



# ALTERNATIVE INVESTING

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## Hedge Funds: The (Somewhat Tepid) Defense

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[Recently](#) I used the CalPERS decision to eliminate their hedge fund program as a good time to review some of AQR's long standing comments on the industry — ultimately being sympathetic to CalPERS' decision. I included the self-serving caveat that I still believe hedge funds provide exposure to many good strategies that deserve to be in a portfolio, but I argued that they should be more fully hedged, more transparent, and delivered at a lower fee. I included in that entry one mild counter-point partially defending hedge funds. Namely, that some pick on hedge funds using flawed comparisons. The fact that hedge funds on average don't run at equity betas of either 1.0 or 0.0, but somewhere in between, confuses the dialogue. This entry expands on that one counterpoint as the flawed comparison I cite has gone viral.

It turns out, not surprisingly, that the CalPERS move has indeed inspired many others to also write on hedge funds. Unfortunately, a great deal of them suffer from the flaw I mention above. They focus on performance, sometimes very short-term performance, often, if not usually, confused by the beta issue. Just a few examples include [here](#), [here](#), [here](#), [here](#), [here](#), [here](#), [here](#), and [here](#). To be fair these are written by very smart people, who share many of my own concerns (yes, sadly, that's part of why I think they're smart!). But, the beta confusion trap shows up again and again. I explicitly addressed this in [#7 here](#) — all of the above can be considered a case study of this “peeve,” and the rest of this post is more specific evidence that people must account for this beta issue better.

In this entry, I'll review the evidence using the same hedge fund indices most of these articles use. These indices are generally seen as imperfect with some degree of [survivorship bias](#). This bias may overstate returns, particularly in the earlier days. However, some argue the other way claiming these indices understate returns as many well-known managers are not represented. I would guess the returns are still biased high, but the real message is don't take this analysis too literally as a blanket defense of hedge funds. Instead, take it as a fair counter-point using the exact same data the critics are using.

Below I touch on many of the sound bites currently being quoted as damning to hedge funds, and explain why they generally miss the mark — while asking the reader to remember I'm generally, and very recently again, a critic calling for various reforms of the hedge fund industry. I think hedge funds, as they stand now, deserve criticism, just the right criticism! Finally, this piece is about the industry as represented by the indices; obviously it's not close to applicable to every hedge fund.

### First a Regression (Perhaps Emotionally)

For hedge fund data I use the average of the monthly returns of the overall Credit Suisse Hedge Fund Index, and the HFRI Fund Weighted Composite Index. Regressing the overlapping, rolling annual (excess over cash) returns of hedge funds on the similarly constructed annual returns of the S&P 500 from 1994-2014 (ending June) you get:

$$\text{Hedge Fund Return} = 3.5\% + 0.37 * \text{S\&P 500 Return}, \quad R^2 = 57\% \\ (2.65) \quad (6.43)$$

The numbers in parentheses are t-statistics adjusted for overlapping observations. Using annual returns limits us to only about 20 independent observations, but results don't vary much over other horizons, and this is a simple way to partially adjust for the lags in reporting found by [Asness, Krail, and Liew \(2000\)](#). This method finds some small, statistically significant positive outperformance (monthly regressions, even adjusting for lags, find somewhat larger outperformance and larger betas but the point is analogous).

So, over the full period, as mentioned above, hedge funds have not been fully hedged to equity market returns, which would be a beta of 0.0. They also have not been close to fully exposed to equity markets, a beta of 1.0. Therein lies the rub. I think if they were fully hedged (0.0) or fully invested (1.0) we'd save a lot of confusion.

### Just Look at 2013

One accusation the critics make is “just look at 2013” when hedge funds, mistakenly often assumed to be very aggressive investments,

failed miserably to keep up with the S&P 500. They were up 9.4% versus a whopping 32.4% for the S&P 500. Oh the humiliation. But, let's ask ourselves, seeing as hedge funds aren't close to fully invested in stocks, and by definition the part of returns not captured by the regression is uncorrelated to stocks, how shocking is this? Below we plot rolling annual total returns of our hedge fund index against the same for the S&P 500 with 2013 being the red triangle. The graph is very consistent with the regression results shown and discussed above. There is a positive relationship between hedge funds and equity markets, but that relationship is far from one-to-one.

