Aquila Group

THE MANY FLAVOURS OF EQUITY MARKET NEUTRAL

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1. What is Equity Market Neutral?

1.1 History

A vehicle started by Alfred Winslow Jones in 1949 is widely dubbed as the first hedge fund. It was arguably equity market neutral (EMN), taking long and short positions in equities. Today, some of the world's largest and longest established hedge fund managers (including AQR Capital, Two Sigma, Marshall Wace, Man GLG, Systematica and Balyasny Asset Management) run equity market neutral strategies trading equities globally. Over the decades, advances in academic finance, data and technology have allowed equity market neutral strategies to evolve enormously, as we discuss below.

The strategy has also become more accessible. In the early years, hedge funds were quite exclusive but now the advent of liquid alternatives means they can be accessed through UCITS in Europe, 40 Act funds in the US, exchange-listed closed end funds, and some active ETF launches are expected. But hedge funds restricted to variously defined institutional/sophisticated/qualified/accredited investors also attract allocations from collective, social savings pools. Over a billion savers are indirectly invested in EMN strategies via their pension or insurance funds.

1.2 Types of Equity Market Neutral

Equity market neutral can be initially split into systematic and discretionary.

Systematic EMN can be subdivided into two broad categories: Statistical arbitrage and fundamental analysis. Statistical arbitrage (stat arb) approaches will use technical inputs, which are mainly historical price data, but could also include volumes. Traditionally, stat arb was based on mean reversion models but these are among many forms of pattern recognition. The most modern types of statistical analysis can include machine learning technology and non-fundamental scoring. Fundamental or factor-based approaches mainly use fundamental data such as accounting and economic data (but can also use price data for factors such as momentum).

Discretionary EMN can also be split in two categories, with either a fundamental or a multi-strategy approach. A fundamental value approach would involve pairs trading. A multi-strategy approach can include event driven trades. Multi strategy can also be a very broad label that includes hybrid approaches, blending systematic and discretionary inputs.

1.3 Commonalities

All equity market neutral approaches that we have seen, have substantially less equity market exposure than a long only fund. All aim to generate most or all of their returns from alpha, rather than beta. All have some short exposure to equities, via one or more of single stocks, sectors or indices.

2. Who Should Consider Equity Market Neutral, Why and When?

Some 60% of investor strategy interest is in equity strategies, according to UBS Capital Consulting, Hedge Fund Landscape Update 2Q 2017.

After an eight-year bull market in global equities, some investors might have forgotten about market neutral strategies but many institutions are actively allocating to the space. Some 11% of hedge fund manager searches were for EMN, according to a Preqin report in 2015.[1]

The Deutsche Bank Alternative Investment Survey, which surveyed 504 investors representing USD 2.1 trillion of assets, found that 32% wanted to increase their allocations to equity market neutral strategies in 2016. Recent examples of institutional investors seeking EMN managers include the Ohio Police and Fire Pension Fund in the US and Korea Post pension fund in Asia.

2.1 Portfolio Construction – an equity complement?

Where do EMN strategies fit into portfolios? EMN funds, as the name suggests, should have little or no directional exposure to the equity market (but this is not always true as we discuss later). Their low volatility and low equity market correlations should therefore reduce volatility and drawdowns for portfolios exposed to equity markets. As such, equity market neutral can be seen as a complement for equity long-only or long-biased equity long/short exposure.

For a simple example, if we start off with a classic 60% equities, 40% bonds portfolio and replace 10% of the equities with an equity market neutral strategy index, the return to risk and Sharpe ratios increase, as shown below. Maximum drawdowns would also have been reduced.

