# Taconic Capital Advisors L.P.
Is There Enough Alpha Available for Long-Short Equity Funds?[i]

Alpha is the excess return earned by skill in stock-picking, over and above one's exposure to the market as a whole. Since 1993 there has been a distinct downtrend in the statistical alpha earned by Equity Long-Short hedge funds. However alpha, in aggregate, is a zero-sum game. If one class of funds generates some positive alpha, some other class of investors must provide it, to their detriment. Through analysis of the relative size and skill of investment classes, we attempt to quantify the total alpha available to hedge funds in primarily U.S. equity markets over the past 25 years. From 1993 to 2008, equity ownership of individual households, the most significant alpha providers, fell from over 50% to 22% as hedge fund equity ownership grew from 1% to over 5%. In our model, this caused a precipitous drop in alpha available to hedge funds. This decline corresponded with a similar fall in realized alpha of Equity Long-Short hedge fund indices. Since 2008, both available alpha and realized alpha have been close to zero, net of fees.

We make various simplifying assumptions given the scale of our model, most notably with regard to skill. Following research papers by Barber & Odean (2000) and Fama & French (2009)[ii], we assume a fixed gross-of-fees alpha return per dollar invested in each of the non-hedge fund classes: -100bps per annum for the household sector, who lose money by unwise stock picking, and +25bps for active mutual funds. We attribute 0% alpha to all other equity ownership classes, predominantly passive investment vehicles such as ETFs and index mutual funds, which exhibited strong and steady growth through the period 1993 – 2017.

The data for the equity market share of various investment classes come primarily from the U.S. Federal Reserve's "Financial Accounts of the United States" quarterly report. We combine the equity market share with hedge fund AUM data from Hedge Fund Research (HFR) and BarclayHedge, and we make equity leverage assumptions in order to compute the total hedge fund industry's equity market ownership[iii]. We also use Investment Company Institute (ICI) data on index mutual fund AUM to separate active mutual fund ownership from the Federal Reserve mutual fund numbers.

Ownership % of US Listed Equity + US Resident Foreign Equity Holdings
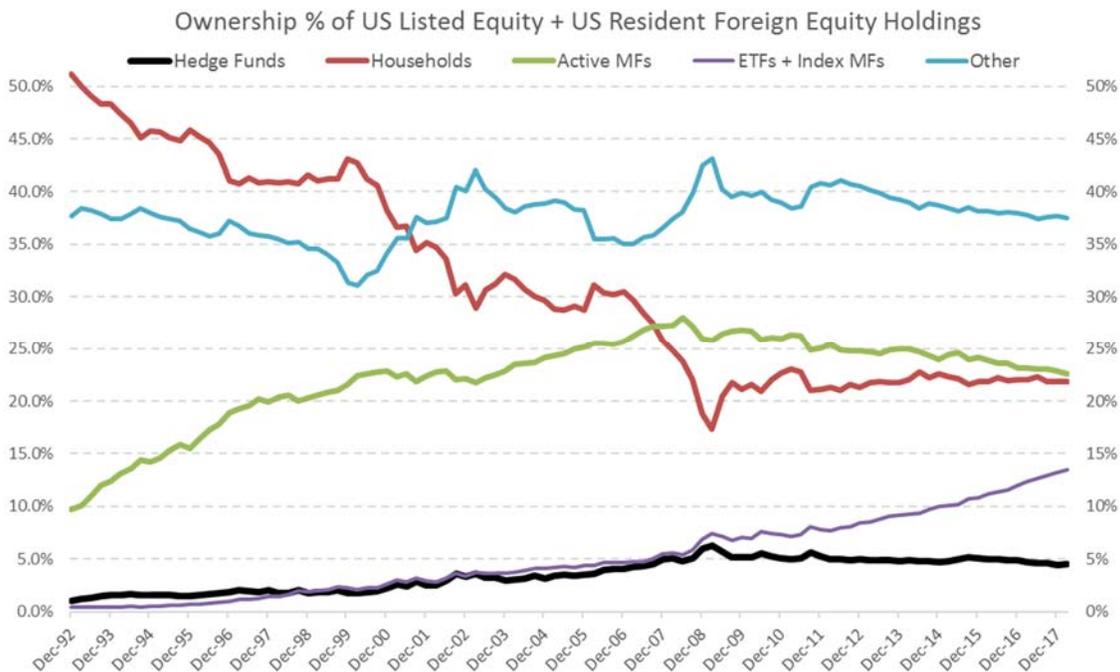
In order to compute the gross theoretical alpha "available" to hedge fund equity ownership for any given period, we apply the following formula:

