AVERAGE ANNUAL FEES ON INVESTABLE HEDGE FUND INDICES AND FUND OF FUND INDICES CAN AND DO REACH 50% OF GROSS RETURNS

As discussed in our last essay ***"Sharpe Ratios Reported by Hedge Fund Indices Underestimate Annual Standard Deviation,"***[1] Sharpe Ratios reported by hedge fund indices (and by definition hedge funds themselves) are significantly overstated due to the fact that serial correlation is not included in the calculation of estimated annual volatility. The Credit Suisse Broad Hedge Fund Index ("CSBHFI"), for example, reports an annualized Sharpe Ratio of 0.80[2] from inception through May 2014 when its actual annual Sharpe Ratio (i.e. the Sharpe Ratio that directly calculates the standard deviation of 20 years of annual returns) is 0.54. This essay intends to demonstrate that in addition to being subject to notable serial correlation, hedge fund returns are hampered by excessive "path dependent" fee structures and also uncertain return expectations.

Fees Paid by Investors: "Buy and Hold" Scenario

BarclayHedge estimates the hedge fund industry had $2.2 trillion in assets under management ("AUM") as of Q1 2014.[3] To put this number in perspective, US Household Financial Assets were $67.2 trillion as of Q1 2014,[4] and Global Financial Assets (the value of equity-market capitalization, corporate and government bonds, and loans) were $225 trillion as of Q2 2012.[5] Based on these published figures, hedge funds represent 1.0% of global financial assets.

When measured in terms of fees, however, the size of the hedge fund industry expands noticeably. According to the Goldman Sachs Thirteenth Annual Global Hedge Fund Investor 2013 Survey,[6] annual management fees averaged 1.65% of assets and annual incentive fees averaged 18.3% of profits net of management fees. Given the Goldman Sachs fee averages, total fees paid to hedge fund managers can be estimated both as a percentage of hedge fund assets as well as a percentage of gross returns.

For example, the Credit Suisse Broad Hedge Fund Index had a five year average annual return, net of fees, of 8.37% from 2009-2013.[7] Using the Goldman Sachs published fee averages (1.65% and 18.3%), and assuming a buy and hold investment strategy, the calculated annual gross return for the CSBHFI was approximately 11.90% over this time frame. Based on this estimate of gross return, fees paid to hedge

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[1] Rulle, M. "Sharpe Ratios Reported by Hedge Fund Indices Underestimate Annual Standard Deviation," http://www.msrinvestments.com/contact/contact.html

[2] Credit Suisse Hedge Fund Indexes, http://www.hedgeindex.com (accessed June 30, 2014).

[3] BarclayHedge, http://www.barclayhedge.com/research/indices/ghs/mum/HF_Money_Under_Management.html (accessed June 30, 2014).

[4] Federal Reserve Statistical Release Z.1 Financial Accounts of the United States B.100 Balance Sheet of Households and Nonprofit Organizations 1, http://www.federalreserve.gov/releases/z1/current/accessible/b100.htm (accessed June 30, 2014).

[5] Lund, S., Daruvala, T., Dobbs, R., Harle, P., Kwek, J. and Falcon, R. "Financial globalization: Retreat or reset?", *McKinsey Global Institute*, March 2013, http://www.mckinsey.com/insights/global_capital_markets/financial_globalization (accessed June 30, 2014).

[6] Goldman Sachs Prime Brokerage, "Thirteenth Annual Global Hedge Fund Investor Survey 2013," http://www.slideshare.net/BrianShapiro1/goldman-sachs-pb-13th-annual-global-hedge-fund-investor-survey.

[7] Credit Suisse Hedge Fund Indexes, http://www.hedgeindex.com (accessed June 30, 2014).

fund managers accounted for approximately 3.52% of assets and 30% of gross returns for the CSBHFI, a non-investable index (when analyzing investable indices, fees represent a considerably larger percent of assets, as discussed below in ***Investable Credit Suisse AllHedge Index***).

By comparison, ICI Research estimates that annual fund expenses for equity mutual funds and bond mutual funds averaged 74 basis points and 61 basis points, respectively, in 2013.[8] Using CSBHFI as the "market benchmark for hedge funds", hedge fund fees were five times greater than average annual mutual fund fees. At the extreme end, average annual hedge fund fees were 18 times greater than Vanguard 's reported average annual expense ratio of 19 basis points[9] (coincidently, Vanguard's AUM is roughly the same size as the hedge fund industry overall).

As high as these figures may seem, these hedge fund fee estimates likely understate the true dollar weighted fees paid by investors for two reasons. First, investors often do not adhere strictly to buy and hold investment strategies and second, the existence of incentive fees (which are "path dependent" depending on timing of returns relative to the dollars invested) exacerbates the negative impact of poor investment timing on dollar weighted fees paid by investors.

