



Equity Market Neutral Strategies

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Introduction

Equity market neutral strategies bring powerful elements of robustness and consistency to relative value portfolios. They are frequently perceived to be Black Box strategies, but close attention brings forward a different picture: in spite of necessary intricate modeling, equity market neutral strategies have intuitive rationales and often provide necessary economic functions, such as the provision of market facilitating liquidity. The main differentiator between the various equity market neutral strategies is frequency of trading which can vary hugely between managers. Some strategies have trading frequencies with positions being turned over within minutes when based on flow information, to months when more slow-changing fundamental information is taken into account.

When dividing the strategies using the trading frequency criteria, the following distinction emerges. On a shorter time frame, statistical arbitrageurs analyze high-frequency price and volume data to detect temporary mispricings. Returns will be generated by a large amount of small trades and will be relatively stable, provided there is a reasonable amount of volume in the market. On a longer timeframe, quantitative equity market neutral managers will take into account balance sheet information together with price information to construct wide and diversified portfolios which will be a reflection of what the manager believes is their «ideal stock». Their returns will demonstrate more volatility, but will be constructed in such a way that, over a cycle of a few months, behavioral trading biases will ensure that sound portfolio construction will result in sound returns. In between long term and short term trading models resides a sprinkle of managers who apply discretionary stock selection abilities within tight neutrality guidelines. Their portfolio returns will purely be driven by the alpha generation abilities of the managers. Such talents are rare, but when identified provide for non-correlated overlays to diversified portfolios.

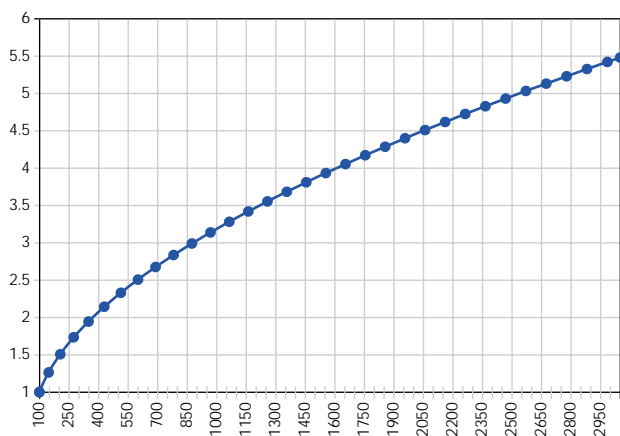
Statistical arbitrage

To understand the concept of statistical arbitrage, consider the following: Take a market in which there is no new information filtering through. The theory of efficient markets would tell you that in a market with no new information, there is no reason for stock prices to move. However, they do. The reason for this apparent contradiction is that supply/demand imbalances push prices temporarily out of their equilibrium. This may happen as a result of large institutions entering a large block sale in a day of light volumes, for example. Should prices diverge sufficiently from their equilibrium levels, the statistical arbitrageur will come into action and enter a trade targeting reversion towards equilibrium levels. Each trade will be a low profit trade, but multiplied by a large number of discrete trades across days and months, sizeable returns can be created. The fact that the statistical arbitrageur can enter into a large number of trades is crucial as a piece of theory highlighted by Grinhold and Kahn¹ shows:

Information Ratio = Information Coefficient x Square Root of Portfolio Breadth

This simple expression says something striking and powerful. It states that the out-performance of a benchmark or manager value added (IR) is a function of the prediction accuracy of the manager (IC) and the square root of the number of his independent bets (PB). In other words, if a manager has some positive predictive ability, even if very small, he can be highly successful provided he is able to take a sufficient amount of independent bets.

Chart 1 | Information Ratio: Function of Independent Trials



Source: Harcourt AG

Taking a step back and looking at what is happening, the statistical arbitrageur is getting paid a premium for providing liquidity in imbalanced supply/demand situations. Since markets do not disclose the identity of the opposite trading parties, nor their rationale for taking on positions, the statistical arbitrage manager will not know for sure whether he is ultimately trading liquidity or some external element. His ability to enter a large number of independent trades however ensures that, on average, the strategy should be correct and generate positive returns.

The particular strategy specification will depend on the universe traded, portfolio construction, choices in risk management and execution abilities:

The universe of stocks traded is crucial to statistical arbitrage models. The idea is that since the strategy benefits from price movements caused by endogenous factors rather than exogenous factors, stocks subject to exogenous events should be excluded from the universe. In practice, most managers restrict themselves to filtering out stocks subject to corporate actions. Managers may, however, exclude entire sectors on the basis of their high exposure to external shocks.