[1] *https://www.preqin.com/docs/newsletters/hf/Preqin-HFSL-March-15-Fund-Searches-and-Mandates.pdf*

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Risk and Return, January 2005 – December 2018

MSCI World Equity	JP Morgan Govt. Bonds	CISDM Equity Market Neutral	Average Annual Return	Standard Deviation	Return to Risk Ratio	Sharpe Ratio	Max DD
60%	40%	0	4.58%	8.58%	0.53	0.37	–35% (Oct 08 – Feb 09)
50%	40%	10%	4.59%	7.22%	0.64	0.44	–31% (Sept 08 – Feb 09)
			Improvement		0.10	0.08	4%

Source: Aquila Capital Concepts GmbH, Bloomberg

2.2 Diversification Benefits

Equity market neutral generates a better diversification benefit than long/short or hedge funds in general. This is because indices of equity market neutral strategies have nearly always shown lower correlations to equity markets, than have indices of equity long/short strategies, as shown below.

Correlation to MSCI World Equity Index, January 2005 – December 2018

Equity Market Neutral Index	HFRX	HFRI	BarclayHedge	CISDM	Average
Correlation	0.12	0.56	0.28	0.48	0.36
Equity Long/Short Index	**HFRX**	**HFRI**	**BarclayHedge**	**CISDM**	**Average**
Correlation	0.81	0.92	0.85	0.88	0.86

Source: Aquila Capital Concepts GmbH, Bloomberg

Many equity long/short funds have a long bias, and their correlations to equity markets can be quite high. The rolling correlation does fluctuate over time as some equity long/short funds may have hedges, or they tactically reduce or reverse their exposures, but on average they retain significant equity beta. (Note that the Barclay Equity Long/Short Index is something of an outlier because BarclayHedge categorises long-biased equity long/short managers into a separate index, which in effect means that the Barclay Equity Long/Short Index is a variable bias index. This in turn implies that these managers are making directional calls, akin to global macro strategies.)

2.3 A Bond Substitute?

Yet many equity market neutral strategies have a level of volatility and returns more typically associated with fixed income investments, as shown below. Most of the equity market neutral indices have shown volatility 1% either side of the J.P. Morgan Government Bond Index, whereas long only equities have exhibited volatility roughly five times as high as bonds.

Volatility of Equity Market Neutral Indices, January 2005 – December 2018

Equity Market Neutral Index	HFRX	HFRI	BarclayHedge	CISDM	MSCI World Equity
Volatility	3.55%	2.60%	2.54%	2.12%	14.72%

Source: Aquila Capital Concepts GmbH, Bloomberg

As such, equity market neutral shares some features akin to bonds. Over the time period we are observing, replacing half of a 40% bond allocation with equity market neutral would have had a marginal impact on risk and return, as shown below, while significantly reducing interest rate duration risk.

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Risk and Return, January 2005 – December 2018

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60%	40%	0	4.58%	8.58%	0.53
60%	20%	20%	4.59%	7.22%	0.64

Source: Aquila Capital Concepts GmbH, Bloomberg

However, going forward we need to ask whether the performance of bonds over the past twelve years is repeatable, and whether replacing equities with bonds makes sense. A significant element of bond returns has come not from their ongoing yield, but from capital gains arising from lower interest rates increasing their valuation. This would only be repeatable if some bond yields turned negative while others sunk further into negative territory.

If instead interest rates rise back towards more normal historical levels, equity market neutral should avoid the interest rate sensitivity of fixed income assets, which are vulnerable to rate rises. The assumption that fixed income bonds will diversify equities is open to question as the two asset classes could decline simultaneously.

2.4 Where Do EMN Returns Come From?

In a climate of low or zero interest rates, returns come mainly from the spread between long and short book performance, minus fund fees and costs. The lack of reliance on market direction means EMN strategies can potentially perform well in an equity bull market, bear market, or in a range-bound sideways market. When and if interest rates normalise, the interest on excess cash (minus fund fees and costs) can also make a significant contribution to returns (and could do in 2017 if a USD return stream was to be hedged back to a higher yielding currency).