Fees Paid By Investors: Non "Buy and Hold" Scenario

Stated incentive fees are the minimum incentive fees paid by investors as they represent an absolute lower bound. The only way an investor pays **only** the actual aggregate stated incentive fee on a hedge fund portfolio across a particular holding period is if he manages a hedge fund portfolio during which time all managers have a positive total rate of return net of management fees. If even a single manager has a negative return net of management fees in a total hedge fund portfolio which generates positive returns, the investor will still incur overall portfolio incentive fees greater than the stated aggregate minimum as the investor is required to pay the full rate to the money makers.

Perhaps the most insidious aspect of incentive fees is how costly it becomes for ill-timed investors to trade in and out of hedge funds. In the previous section, our return analysis assumed that investors buy and hold. The fact is, however, that investors (not just hedge fund investors but mutual fund investors as well) tend to exhibit "return chasing" behaviors. John Bogle of Vanguard has demonstrated this phenomenon for decades in his advocacy for buy and hold mutual fund investing. Due to return chasing behavior, actual investors' true "dollar weighted" returns are lower than what one would expect assuming a buy and hold investment strategy.

Similar to Bogle and the mutual fund industry, Dichev and Yu discuss the costs associated with return-chasing in the hedge fund industry in their paper, ***"Higher Risk, Lower Returns: What Hedge Funds***

[8] Gallagher, E. and Duvall, J., "Trends in the Expenses and Fees of Mutual Funds, 2013," *ICI Research Perspective*, vol. 20, no. 2 (May 2014): 1.
[9] https://investor.vanguard.com/mutual-funds/low-cost?WT.srch=1

Investors Really Earn".[10] The authors estimate that return-chasing behavior costs hedge fund investors approximately 3-7% annually versus a buy and hold investment style.

Certainly one cannot blame a hedge fund manager for an investor's poor timing practices. That being said, the existence and structure of incentive fees accentuates the problem. Dichev and Yu estimate that mutual fund investors cost themselves approximately 1.5% per year due to poor timing versus buy and hold. As bad as that number is, it is still significantly lower than their estimates for hedge fund investors. Incentive fees are a major reason for this difference and significantly increase the probability that actual fees paid will be higher than stated fees. To repeat, stated fees are the absolute lower bound for any hedge fund investor because of the existence of incentive fees.

Uncertain Return Expectations: Non-Investable Indices versus Investable Indices

In addition to being hampered by a rather onerous fee structure, hedge funds are also subject to uncertain return expectations as evidenced by the wide ranging non-investable and investable hedge fund indices that purport to represent the hedge fund industry as a whole.

As it pertains to non-investable hedge fund indices, one must ask the question: If a hedge fund index is not investable and can't be replicated in an investment strategy (due to liquidity restrictions, the inclusion of closed funds, etc.), what does it really tell us about expected returns? Ultimately, unlike the S&P 500, few hedge indices exist in which one can invest. Take the CSBHFI, for example, which reports a lifetime Sharpe Ratio of 0.80. The CSBHFI contains approximately 500 funds which are selected from Credit Suisse's database of 9,000 funds such that the index represents 85% of the assets in the database (at both the overall index level and the sub-sector level). Even with relatively high correlation among its strategies, the more funds included in the CSBHFI, the greater the measured Sharpe Ratio is likely to be given the benefits of diversification. Unfortunately, these diversification benefits are not attainable by investors because investors cannot invest in the index. ***Thus, Credit Suisse's hedge fund industry "Market Sharpe", besides being overstated due to the fact that serial correlation is not taken into consideration, is simply not achievable by any individual investor.***

Pictet Alternative Investments describes many of the issues involved in analyzing different existing hedge fund indices in its essay ***"Hedge Fund Indices: how representative are they?***".[11] Mesirow Financial, in its essay ***"Understanding Hedge Fund Indices, Biases and Methodologies"***[12] also covers this topic. These essays reinforce our view that it is challenging to use manager based indices to make accurate decisions on how to invest in or "benchmark" hedge fund investments. Pictet shows the lack of overlap of performance from a variety of non-investable indices. It is striking how these index returns

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[10] Dichev, I. and Yu, G., "Higher Risk, Lower Returns: What Hedge Fund Investors Really Earn," *Journal of Financial Economics*, vol. 100, no. 2 (May 2011): 248-263.

[11] http://www.pictet.com/content/dam/pictet_documents/pdf_documents/pai_documentation/hedgefunds_indices_en.pdf)

[12] (https://www.mesirowfinancial.com/advancedstrategies/collateral/whitepapers/mas_wp_2011_understanding_hedge_fund_indices.pdf)

have such a wide range of performance given that they are created to be representative of the hedge fund market as a whole.

