

FQ Perspective

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Redefining Beta

Ask any group of equity market neutral managers what it means to be “market neutral” and you’ll get a diversity of responses. What this reflects is that there are important differences in what active managers perceive their goals and their roles to be. These differences aren’t just differences of opinion on what the best way to add value is. No, what these differences primarily reflect are different understandings about what *risks* the portfolio should be exposed to and which risks it should not. How the question about risk is answered defines what it means to be market neutral. Ultimately, how risk, or “beta,” is defined will determine how value added, or “alpha,” is defined.

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We raise this point because we want to highlight a change that has been taking place for sometime in the mindset of many institutional investors – a change that has not fully taken hold. What is changing is the customary use of the term “beta,” and the change in usage implies a change in goals and priorities for both retail and institutional investors. Language is a cultural phenomenon. Culture defines our language, and language maintains and shapes our culture. As new ideas and new understandings slowly take hold, the terms we use may change their conventional meaning in response to these changes.

We are today emerging from a world where equities dominated both our attention and our portfolios. There had been a cult-like attitude towards equities and equity investing that is largely behind us now as equities stand

side by side with other asset types. Bonds, real estate, alternative asset classes and vehicles such as hedge funds that are meant to generate active return on top of cash have all regained their respectability.

Under this prior regime where equities stood firm and largely alone on center stage, the term beta principally referred to the sensitivity an asset or an active strategy might have to the performance of the equity

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market. True, bond investors also have their “beta,” but suffice it to say that betas were measured primarily against stocks, and only sometimes against bonds. With more asset types sharing center stage with equities today, the term beta, and consequently the term alpha has taken on a subtlety different and broader focus today than it conventionally has in the past.

Beta in Market Neutral

The reason we chose to revolve this discussion around market neutral is because market neutral is one of the few products where “neutrality” is a core attribute. Neutrality implies something about what risks are being taken and which are not, so which risks are being taken in market neutral? The term “market neutral” clearly implies that the portfolio should in some sense be neutral with respect to the market itself. Holding a portfolio of stocks in conjunction with an equally sized portfolio of short-stock positions would make one “dollar neutral” with respect to the market.



Since the sensitivities individual stocks share with the market return vary stock by stock, being dollar neutral doesn't guarantee that the portfolio will be insensitive to the market return. Being insensitive to the market return implies something more such as being "beta neutral" or "zero beta." Simply, being beta neutral means that a portfolio's return will be insensitive to whether the market is up, down or flat. As many investors in market neutral discovered first hand in the latter half of the 1990's, there can be a big difference between being dollar neutral and beta neutral, particularly when the market moves significantly.

Beta neutrality had a particular rationalization in the 1990's as the concept of portable alpha slowly spread. Since a higher quality risk-adjusted active return can be produced from market neutral investing than can be produced from typical long-only portfolios¹, market neutral could be used to derive a superior alpha detached from the market return, that was then combined with equity futures to retrieve the index return. Having the market neutral portfolio be beta neutral was very important, in such a case, to insure that there was only one exposure to the equity market index return (through the futures).

That's not where the definition of neutrality ends, however. Some managers will have also defined market neutral as being industry and sector neutral as well, for example. Neutrality extends itself beyond just the market, therefore, and includes being neutral with respect to the

performance of individual segments of the market. Others may also include "style neutrality" in the definition. The notion here is that the returns will be insensitive to the relative performance of value versus growth, large cap versus small cap, and possibly an array of other such style attributes.

Now why would a market neutral manager be motivated to remain "beta neutral," if you will, with respect to not only the market, but to sector, industry and style exposures as well? One answer given by some is that some managers don't claim skill in forecasting the returns to these dimensions of the market. That's a good reason for not taking risk in these areas. Don't take risk where you don't have skill. Another answer given – *the one we're interested in here* - is that being neutral to all of these dimensions is essential to the definition of market neutral. The argument is that market neutral is supposed to produce "pure" alpha, and alpha cannot be pure if it includes returns derived from the taking of certain economic risks related to any kind of broad market behavior.