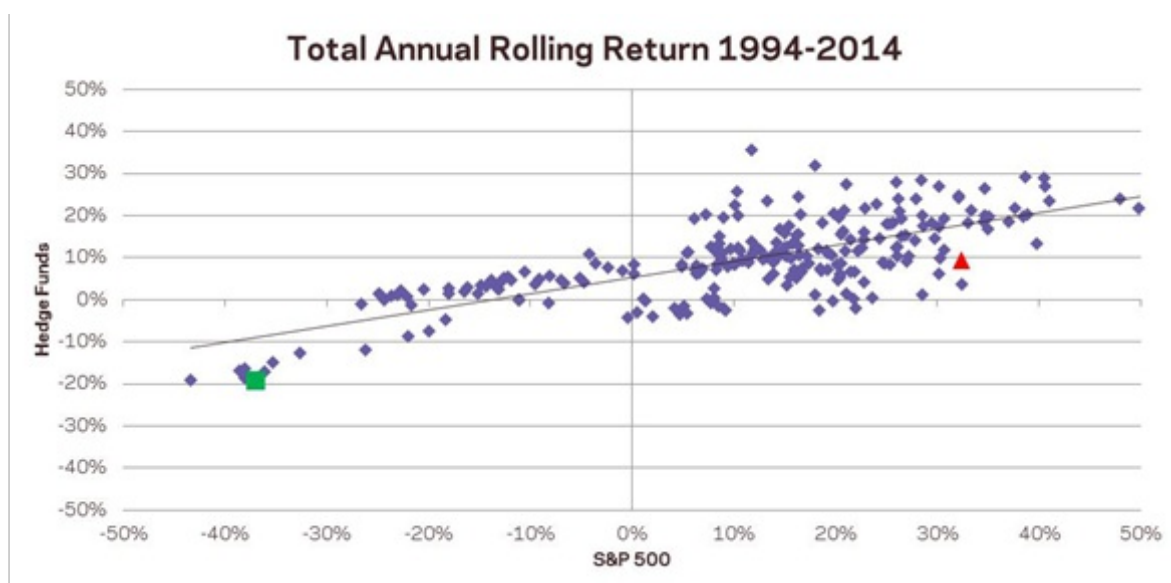


So, yes, it was a disappointing year (lying below the regression line). That's not a shock given it's a year the critics choose to focus on. But, it was really only mildly disappointing. Just looking at hedge funds versus stocks it seems like a really bad year for them. But, when you adjust (statistically or just with your eyes) for the fact, one well known before 2013, that hedge funds as a group are net long but way less net long than 1.0, you expect them to trail in such a year. I could bore you with standard deviations, but there are obviously plenty of years that lie further from the regression line than 2013. Essentially, most of the 2013 based criticism of hedge funds is driven by a failure to understand that hedge funds are not meant to keep up with the S&P 500 one-for-one, certainly not when it soars. Of course some stars will keep up, either by luck or skill, but as a broad category it's never been the case at such a time.

As an aside, to keep it simple I'm sticking to U.S. stocks, but hedge funds often run fairly global portfolios, and given the U.S. outperformed most of the world in 2013, this is a somewhat tougher comparison to make for hedge funds that year.

#### Just Look at 2008

Another data point thrown at hedge funds is about the opposite environment. Not only did they fail to keep up in 2013, but they failed to protect you in 2008. True! But yet again we must ask how surprising this is to one who knows that hedge funds are neither fully hedged nor fully exposed to stocks? Below the green square highlights calendar year 2008 on the same graph from above.