2.5 A Cash Plus Strategy

Moreover, equity market neutral is a cash-efficient strategy that actually benefits from rate rises. The strategy takes short positions by physical shorting the stocks. Since the long book of an EMN strategy is substantially financed by the proceeds of short sales, EMN strategies are sitting on excess cash that can be up to 70% of NAV and should earn some interest rate yield. Therefore, equity market neutral can, to some extent, be seen as a "cash plus" strategy, earning interest on cash, plus or minus alpha generated from stock selection.

The amount of excess cash is largely a function of leverage. Assuming 15% margin on equities, the table below illustrates how cash levels may vary with leverage. Of course, margin levels will vary between markets and stocks, and can change over time.

NAV	Leverage	Avg Margin %	Long	Short	Unencumbered Cash	Margin Requirement on Short Positions	Excess After Margin
100	2	15	100	100	0	–30	70
100	3	15	150	150	–50	–45	55

Source: Aquila Capital Concepts GmbH, hypothetical calculation

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2.6 Sizing Allocations to EMN Strategies

Individual allocations will involve investors mapping their return targets, risk appetites and liquidity preferences against those of equity market neutral strategies. A basic portfolio mean/variance optimisation exercise, adjusted for liquidity tolerances, will often suggest a significant allocation to many equity market neutral strategies. More sophisticated portfolio construction approaches will look at factor exposures – and these can vary greatly between EMN managers.

2.7 Risk Factors

The largest risk factors will tend to be idiosyncratic, stock-specific risk, or factor risk. More specifically, the risk is negative alpha from a long book that in aggregate underperforms the short book. On the short book, there is an additional risk of stock loans being recalled or repriced upwards. Security borrowing can also entail counterparty risk. Where portfolio construction is predicated upon historical or forecast patterns of correlations between securities, sectors, markets, and regions, unexpected patterns of correlation can lead portfolio risk to overshoot or undershoot targets, and may cause losses.

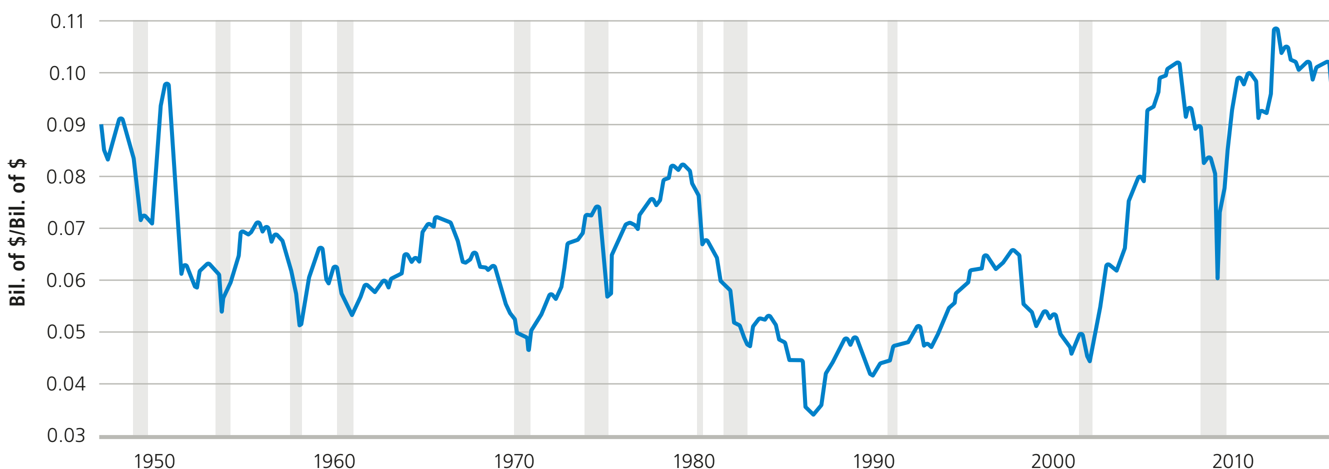
2.8 De-Risking Portfolios and Shedding Beta

Many institutions need to reduce equity exposure for various reasons. They may have a mature liability profile; solvency and capital adequacy rules may penalise long only equity exposure; and some pension funds even face negative cash flows in net terms.