$$HF\ \alpha = -\frac{HH\ \alpha\ \times HH\ \%Own + MF\ \alpha\ \times MF\ \%Own}{HF\ \%Own}$$

...where HF, HH and MF stand for hedge fund, household and active mutual fund respectively and all alphas are over dollars invested and gross of fees. This formula is based on the above-mentioned "alpha zero-sum game" intuition and simplified to assume the aggregate alpha from non-hedge fund classes flows directly to hedge funds. Clearly, as hedge funds own more of the market, aggregate alpha is spread over a larger base, resulting in less alpha per hedge fund dollar invested.

We now compare these results for theoretical alpha to Equity Long-Short statistical alpha using the average monthly returns of HFRI, BarclayHedge and Credit Suisse hedge fund indices[iv]. We extract statistical alpha relative to the S&P 500[v], and we use the Federal Funds rate as the risk-free rate in the CAPM definition of alpha. This calculation yields alpha for net-of-fee returns; we therefore deduct hedge fund fees (assuming 1.5% management and 20% performance fees) from theoretical gross returns derived from our model's gross alpha plus risk-free and market beta returns to get theoretical net alpha in the table below.

5yr Periods annualized returns inclusive of end years	Statistical and Theoretical Alpha			Equity Long-Short Return Factors				Average Ownership as % of Equity Market				
	Statistical Net Alpha	Theoretical Net Alpha	Theoretical Gross Alpha	Equity LS Avg. Net Return	S&P 500 Beta	S&P 500 Return	Risk Free Avg. Rate	Hedge Funds	House - holds	Mutual Funds	ETFs + Index MFs	Other
1993 - 1997	11.0%	18.3%	26.8%	20.9%	0.33	20.3%	4.7%	1.5%	45%	15%	1%	37%
1998 - 2002	10.4%	11.8%	16.8%	12.8%	0.39	-0.6%	4.4%	2.0%	39%	22%	2%	35%
2003 - 2007	4.4%	2.0%	5.8%	11.8%	0.44	12.8%	3.1%	4.0%	29%	25%	4%	38%
2008 - 2012	-0.1%	1.0%	3.0%	0.9%	0.40	1.7%	0.6%	5.1%	22%	26%	7%	40%
2013 - 2017	0.5%	0.6%	3.7%	6.5%	0.37	15.8%	0.3%	4.4%	22%	24%	11%	39%
End Q1 2018		1.1%	3.6%		0.37	5.0%	1.5%	4.5%	22%	23%	14%	38%
	* Assumes 1.5/20 fees on gross α + β returns			* 1993-1997 just HFRI, after avg. of HFRI, CS & BarclayHedge				* Hedge Fund ownership based on all HF AUM (not just LS)				

Since 1993, there has been a distinct downtrend in both realized statistical net alpha and our stylized model theoretical net alpha, and both have been close to zero since 2008. Market structure as of Q1 2018 implies that this trend may continue, as hedge fund ownership, though off its highs, remains elevated relative to households. Clearly, this isn't a proof of why Equity Long-Short funds haven't performed as well as they have in the past but an attempt at connecting trends in macro market structure with the intuition that supply and demand are at play in the marketplace for alpha.