Again, a disappointment even versus my regression line (remember, again, we are defending periods the critics have already chosen as disappointing, so we start out in the hole!). But, again, a far more mild disappointment (roughly half as surprising). Given how crazy markets were back then, it's probably less surprising than that — some statistical techniques adjust for different volatility environments but I have kept it simple here. Going the other way, regression betas pre-2008 were a bit lower (about 0.32 vs. the 0.37 I show above for the full period) so on that front maybe it's a bit more surprising. Forces go in both directions, but all considered, it's a way smaller "shock" than just

looking at the total return while ignoring the beta to equities.

In fact, when one realizes that hedge funds are, and always have been, only partially hedged to equity market returns, neither 2013 nor 2008 would make anyone jump up and say, “Wow, hedge funds acted shockingly differently than we expected.” Ignoring their positive beta (“Just look at 2008”), or implicitly acting as if it’s 1.0 (“Just look at 2013”), makes for some exciting sound bites but is very misleading. By-the-way, some actually over-praise hedge funds for “only” losing about 20% in 2008 while equities lost much more — such lauding is equally missing the point as the critiques I highlight here just from the other direction.

### Just Look at the Last 10 Years, or Versus 60/40, or Any Other Way You Like

Some of the critiques have focused on the more reasonable comparison to the 60/40 portfolio of stocks and bonds. Let’s look at that, and at some other statistics on all the portfolios. Stocks are again the total return on the S&P 500 index, and bonds are the U.S. Barclays Aggregate Index.

	Stocks	Bonds	60/40	Hedge Funds
Compound Return	9.3%	5.9%	8.3%	8.7%
2008	-37.0%	-5.4%	-22.0%	-19.0%
Full GFC	-49.2%	10.4%	-30.0%	-17.1%
Worst Drawdown	-51.0%	-5.2%	-32.5%	-20.5%
2013	32.4%	-2.0%	17.6%	9.4%
Last 10 Years	7.8%	5.0%	6.6%	6.1%

The “Compound Return” is annualized over the full 1994–2014 period and on that measure hedge funds look OK. They come in at a small deficit to stocks, but beat 60/40, a much closer beta comparison (actually 60/40 is still a bit more volatile with a higher equity beta). Looking at hedge funds versus this more relevant 60/40 portfolio shows a close race in 2008 with the edge to hedge funds. Next, the row called “Full GFC” is not just 2008 as I graphed above, and which many of the articles critical of hedge funds reference, but July of 2007 through February of 2009, which is a closer approximation to the full crisis in markets. Over this more relevant period (after all, calendar years are arbitrary), hedge funds handily beat both stocks and 60/40. The next row after that is the worst drawdown for each investment. For stocks, 60/40 and hedge funds, the worst drawdowns occurred around the same time period as the GFC. Viewed over this draconian “how bad could I possibly do with perfectly bad timing” the hedge fund indices have been considerably less dangerous than 60/40 (–20% isn’t fun, but –32% is worse! — of course some of this comes from hedge funds being lower volatility than 60/40, but that’s also a drag on their long-term compound returns). 2013 is the notable exception to much of the above since hedge funds actually did decently underperform. Because that’s the most recent period, literally last year, it tends to get nearly ubiquitously overweighted in opinion pieces. Finally I show annualized compound returns over the last 10 years, a period sometimes used to criticize hedge funds versus the first half of the sample. The critique rings true, but only very quietly, has hedge funds have only trailed 60/40 by a bit.

### Why Bother to “Hedge” at All if You’re Long-Term

Of course, in building a portfolio one doesn’t have to choose between stocks, bonds and hedge funds. One can and should be building a portfolio of the best combination, not looking at individual asset classes or artificially limited combinations.

A particularly misguided question related to this, in that it fails to grasp that one is building a portfolio not choosing the best single investment, is “why bother to hedge at all if you’re long-term?” I mean, long-term investors shouldn’t eschew but embrace risk as that leads to higher returns, right? And hedging is running away from risk, no? This argument, made in some of the links cited above, misses some crucial things basic to portfolio construction.