Unconstrained allocators might also want to reduce equity exposure if they perceive equities to be highly valued. Calling a market peak is a fool's errand but some allocators rebalance portfolios incrementally, reducing exposure to more richly valued asset classes and increasing exposure to less richly valued ones.

Equity markets are not expensive in absolute terms, possibly because the denominator of the P/E equation is historically high. The profit share of US GDP is close to its highest levels, according to data below from the St Louis Fed.

Corporate Profits after Tax (without IVA and CCAdj)/Gross Domestic Product



Source: fred.stlouisfed.org/https://fred.stlouisfed.org/graph/?g=1Pik

US corporate profits peaked a few years ago and the latest leg of the US equity bull market has been driven by multiple expansion (and possibly hopes of tax cuts) rather than profit growth. Corporate profits could fall if labour secures a higher share of GDP, due to factors such as higher minimum wages in many US states, and wage pressures in China and Eastern Europe.

Allocators who believe that corporate profits might be at relatively high levels, may instead look at a cyclically-adjusted PE ratio such as the Shiller CAPE. This appears below and the current reading around 30 is roughly double the historical median near 15, albeit below the heights reached at the top of the TMT bubble in 2000. On this basis, US equities – which make up around half of global market capitalisation – are valued above historical averages.

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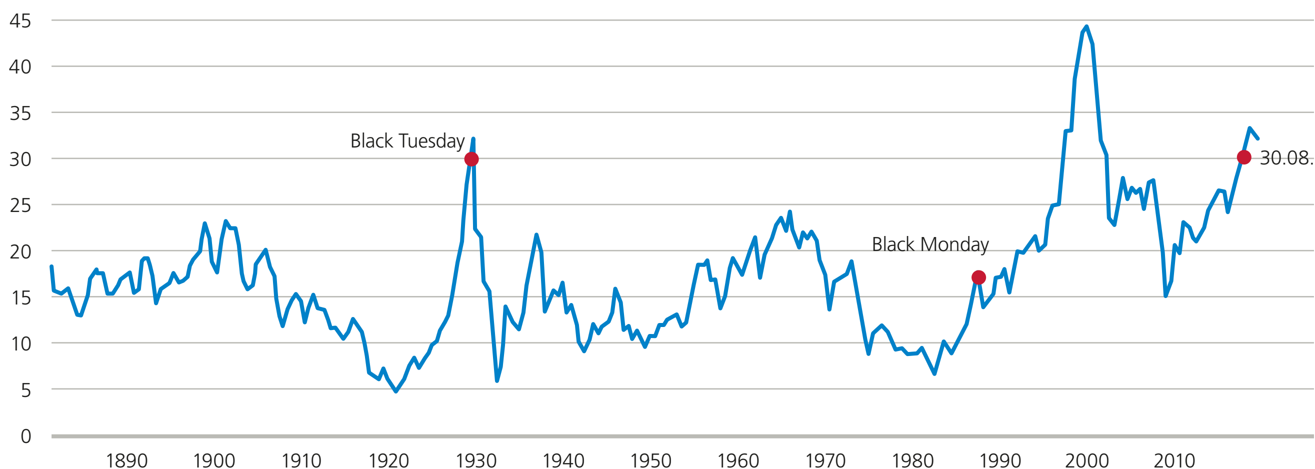
Historical Shiller PE Ratio



Source: http://www.multpl.com/shiller-pe/

Of course, equities are not highly valued relative to government or corporate bond yields. To the contrary, the Fed Model suggests that equities are undervalued, according to Yardeni Research. And at the time of writing, the consensus is that the Fed will not raise rates again until 2019. However, consensus rate forecasts are pretty volatile and can often be wrong. If interest rates do mean revert towards more normal historical levels, equities will no longer look cheap on a relative basis.

