

Methodology

Qi's Fair Value Gap (FVG) analysis was used to construct a long/short portfolio consisting of the 50 single name US stocks in the S&P 500 with the most extreme FVGs; 25 longs ranked as cheapest according to Qi's macro models and 25 shorts ranked as the most expensive. **Over the last 12 years this L/S strategy returned an annualised 12.3% compared to an annualised return of 2.0% for the HFRX EH - Equity Market Neutral Index (HFRXE Index).**

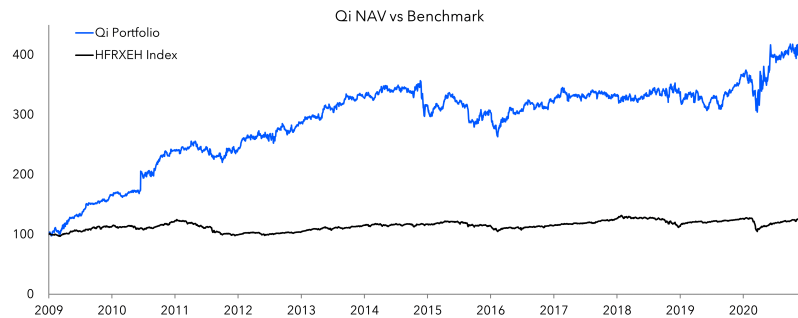
Qi's machine learning algorithm calculates a daily fair value for all securities using the prevailing macro factors for each security. Qi's Fair Value Gap (FVG) is the difference between the prevailing spot market price and this model value and these FVGs can be used as trading signals to generate alpha. Qi Labs back-tested the quality of this signal using the long term FVGs (250 business days look back) across the S&P 500 (with no membership bias). The sample period tested runs from 2nd January 2009 to 23rd November 2020.

To test these trading signals, Qi created a rolling portfolio consisting of those assets with the largest absolute FVGs subject to just one constraint: upon entry, model R^2 had to be 65% or above. Qi's R^2 is a measure of the variance of any security that can be explained by macro factors. Therefore a new trade is only added to the portfolio if the asset is in a macro regime i.e. can be well modelled using macro factors. Trade exit did not depend on R^2 . Positions are closed when the FVG for a stock moves inside 0.25 standard deviations and simultaneously the stock with the next biggest FVG is added to the portfolio. A stop loss parameter was set at -25%. The average holding period for trades in this strategy was 20 trading days.

Long positions are equally weighted at inception and subsequently the notional from each closing position is used to open the next long. For shorts, a dynamic position size optimiser was developed by Qi Labs and employed. The short position sizes are a function of a Qi vol indicator, which tries to pre-empt spikes in VIX using R^2 values from various x-mkt assets. When the Qi vol indicator is high, new short position sizes are increased, and vice-versa. There is no discretionary overlay employed, we are purely testing the reliability of Qi's Fair Value Gaps as trading signals, and the accuracy of using R^2 as a vol indicator. Trading costs have not been considered.

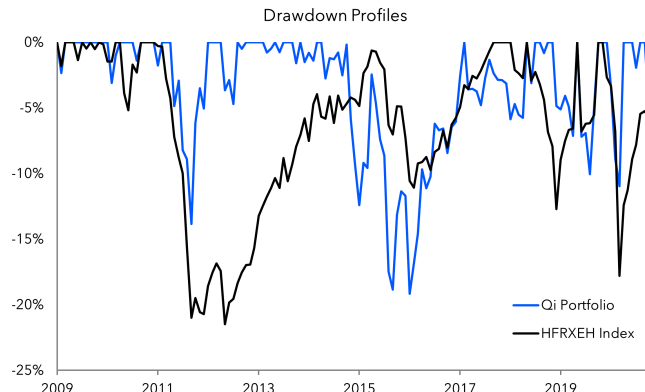
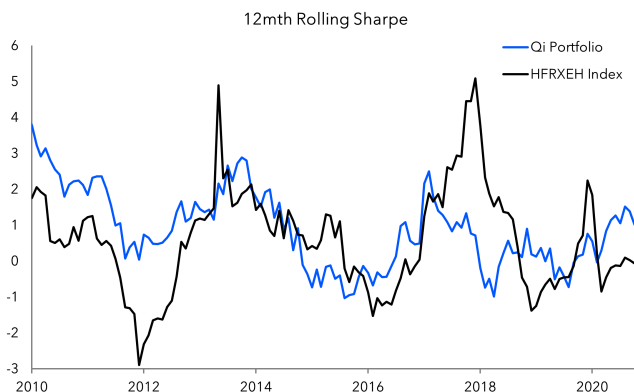
Performance

	Qi	HFRXEH
Return CAGR	12.3%	2.0%
Avg. Monthly Return	1.0%	0.2%
Avg. Monthly Gain	3.3%	1.4%
Avg. Monthly Loss	-2.1%	-1.6%
Avg. Monthly Gain/Loss	1.6	0.9
Max Monthly Gain	13.9%	5.2%
Max Monthly Loss	-9.3%	-9.6%
Full Period Sharpe	0.96	0.29
1yr Rolling Sharpe High	4.08	5.09
1yr Rolling Sharpe Low	-1.03	-2.89
Max Drawdown	-19.2%	-21.5%



Monthly Returns

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr	HFRXEH
2009	5.7%	-0.5%	5.7%	12.6%	3.2%	3.8%	6.4%	5.9%	1.1%	1.8%	-0.5%	7.3%	65.9%	12.5%
2010	2.2%	-3.3%	1.4%	3.3%	0.4%	13.9%	3.3%	-2.4%	13.0%	3.4%	-0.2%	4.0%	44.7%	8.9%
2011	-1.7%	2.8%	1.9%	3.4%	-3.5%	-0.7%	-4.1%	-1.6%	-3.1%	7.4%	1.6%	-2.0%	-0.1%	-19.1%
2012	8.2%	1.6%	-0.5%	3.4%	-3.1%	1.2%	-1.9%	6.0%	-0.2%	-1.4%	3.0%	2.6%	19.9%	4.8%
2013	2.3%	0.8%	0.1%	0.5%	4.6%	-0.7%	3.0%	-0.3%	3.6%	-0.9%	2.0%	-1.4%	14.2%	11.1%
2014	0.5%	-0.6%	3.7%	1.0%	-1.7%	2.0%	-1.9%	1.9%	-2.6%	4.2%	-6.3%	-4.2%	-4.4%	1.4%
2015	-3.9%	4.7%	-1.9%	7.2%	-1.1%	-3.4%	-0.6%	-9.3%	-1.1%	4.6%	1.8%	0.8%	-3.1%	-2.3%
2016	-7.3%	-0.4%	3.6%	5.4%	-0.9%	1.3%	3.6%	0.1%	0.0%	-1.7%	0.6%	1.1%	5.0%	0.1%
2017	4.0%	1.6%	-1.3%	0.2%	-1.4%	0.0%	1.3%	1.5%	-0.8%	0.0%	-1.9%	0.8%	4.0%	10.0%
2018	-0.9%	-0.3%	-0.3%	-2.0%	1.8%	1.8%	3.6%	-0.5%	-0.6%	-0.7%	2.7%	-3.2%	1.1%	-9.4%
2019	-1.3%	1.3%	-2.9%	0.7%	-5.3%	4.5%	1.4%	-3.8%	6.1%	1.5%	3.2%	3.9%	8.9%	10.7%
2020	-3.5%	-6.1%	1.8%	11.5%	-1.3%	8.1%	-2.0%	3.2%	3.1%	-3.5%	-1.3%	-	8.9%	0.4%



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