In building an optimal portfolio, all investors should look for investments that produce long-term positive returns (note, this is not the same thing as saying they always work) that aren’t very correlated to what they already own (say, stocks). The observation that a long-term, or for that matter a short-term, investor shouldn’t want merely a “hedged” portfolio is true. They should want a portfolio that hedges away the risks they already bear (say, stock market risk) and includes other sources of return not very correlated with those risks. They should want that regardless of time horizon. (I address later the issue of paying alpha fees for beta performance.)

Now I’ll look at a portfolio that’s ex post optimal over this 1994–2014 period. Now, ex post optimal always overstates how good things could have been (it’s ex post after all). It takes small victories and sees them as certainties, as we are looking backwards. But, if we can keep that in mind, I think it’s still instructive to see what these optimal portfolios look like. In other words, what would we have done if we knew what would happen over the 1994–2014 period to these asset classes?

I’ll run a simple optimization looking at the 1994 to 2014 data. The optimization looks for the highest compound return allocating passively (not changing this allocation around intra-period) across stocks, bonds, and hedge funds, without allowing leverage, and limiting realized volatility of rolling annual returns to that of the 60/40 portfolio (using annual instead of monthly volatility again just biases it a bit against hedge funds). When you do this you get the rather radical portfolio of 31% in equities, 0% in bonds, and 69% in hedge funds (yes, I’m

usually the one talking about how important more bond diversification is, that's coming soon). The results look like this:

	Stocks	Bonds	60/40	Hedge Funds	31/0/69
Compound Return	9.3%	5.9%	8.3%	8.7%	9.1%
2008	-37.0%	-5.4%	-22.0%	-19.0%	-24.8%
Full GFC	-49.2%	10.4%	-30.0%	-17.1%	-28.2%
Worst Drawdown	-51.0%	-5.2%	-32.5%	-20.5%	-31.0%
2013	32.4%	-2.0%	17.6%	9.4%	16.1%
Last 10 Years	7.8%	5.0%	6.6%	6.1%	6.7%

I do not claim that many would undertake this portfolio, which is mostly hedge funds plus some straight equity. But it is the optimal one, subject to my conditions, over this period, and it did produce reasonable results over the last 10 years, a period used by some to criticize hedge funds. Incidentally, the last column shows that what worked "optimally" well for 20 years would still have done pretty poorly in 2008 — you'll have to wait until the next section to see that change for the better.

### Now Let's Get Crazy

The results above might appear confusing, particularly the non-existent role of bonds in the optimal portfolio. They might appear especially confusing given my full-throated defense of the role of bonds in [other places](#). But I snuck a constraint into the optimization above — no leverage allowed. Without leverage hedge funds replace bonds as the most attractive low risk asset over this period (remember, hedge funds are correlated with equities but are still low beta making them a candidate for a low risk asset). Now let's re-run the exact same ex post optimization and volatility target but lift this nolverage constraint. Well now the optimal portfolio is 0% equities (yes, 0%), 227% bonds (yes, 227%), and 90% hedge funds (yes, 90%). While there may be practical issues, perhaps fewer than you might think, you'll see below that this has not been a particularly dangerous portfolio compared with the others. What's going on here is hedge funds are a combination of equity exposure and "other strategies," and since they come as a package you don't need equities directly anymore. With leverage allowed you can now obtain the one thing equities uniquely offered, aggressive returns but with a more diversified portfolio (equities still uniquely offer this aggressiveness without explicit leverage, but remember that they have plenty of implicit leverage). Hedge funds are seen as equity related but better substitutes, and the role of the low risk asset re-emerges for bonds as with leverage they can be held in enough size to matter. The next table looks at how this portfolio would have performed:

	Stocks	Bonds	60/40	Hedge Funds	0/227/90
Compound Return	9.3%	5.9%	8.3%	8.7%	15.3%
2008	-37.0%	-5.4%	-22.0%	-19.0%	-10.5%
Full GFC	-49.2%	10.4%	-30.0%	-17.1%	-2.9%
Worst Drawdown	-51.0%	-5.2%	-32.5%	-20.5%	-23.1%
2013	32.4%	-2.0%	17.6%	9.4%	3.2%
Last 10 Years	7.8%	5.0%	6.6%	6.1%	13.8%