As aforementioned, higher interest rates should bode well for the absolute level of equity market neutral returns.

Apart from interest on cash, the difference between long and short book performances is the main driver of returns. Therefore, a greater cross-sectional dispersion of returns improves the opportunity set for active management in general and equity market neutral in particular.[2] For much of the post-credit crisis period, stock dispersion has been at low levels. In late 2016 and 2017 it has started to pick up.

Increased stock dispersion improves the potential for all market neutral strategies. The explosion in sector dispersion seen since Donald Trump was elected helps those market neutral strategies that are not sector neutral.

2.9 Institutional Investors Are De-risking Portfolios

In October 2014, The Institutional Investor Custom Survey group surveyed pension plans running US$1.9 billion or more and found 42% of plans were reducing equity allocations while 35% were increasing allocations to alternatives.

2.10 Why are EMN Strategies Good Candidates for UCITS?

While it is generally possible to adapt an offshore strategy in a UCITS format, it might be done at the expense of performance. EMN strategies are usually easily replicable, as their strategy naturally fits UCITS. First they trade equity stocks, which are fully eligible products. Although the strategy cannot use shorts under a UCITS structure, it can resort to Contracts for Difference (CFDs). Second, an EMN manager will look at avoiding a specific country, or industry exposure, which entails having a wide investment universe, and a diversified portfolio. This generally ensures that issuer and risk spreading limits are respected. Finally, equity market neutral is a cash rich strategy, which will hence not be constrained by regulations applying to borrowing limits.

3. What Features to Look for in an EMN Manager

Some criteria apply to any hedge fund selection process. A long track record that has maintained returns through market and economic cycles – including the 2008 crisis and periods of high correlations between stocks – is desirable in demonstrating the resilience, adaptability and versatility of an approach.

3.1 Geographic Spread

Equity market neutral strategies can focus on particular regions or may be global. For long only investors since 2009, US equities have greatly outperformed European and Asian equities but, as market neutral strategies are taking little or no directional risk, the potential for alpha generation is more relevant. Here, many studies suggest that US small caps, and non-US equities, may be less efficient markets offering more scope for alpha.

http://www.q-group.org/wp-content/uploads/2014/01/Cross-Sectional-Dispersion.pdf

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Generally, Grinold and Kahn's fundamental law of active management states that the information ratio is skill multiplied by breadth or the number of independent investment opportunities. One dimension of breadth is geographic coverage so a wider geographic investment universe may improve the opportunity set, partly because inter-regional correlations can be very low.

The size of the investment universe for equity market neutral strategies has grown partly as the development of security lending markets has made it possible to short more stocks, particularly in Asia. Many managers have taken advantage of this and expanded their purview to include Japanese, Asia ex-Japan, Canadian, Latin American and other emerging market equities.

3.2 Fundamental or Technical or Both?

Statistical arbitrage is lowly correlated with the full universe of equity market neutral strategies, which may be based largely or entirely on fundamental inputs. For instance, the CISDM Equity Market Neutral Index has shown a correlation of only 0.32 to BAIF-Equity Statistical Arbitrage Hedge Funds Domiciled Globally, between January 2005 and December 2016. Allocating to both statistical arbitrage, and fundamentally oriented approaches, can therefore increase portfolio diversification benefits.

3.3 Defining Neutrality

Clearly the fact that indices of equity market neutral funds have shown equity market correlations ranging from 0.1 to 0.6 shows that this strategy is a broad church.

The strategy label "equity market neutral" should not throw investors off the scent of deeper research to find out precisely what is neutral and what is not in each strategy. Equity market neutrality can be measured across many dimensions, and the parameters defining neutrality are also subjective.