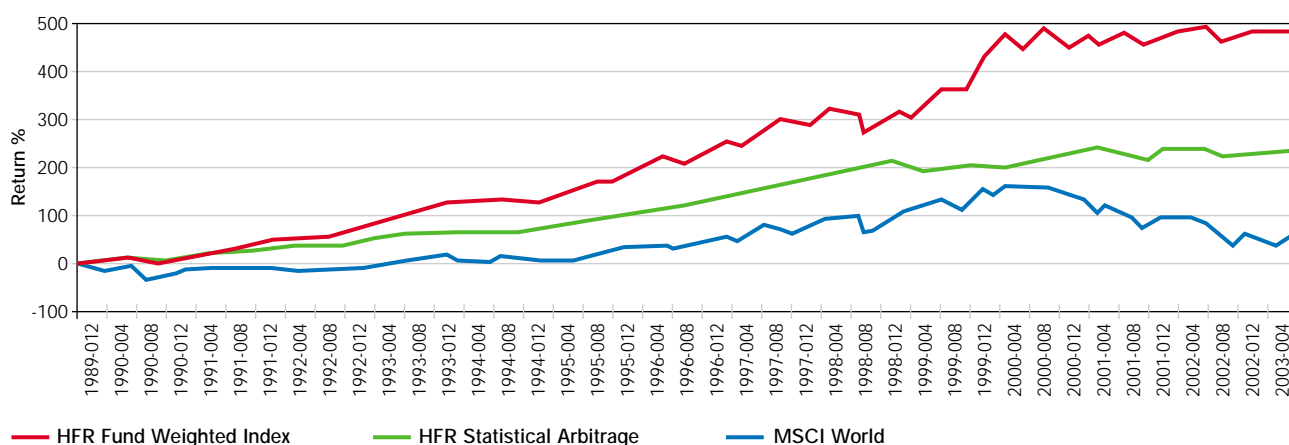
In aggregate, the statistical arbitrageur's portfolio will typically consist of a large number of long and short positions. These will be constrained such that their sum is market neutral with respect to market direction as well as to other distorting factors such as capitalization, sector or geography. In some cases, managers will like to separate the universe into several clusters of similarly behaving stocks, an example of which may be integrated oil companies with their low degree of brand differentiation, similar price cycles and similar macro event sensitivity.

It may appear obvious that cutting losing trades is the action to take for effective risk management. There is however a paradox with mean reverting trades: as prices diverge, positions reach increasingly attractive levels yet at the same time threaten to decay to levels where one losing trade may erase the profits of numerous winning trades. Statistical arbitrage being a game of large numbers, disciplined position cutting is usually preferred.

As the trading frequency increases, the importance of execution increases dramatically. The trading infrastructure and the manager's understanding of the market's micro-structure at this level should be unquestionable but subject

¹ Richard, Grinhold and Ronald, Kahn, 1999, Active Portfolio Management - A Quantitative Approach for Providing Superior Returns and Controlling Risk, Mc Graw-Hill.

Chart 2 | Historical Performance in USD



Source: HFR

to in-depth scrutiny. Indeed, poor execution may destroy the value-added of perfectly well functioning models. Trading costs are a prime concern as are fill levels² and speed of execution.

The strategy will fare best when volume levels are healthy and volatility is at a steady level. High volumes increase the number of trading opportunities, improve the chances of entering and exiting positions without being caught out, and reduce the chance of one statistical arbitrage player trading against the another. Volatility is necessary to create some amount of stock price movement which is a positive to the strategy; however, at high levels of volatility, equity price movements become difficult to interpret and inadequate trade orders may be generated.

Figures for the period January 1990 to May 2003 taken for the HFR Statistical Arbitrage index show that the strategy generated annual returns that vary from relatively flat with -3.17% in the most difficult year to strongly positive with 19.6% in the best year. The most difficult year was 2002, when the strategy experienced a drawdown of -5.4% over the second quarter. The period was characterized by exceptional volatility in the equity markets without corresponding mean reversion, a condition which was difficult to manage, particularly given the then prevailing low market liquidity. The average return of the period was 9.43% with a standard deviation of 4.37% as compared to 3.74% return and 15.5% standard deviation for the MSCI World. These figures suggest vast differences in performances despite a correlation of 0.48.

The current outlook for the strategy is moderately favorable,



²Fill levels refer to trade orders transferred to the executing broker that were successfully executed.

as volumes have improved and volatility reverted away from extreme levels. In the event of a continuing equity market rally, the strategy would be well placed to benefit from the related activity and generate compelling returns with low downside risk.