Yeah, those results are kind of silly good. It's what you get from combining the benefits of risk parity (roughly equal risk exposure to multiple risk premia) and hedge funds over this period, two things that we know were good over this time frame, in the ex post optimal amount. Full period compound returns go way up, the financial crisis is far less damaging, the worst drawdown is not as severe and shorter (happening during the GFC but lasting only 9 months), and only 2013 was a (relative not absolute) loser versus 60/40 and prior combinations we have looked at (as both risk parity famously had a tough year, and hedge funds underperformed stocks).

By-the-way, if instead of over the full period we optimize the same way but maximizing compound return over the last 10 years, the period correctly seen as not quite as good for hedge funds as the first half, instead of 0/227/90 the optimal portfolio is 0/253/74. Yep, a bit more bonds and a bit less hedge funds, but they still dominate equities over this "worse" period.

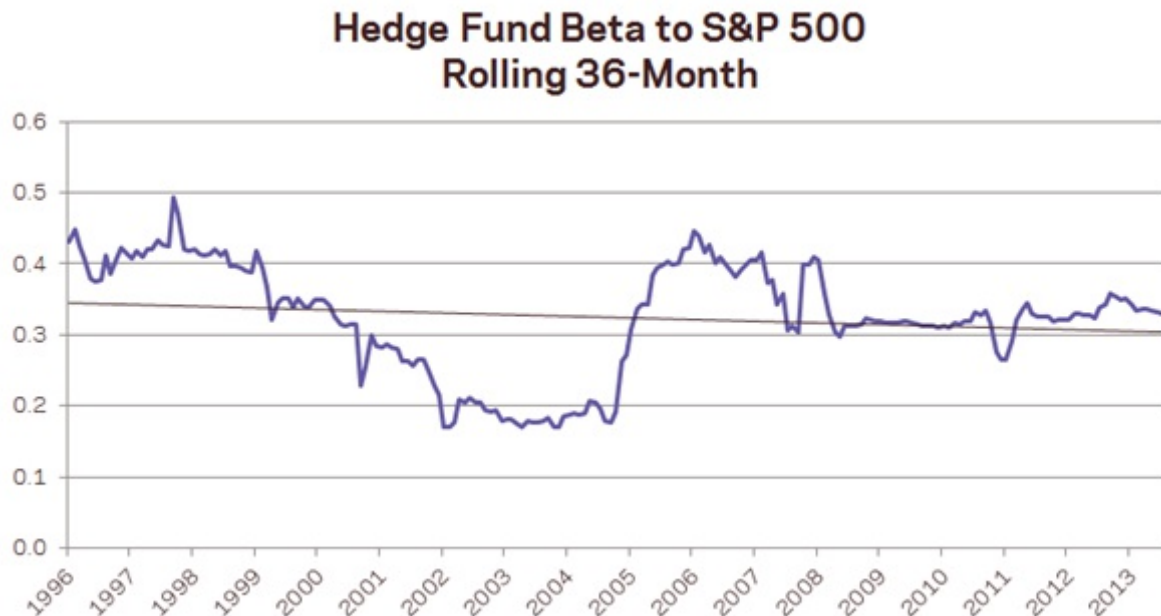
OK, our brief excursion into hedge funds plus risk parity land is over. I hope it was an interesting short detour.

