not go into details about how QPP generates its forward projections here, but a wide range of validation studies are available here:

<http://quantext.com/subpage.html>

QPP Projected Statistics		
Ticker	SD	Average Annual Return
50% each in JSVAX and CGMFX	29.7%	16.4%
ETF Portfolio + 4 stocks	21.9%	15.2%

Projected Statistics

QPP's projections suggest that the portfolio allocated 50/50 between JSVAX and CGMFX has a higher expected return than the **ETF+4** portfolio, but with substantially more risk. If we increase the weight to JSVAX to 65% (with the remaining 35% min

CGMFX), the projected average return is 15% per year, with a standard deviation of 25%. The most striking feature of the projections is that the mutual fund portfolio and the *ETF+4* portfolio are projected to generate substantially lower average returns in the future, along with substantially higher volatilities. Qualitatively, these results are reasonable and consistent with a range of other QPP analyses and are well supported by other research:

<http://etf.seekingalpha.com/article/34635>

We have been in a period in which materials, energy, and emerging markets have been generating out-sized returns with low volatility. This will not go on forever. Given that QPP does not attempt to replicate the actual management strategy of the fund and considering the high turnover of both funds and given uncertainties in future performance of assets, this projection is (naturally) quite approximate. In addition, the future risk and return for a mutual fund have additional uncertainty because the style can change in a wide range of dimensions. The main take-away from the projections is that these allocations are fairly aggressive and, as market volatility reverts to normal levels, these portfolios could get very volatile indeed.

What is the take-away here? We find that it is quite straightforward to develop a portfolio of ETF's and a few individual stocks that broadly captures the allocations, risk, and return of two top mutual funds. Second, we see that these "domestic equity" mutual funds have substantial concentrations to specific sectors. The fact that it appears to be quite easy to replicate the returns with the same general levels of risk suggest that investors can access these levels of performance with ETF's. If you are willing to take on a few individual stocks, you can replicate the trailing performance even more closely. At this point, each investor needs to ask himself or herself whether there is evidence that the managers' skill has generated the impressive trailing performance or, alternatively, simply an aggressive investment policy, along with a tolerance for taking on some risky positions—such as 10+% in Russian wireless. Is there evidence for sufficient incremental value (beyond asset allocation) to merit the fees that these funds charge and expense that they incur on the basis of their high turnover?

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>