Quantitative Equity Market Neutral

Quantitative market neutral programs are driven by investment insights rather than by statistics. Their main premise is that there are pervasive market behaviors which are tradable and may generate substantial returns over time. To state the obvious: the market prefers cheap stocks with good growth prospects which are currently benefiting from analyst upgrades to expensive stocks with no growth prospects being downgraded by analysts. No specific large stock bets are required. Typical portfolios here will contain a large number of stocks such that the required characteristics of the portfolio will be balanced in a finer way than if only a handful of stocks were to be included. The list of traded factors can be extended when adequate data is available. Other well documented trading biases include the disposition effect, whereby investors sell their winners too early and keep their losers for too long. Excess leverage may indicate companies that are over-extending themselves. The use of available «insider information» may help decipher between what insiders are doing versus what they are claiming to do. Over investment cycles, systematic exploitation of behavioral biases across a wide number of stocks enables the capturing of significant excess returns.

In terms of what stocks to trade, quantitative market neutral managers usually restrict themselves to the most liquid stocks within the area they trade in, such that price movements truly express the market behavior the strategy is attempting to isolate.

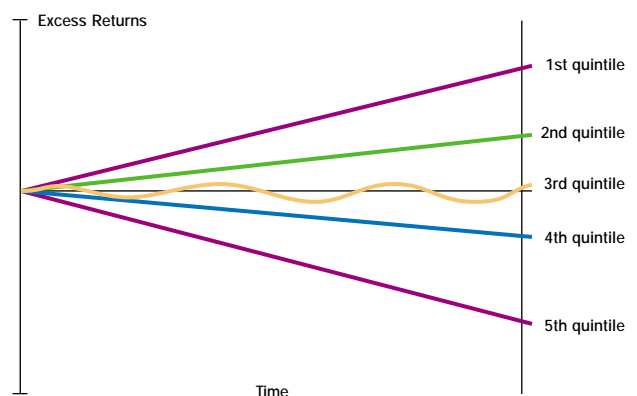
Once the universe is determined, the investment process is similar across managers. A handful of significant factors are selected, the universe of stocks is screened and ranked, a risk budget is allocated between risk factors, then a portfolio is constructed with long positions in top ranking stock and short positions in bottom ranking stocks.

The factors traded are the most critical element in the strategy. What the managers are attempting to do is identify different groups of factors which they believe explain most of the equity price movements. The challenge is to be able to avoid factors which bring little explanatory power, as well as limit systematic biases in the portfolio such as a large versus small capitalization bias for example, so as to



concentrate on the few factors that are in aggregate robust across market cycles. The number of factors does not need to be large; half a dozen intuitive and significant factors usually suffice to express the manager's views in an effective way. Examples of factors could be valuation, growth estimates, leverage, momentum, earning revision and insider trading. The aim is then to score all stocks in the universe and go long the top scorers and short the lowest scorers in a market neutral construction. The ability of the model to separate top from bottom performers is often surprising, with the best results on the extreme top and bottom quintiles. The short side in particular tends to display particularly good

Chart 3 | Sorting Mechanism Cumulative Performance



Source: Harcourt AG



performance, which is likely a consequence of scant coverage by investment bank research.

The long and shorts determined by the ranking process will be constrained to fit risk neutrality guidelines. Portfolios will usually enforce dollar or beta neutrality as well as limit the amount of net exposure to factors such as sector, region and capitalization. Typically, a certain amount of risk capital will be determined and allocated across factor exposures so that the portfolio remains balanced while avoiding unnecessary rebalancing costs.

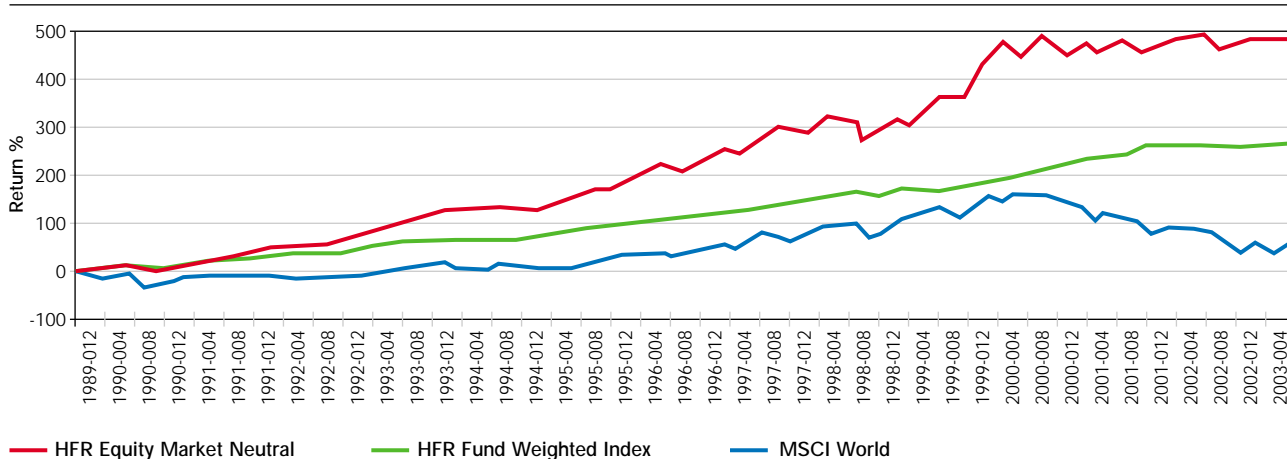
The critical execution phase for statistical arbitrageurs is less of an issue for quantitative market neutral strategies,