### What, in This Same Data, Is a Cause for Real Concern?

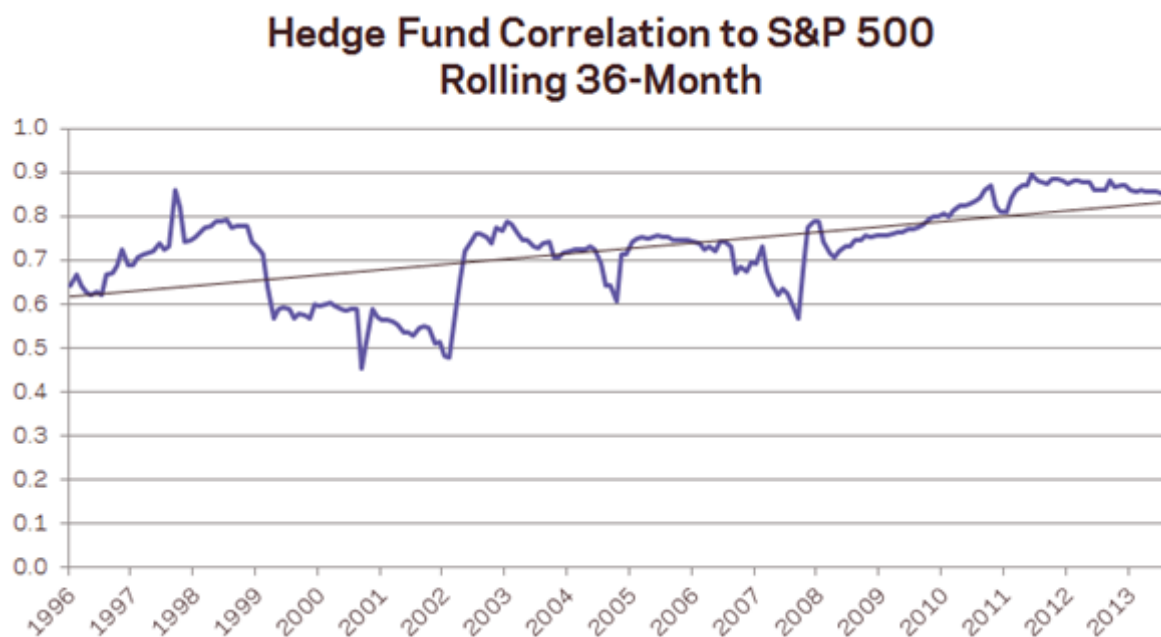
So, while many of the critics' comments miss the mark, there are concerns beyond what I talked about in my [earlier post](#). There does seem to be a change in hedge fund behavior over time. Before I jump into this, let me caution you in advance. If you say to me "this isn't enough time to draw strong conclusions and things may change again," I'll tell you that I think you are right. If someone else wrote this I'd point that out myself! The changes through time could be temporary. With that caveat, I do think they're worth exploring. While perhaps random fluctuations, I give the story told by the upcoming data more credence as it does jibe with an industry that's grown somewhat too large. For me, data plus a story that rings true is always more powerful than either alone.

Using the same proxy for overall hedge funds, I'm now going to examine a bunch of three-year rolling results. The choice of three years is pretty arbitrary but I've tried both two- and four-year periods as well, and you get roughly the same results. Choosing three years gets me about seven independent rolling periods and feels long enough not to be flat out silly to examine with monthly data.

Let's first look at the rolling three-year realized beta (to the S&P 500) of hedge funds (each graph has a linear trend line also):



Well, we see above the standard evidence that hedge funds are net long (the beta clearly averages positive and in fact is always positive). But, interestingly, there's no real trend. Hedge funds don't look particularly longer now than earlier in our sample. Now let's do the same with correlation to the S&P 500 instead of beta.



Now we have a trend going (the trend line starts just above 0.60 and ends well above 0.80, and the realized correlation has been high versus history for quite some time with the GFC notably absent from the prior 3 year sample for a while now). Many use the terms beta and correlation fairly interchangeably. Clearly they aren't the same and they aren't the same in a fairly simple way. Correlation to the market does not depend on volatility (how aggressive you are), it only says how much of your return is (linearly) explained by the market. Beta is affected by that but also scaled by how aggressive you are. Consider an example. You put half your money in an S&P 500 index fund and



half in T-Bills. Your correlation with the S&P 500 (excess returns) is 1.0, but your beta to the S&P 500 is 0.50. Again, correlation is about how well you move together; beta is about that and about how aggressive you are.