Ultimately, Pictet concludes that Fund of Funds Composite Indices (for example, the ***HFRI Fund of Funds Composite Index***[13]) most accurately represent expected hedge fund returns (despite being non-investable) because each index component contains as many as 100+ underlying funds that are all investable. Mesirow Financial makes a similar point. Of course, the weakness in using these indices as benchmarks is that these indices do not show underlying hedge fund styles. Despite this noted weakness, we agree with Pictet regarding Fund of Funds Composite Indices as being the most representative of true investable (maybe "quasi-investable") manager based indices.

Investable Hedge Fund Index Example: Credit Suisse AllHedge Index

Credit Suisse recognized the point made by Mesirow and Pictet and created two capital weighted investable indexes in 2004, one of which has recently been discontinued.[14] The Credit Suisse AllHedge Index (the surviving investable index) is the equivalent of a capital and style weighted single fund of funds that seeks to be an actual investable index representing the hedge fund market in its entirety. We agree with Credit Suisse's marketing statement that AllHedge is "the industry's most representative asset-weighted and fully invested strategy based index". At any point in time the index includes 10-25 funds in each of its ten sub-categories which seek to represent approximately 70% of assets in each sub sector and 70% of the Credit Suisse database of 9,000 funds as a whole.

Consistent with the "Fund of Funds" concept of Pictet and Mesirow, AllHedge charges itself an additional annual fund of funds management fee of 84 basis points. Surprisingly, even after adding back this 84 bps fund of fund management fee to its returns, Credit Suisse's AllHedge Index, since 2004, has produced a Sharpe Ratio[15] of only 0.34 vs. the Credit Suisse Broad Hedge Fund Index's Sharpe Ratio of 0.82 over the same period of time. In other words, Credit Suisse's representative investable hedge fund index was nearly 60% lower than its representative non-investable index. The primary difference between the two indices after taking fees into consideration: AllHedge does not include closed funds. This fact alone would seem to imply that the best performing hedge funds are both large and closed. For investors who are considering making new investments in the hedge fund industry, we believe that estimates for expected returns are better derived from investable indices as opposed to "non-investable" indices.

"The Relentless Rules of Humble Arithmetic" - Vanguard

Based on the philosophy discussed above in terms of which indices best represent the investable hedge fund market on a look forward basis, we chose three representative indices and calculated their performance as well as their fees relative to performance. The results, included in Table 1 below, demonstrate the magnitude of the impact hedge fund fees have on net performance. Indeed, based on

[13] https://www.hedgefundresearch.com

[14] Credit Suisse discontinued the Credit Suisse Blue Chip Hedge Index.

[15] Sharpe ratio incorporates the Gerald van Belle adjustment for serial correlation in the estimation of annualized volatility.

the analysis included below, one could argue that average annual fees on investable hedge fund indices and fund of fund indices can and do reach as high as 50% of gross returns.

Table 1: Hedge Fund Index Returns and Fees

Performance and Fees	HFRI Fund of Funds Composite Index 1990 – 2013	BarclayHedge Fund of Funds 1997 - 2013	Credit Suisse AllHedge Index 2004 – 2013
Net Annual Geometric Mean Return	7.35%	5.84%	2.79%
Standard Deviation of Annual Returns	10.31%	10.08%	8.42%
Average annualized 90 day rolling T-Bill rate	3.16%	2.46%	1.62%
Excess Mean Geometric Return	4.19%	3.39%	1.18%
Sharpe Ratio	0.41	0.34	0.14
Estimated Fee Structure	1.65% Management 18.3% Incentive 0.84% Fund of Fund	1.65% Management 18.3% Incentive 0.84% Fund of Fund	1.65% Management 18.3% Incentive 0.84% Fund of Fund
Implied Gross Return	11.67%	9.83%	6.10%
Total Fees as a Percentage of Assets	**4.32%**	**3.99%**	**3.30%**
Total Fees as a Multiple of Excess Return	**1.03x**	**1.18x**	**2.81x**
Total Fees as a Percentage of Gross Return	**37%**	**41%**	**54%**

Reviewing the results of our performance and fee analysis in Table 1 above, it is striking the percent of return that is not being distributed to investors, but instead being retained by hedge fund managers (**37%-54%** of gross return) in the form of fees. Further, the returns shown in Table 1 above are "buy and hold" return results and thus represent the ***maximum return and minimum fees*** for an investor. No wonder hedge funds represent only 1% of global financial assets. Ironically, these styles still have the ability to provide correlation benefits, but few and far between are the managers who can overcome the fee structure. We believe that at an annualized volatility of 10 percent, a more reasonable fee structure for many hedge fund strategies would range from 25-75 basis points annually, particularly if one can achieve that exposure via a liquid alternative index.