The simplest concept of market neutrality is a dollar neutral portfolio where the long book is of the same nominal size as the short book, implying a net exposure of 0% (though net exposure in a range of +_5% to 10% is often thought to be broadly market neutral). The obvious flaw here is that if either side of the portfolio had a much higher beta, a dollar neutral portfolio could have significant market exposure in beta-adjusted terms. Tolerance of beta varies widely. Morningstar's equity market neutral category ranges between a realised equity beta of +0.3 and -0.3 whereas other investors would expect to see a much tighter range of +0.2 to -0.2 or even +0.1 to -0.1. Strategies that have minimal or no beta can be viewed as "beta neutral".

But even when we control for market beta, there are plenty of other risk exposures, including:

- Country
- Currency
- Industrial sector

and popular risk factors or styles such as:

- Value
- Momentum
- Growth
- Quality
- Market capitalisation size

Arguably to isolate pure stock specific risk, the "strictest" or purest market neutral strategies would need to hold constant all of these other risk exposures. The objective here would often amount to pairs trading. In practice doing so would be complicated and might entail frequent portfolio rebalancing and incur high transaction costs. Therefore, most market neutral strategies will allow some latitude for risk factor exposures within limits.

Allocators need to ascertain which risk factors are being neutralised or mitigated and which are being taken. Back-tests of so-called "smart beta" strategies suggest that emphasising certain factors could have generated strong returns. However, a possible danger of keeping a hard-wired, structural exposure to popular factors is that where factors are already well understood, their alpha generating power may be eroded over time or may simply not match current cycles. For example, the much vaunted "value" factor outperformed for a multi-decade period but has greatly underperformed over the past decade. Therefore, portfolios can benefit from the flexibility to tactically and dynamically tilt portfolios towards or against factors as an additional source of alpha. More specifically, strategies where the returns are less prone to be explained by generic factor exposures, will be more attractive.

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3.4 Generic or Next Generation Factors?

More importantly, proprietary and new factors and data sources may be more likely to differentiate a strategy from the growing range of more generic products that track well-understood risk factors. More modern factors include behavioural and cognitive biases that are codified into actionable signals. Academic research into fundamental anchoring includes Richardson, Sloan and You's 2012 paper, which showed that fashion can matter as much as fundamentals in determining stock prices – and the two families of factors combined have more explanatory power than either does alone. Some managers are widening their horizons by drawing upon a growing range of datasets, including unstructured data, as well as more traditional fundamental, asset pricing and capital flows data. Insightful data can be derived from Apple's App store, and data from options and security lending markets. Techniques, such as text mining and natural language processing (NLP), are used to draw inferences from companies' conference call transcripts. These multiple inputs can throw up opposing signals so they need to be aggregated to arrive at a useful conclusion. However innovative the process is, the outcome might still be somewhat overcrowded positions. Consequently, some managers are also making a conscious effort to mitigate crowded exposures by monitoring their correlation to, and ownership/shorting overlap with, other hedge funds.

3.5 Return Attribution

The beta of equity market neutral strategies to the MSCI World Index should be pretty close to zero and the majority of returns should not come from the generic factors of quality, value and momentum.

3.6 Capacity in Equity Market Neutral

Slower portfolio turnover increases capacity since greater volumes can be traded absent of market impact over longer periods. Capacity constraints arise more from the short book, since the availability of security borrowing is limited and its cost may increase with the quantity required. Equity market neutral strategies using indices on the short side tend to be more scalable, but clearly miss out on the chance to generate alpha from shorts. A number of leading equity market neutral strategies, including some of those run by Marshall Wace and Two Sigma to name just two, are thought to have very limited available capacity.

3.7 Portfolio Turnover

When equity market neutral strategies, including statistical arbitrage, trade over intra-day or multi-day periods, there is a higher hurdle in terms of transactions and trading costs that needs to be covered. Lower portfolio turnover, and longer holding periods, reduce this potential drag on returns.

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