What is going on with hedge funds is that they are still about as net long as before, but the positions they are taking around this average net long seem less aggressive. In geek language, hedge funds' beta to the S&P 500 has been relatively stable, as correlation has risen and volatility has fallen; this is not a good development for fee-paying hedge fund investors. You don't pay high hedge fund fees for the net long market exposure. That's something you stomach if you get enough of the good stuff. The good stuff you pay hedge fund fees for is the uncorrelated return in excess of that net long in stocks (I'm implicitly ignoring any possible returns from timing this equity beta). It appears that less "attempted good stuff" is going on now than there used to be (the "attempted" is partly a guess — we can only measure the actual returns, not what they intended).

Another way to view this is in realized active risk space. Over each 36 months, subtract the full period long-term beta, or 37%, of the return on the S&P 500 (using rolling estimates may be better if beta moves are real and predictive going forward, it may be worse if not; this is not something I've explored yet). Then let's plot the annualized standard deviation of this "hedged" diversified hedge fund portfolio.



It's not been a one way ride, and remember, not all risk, even active risk, is voluntarily chosen. The period around the tech bubble and the GFC both saw larger than normal realized active risk. We can't separate intentional from unintentional active risk using this method, and it seems clear much of the active risk around these periods, particularly the GFC, was unintentional. Similarly recent low active risk is probably, at least partly, a result of calmer than usual markets, and that part could come back over time with no change in hedge fund behavior. Still, the trend appears clear. Hedge funds have been doing less around their average net long position rather steadily over time when viewing the whole 20 years.

Using this same crude methodology we plot the realized alpha of hedge funds over the prior 36 months. That is, we take their summed monthly returns over cash, subtract 37% for the S&P 500 excess return and look at the annualized average of this hedged performance of "realized alpha" for the prior 36 months:

## Hedge Fund Realized Alpha Rolling 36-Month



We see the first non-trivial negative alpha of the 36-month rolling periods at the very end. Viewing this same data one final way, below is the cumulative alpha over time (no more rolling 3-year periods) using the full period 37% hedge ratio on the S&P 500:

## Cumulative Hedge Fund "Alpha"



Clearly it's flattened since the GFC. Is this the new reality, or random fluctuation? I don't know, but it makes the list of concerns and adds fuel to my tepidness (at this point I burn with white hot tepidity).

### Conclusion

Many of the current articles that are critical of hedge funds may be giving good advice, but for the wrong reasons. Hedge funds, broadly speaking, are, and always have been, net long equities, but nowhere near fully invested. That is, again, they have betas between 0.0 and 1.0, two numbers that would both be much easier to analyze than the truth! Their performance in the specific years often cited, 2008 and 2013, are much less anomalous when this is acknowledged. 2008 was not as bad for hedge funds as it looks when they are viewed alone, as they are net long and expected to fall with the market, and 2013's underperformance versus the market is not as bad as hedge funds are not close to fully invested, and thus, not generally expected to keep up with a skyrocketing market.

The point of hedge funds has never been just the "hedging." It has been, and continues to be, that they include strategies that produce positive returns over time and aren't very correlated with the markets (the hedging was only important to get these strategies without too much market exposure). If you use the same indices many articles have used to critique hedge funds you see they have been a positive over the last twenty years, and in our most unconstrained look back, fully replace equities as a companion to bonds in a solution resembling "risk parity."

So why is this only a tepid defense? First, as stated earlier, I have my concerns about these indices. That is, do they really represent the experience of most broadly diversified hedge fund portfolios? Second, the trend is not hedge funds' friend. Over time they have been

providing the same expensive stock market beta but less of the uncorrelated stuff — the reason to invest with them in the first place. Third, and still most important to me, the critique in my [original post](#) still stands. The “uncorrelated stuff” I refer to may in fact be true manager alpha, (color me cynical but convincing!), but is also composed of many known strategies that, even if they survive hedge funds’ very high fees, should be available to investors at more reasonable fees (as they are known!) and with more transparency.

Basically, it’s far more complicated than many of the critical articles imply. But one thing the critics do get very right is that hedge funds should be a better deal for investors.

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