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This commentary is proprietary information of Taconic and may not be reproduced or otherwise disseminated in whole or in part without the written consent of Taconic.
[ii] Eugene F. Fama and Kenneth R. French "Luck versus Skill in Mutual Fund Performance" (December 2009);

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1356021
We take Fama & French equity mutual fund aggregate net alpha of -0.81% per year from 1984-2006 and add back average fees of around 1% to get our rough gross alpha number for active mutual funds
- Brad M. Barber and Terrance Odean "Trading is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors" (April, 2000);
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=219228
Barber & Odean have individual household aggregate alpha after costs as -3.7% annually from 1991-1996. Given such a short analysis period and only ~65,000 individuals at one "large brokerage firm," we haircut this negative alpha number in our analysis to -1%.

[iii] Total market value is from Corporate Equities section of the "Financial Accounts of the United States" (section L.223 in www.federalreserve.gov/releases/z1/20180308/z1.pdf) and includes "holdings of foreign corporate equities and investment fund shares by U.S. residents: includes American Depositary Receipts (ADRs)." Therefore total market capitalization in this analysis is larger than U.S. market capitalization (by ~$9T in Q4 2017). We removed private equity from this section ("Closely held equity").
- Hedge fund AUM data comes from Hedge Fund Research (HFR) "Global Hedge Fund Industry Report – First Quarter 2018" for 1993-1997 and a simple average of HFR and BarclayHedge AUM estimates after 1997 (earliest year for BarclayHedge)
- Total hedge fund industry equity ownership includes ownership estimates from Event-Driven funds that invest in equities, such as Activist or Special Situations strategies, as well as Equity Long-Short funds – the focus of this analysis
- We set long equity leverage on AUM for Equity Long-Short and equity based Event-Driven strategies (such as Merger Arbitrage) at 1.30 and apply other long equity to AUM ratios for diversified strategies based on experience and broker research. The actual equity leverage employed by any particular strategy on average may differ materially from these assumptions.
- Since the Federal Reserve market value data is based on U.S. based ownership of all equities and foreign ownership of US equities, we made estimates on U.S. based hedge funds (75% of total) and non-U.S. hedge fund investments in U.S. equities (25%).

[iv] Given data history constraints, the 1993-1997 period is just HFRI and after is a simple average of HFRI, CS and Barclayhedge Equity Long-Short hedge fund index returns
- The HFRI Equity Hedge (Total) Index (the "HFRI Index") comprises investment Managers who maintain positions both long and short in primarily equity and equity derivative securities. A wide variety of investment processes can be employed to arrive at an investment decision, including both quantitative and fundamental techniques; strategies can be broadly diversified or narrowly focused on specific sectors and can range broadly in terms of levels of net exposure, leverage employed, holding period, concentrations of market capitalizations and valuation ranges of typical portfolios. These managers would typically maintain at least 50% exposure to, and may in some cases be entirely invested in, equities, both long and short.
- The Credit Suisse Long/Short Equity Index (the "CS Index") is an asset-weighted hedge fund index derived from the Credit Suisse database of more than 5000 funds. The directional strategy involves equity-oriented investing on both the long and short sides of the market. The objective is not to be market neutral. Managers have the ability to shift from the value to growth, from small to medium to large capitalization stocks, and from a net long position to a net short position. Managers may use futures and options to hedge. The focus may be regional, such as long/short US or European equity, or sector specific, such as long and short technology or healthcare stocks. Long/Short equity funds tend to build and hold portfolios that are more concentrated than those traditional stock funds.
-The Barclay Equity Long/Short Index (the "BarclayHedge Index") comprises managers employing a directional strategy involving equity-oriented investing on both the long and short sides of the market. The objective is not to be market neutral. Managers have the ability to shift from value to growth, from small to medium to large capitalization stocks, and from a net long position to a net short position. Managers may use futures and options to hedge. The focus may be regional or sector specific. The BarclayHedge Index is recalculated and updated real-time as soon as the monthly returns for the underlying funds are recorded. Only funds that provide Barclays with net returns are included in the index calculation.

[v] The S&P 500 Total Return Index (the "S&P 500") is a market value weighted index consisting of 500 stocks chosen for market size, liquidity and industry grouping, and is meant to reflect the risk/return characteristics of the large cap universe. It combines the price returns and dividend yield of the S&P 500 Index. All returns include reinvested dividends except where indicated otherwise.