given that their portfolios generally don't tend to turn-over more than twice a year. As for any long-short fund, the quality of the borrow should be assessed such that the fund will not suffer re-calls³.

Looking at past returns, equity market neutral managers have generated stable and robust returns. From January 1990 through May 2003, the HFR Equity Market Neutral Index generated an annual return of 10.09% which compares to 3.74% for the MSCI World. Statistical arbitrageurs have

³ Re-calls refer to stock borrowed to third party which is claimed back prior to normal termination of contract.

Chart 4 | Historical Performance in USD



Source: HFR

generated this performance with a standard deviation of 3.55%, a large margin below the 15.51% standard deviation of the MSCI World. Over the period, there were no negative years and the maximum drawdown was -2.72% as compared to -46.30% for the MSCI World. The correlation between the HFR Equity Market Neutral and the MSCI World at 0.07 is negligible. These figures display vast differences in performances in favor of quantitative equity market neutral strategies in addition to strong de-correlation properties.

Fundamental Equity Market Neutral

The essence of this equity market neutral strategy is to benefit from the fundamental investing expertise of the manager while constraining the portfolio to strict risk management guidelines so as to be dollar neutral at the least, but also often constrained in terms of sector, size and style bias exposures. The general investment framework is more flexible than for statistical arbitrageurs or quantitative equity market neutral managers. The stock selection process will be discretionary, and the holding periods of positions vary from several months for core positions to a few days for trading oriented positions. Intra-day trading is typically not the aim of such managers, as the investment process relies on the identification of fundamental miss-valuations rather than the identification of trading inefficiencies.

The challenge for fundamental equity market neutral managers is to accommodate their style with the tight risk guidelines imposed by their investment process. In practice, the managers face two options. They may either choose to select positions on both the long and short side while using risk management software to suggest the appropriate factor neutral weightings, or they may select names on one of the sides or both and subsequently let a computerized system decide on what hedges to purchase in the market.

Risk management software packages offer clarity and precision as to the risks borne by managers and seek to prevent

being affected by elements the manager was unaware of. The flexibility of the investment constraints then determines the amount of risk capital the manager can allocate to any portfolio view he may maintain.

The amount of managers representing fundamental equity market neutral is scant. Consequently, there is no relevant benchmark index to the strategy. Empirical observation would suggest however returns approximating those of long/short managers, albeit with slightly lower returns, lower standard deviations and lower correlation to the MSCI World. From January 1990 through May 2003, the HFR Equity Hedge Index generated an annual return of 18.09% which compares to 3.74% for the MSCI World. Long/short managers have generated this performance with a standard deviation of 11%, below the 15.5% standard deviation of the MSCI World. The correlation between the HFR Equity Hedge and the MSCI World is 0.65.

Conclusion

The famously detrimental hedge fund years of 1994 and 1998 hardly dented equity market neutral strategy performances and, indeed, figures show these strategies provide solid returns in close to all environments. If returns oscillate between strong and flat, one is hard pressed to find negative years for these strategies. The reasons come through clearly.

The strategies strive at regular levels of risk aversion, when volumes are high, markets are liquid, investors behave in rational manners, and managers can apply their skills unhindered. In more difficult market scenarios, volumes may be reduced, volatility erratic and investors driven by sentiment rather than rationality, yet the strategies do not suffer from sudden drops in prices in the way of directional or liquidity sensitive strategies. In aggregate, market neutrality and the trading of very liquid securities is a potent argument in favour of the stability of equity market neutral strategies.

The current outlook for the strategy is confidence that, after 18 months of sub-average returns, conditions have improved substantially; volumes have moved up from bottom quintile, volatility has become more controlled, and revived corporate activity is inducing structural re-pricings and turning-over of portfolios. Hence, conditions prevail for equity market neutral strategies to be considered for their market upside capturing characteristics and strong diversification properties; and as such, they deserve to be included as core investments in diversified hedge fund portfolios.