Let's take a step back for a minute and rethink what role these portfolios play. No longer is it the case that equity market neutral is used principally as a tool in

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1. *The performance of active investing tends to be degraded in long-only portfolios as a result of investment constraints that are asymmetric and unequal. For example, take a stock that has a 0.25% capitalization weight in a benchmark. In a long-only portfolio, one can only underweight the stock by 0.25% at most – by not holding any shares of the stock. Larger overweights of, for example, 1%, 2% or maybe 4% might be allowed. This asymmetry in the effective investment ranges degrades the risk-adjusted value added because it underutilizes the investment manager's views about which stocks to underweight. These asymmetries may also lead to inequalities. One will have greater potential to underweight the larger stocks in the benchmark, which means that more active risk, particularly in terms of underweights, will be focused on the largest stocks. Because shorting is integral to what market neutral is, these asymmetries and inequalities don't appear in market neutral, and don't degrade the risk adjusted value added in market neutral leaving it to produce a superior result.*

pursuing the best active equity returns. Equity market neutral is more frequently used today as a tool in the absolute return toolkit. That doesn't mean that it is no longer used in combination with equity futures to achieve a more efficient active equity portfolio. It just means that it's getting increasingly more attention for its role in the Hedge Fund and Fund of Funds context.

In such a context, the fact that the alpha produced by equity market neutral is produced through the use of equities becomes largely inconsequential. The market neutral alpha is prized not for being an equity product,



but rather it is prized for its risk-adjusted magnitude, its consistency, its lower frequency of delivering multi-sigma events, its higher-than-average diversification of alpha across the universe of managers in the same category, and its low correlation with other alpha sources. What’s not so important is that it uses equities. In other words, *no place of special importance is reserved for the asset class from which the excess return is drawn!*

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We wouldn’t be the first to point out that the separation of alpha from beta continues to widen. It is in the context of absolute returns where the fullest separation is taking shape. There, individual funds are evaluated from a *risk* perspective for their various market and economic exposures. Equity market beta and fixed income market “beta” are no longer the only measures of exposure that matter. Now, funds’ sensitivities to other exposures are just as important. Funds are evaluated for their exposure to changes in the default spread (the difference in yields on Baa bonds and Aaa bonds), changes in the term structure (the difference in

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yields on long-term and short-term government issued bonds), and changes in equity or fixed income volatility amongst other risks. The work of people such as Thomas Schneeweis, William Fung and David Hsieh amongst others has been focused on such measures of risk.

We also wouldn’t be the first to point out that the separation of alpha from beta is not complete either. People such as Cliff Asness and Greg Jensen have made

important comments about the overlap between alpha and beta in funds, where beta is defined more broadly to include any well-defined source of return. Private equity is well known to have a high exposure to public equities, so it has a high “beta” with respect to this other asset class. Amongst convertible arbitrage funds, there is a high correlation amongst funds implying that there is a significant common return – a convertible arbitrage “beta.” In such cases, these betas are delivered in combination with a return that is unrelated other common attributes – the latter being considered the true “alpha.”

The point that we’re trying to make here is that *in the separation of alpha and beta, what defines beta has broadened beyond the asset class from which the alpha is derived.* This formalizes what we think some market neutral managers were after when they sought to “neutralize” more than just the equity market return by neutralizing sector, industry and style exposures. Neutralization and orthogonalization are, however,

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different approaches to achieving a similar end. The former, neutralization, takes the approach that certain risks shouldn’t be touched, while the latter seeks to exploit those risks without creating a lasting, systematic exposure to those risks. We take this latter more tactical approach which allows us to take risks in sectors, industries and factors without creating a structural or systematic sensitivity to the performance of these dimensions. The greater latitude means we have more ways to add value, which allows for greater diversification of the active risk, and this can be very valuable at those points in the market cycle when managers find the bottom-up opportunities to be scarce. Despite this difference, there remains a purpose that we hold in common with those who choose not to allow any risks in these dimensions.

As an aside, it would have seemed appropriate had the usage of the term “hedge fund” had taken on a similar, expanded meaning to describe sources of alpha that were not derived from any of the now more-commonly defined betas. Hedge Funds then would represent a special category of funds that delivered pure alpha, and funds that delivered a combination of some beta(s) and alpha would be just “funds” rather than “hedge funds.”

First Quadrant’s Market Neutral Betas

To move this discussion from the abstract to something more concrete, we’ve shown below a presentation of the betas in First Quadrant’s US Market Neutral Equity product. The good news is that the product achieves “neutrality” on nearly every front, not just in terms of its sensitivity to the equity market return.

Betas in First Quadrant’s US Equity Market Neutral Product²

	Correlation Coefficient	T-statistic
Sensitivity to Stock Price		
S&P 500 Price Return	-0.04	-0.46
Russell 1000 Price Return	-0.03	-0.39
Global Stock Excess Return	-0.08	-0.94
Sensitivity to Style		
Size: S&P 500 - Russell 1000 Price Return	-0.06	-0.74
Value/Growth: Russell 1000 Value-Growth Price Return	0.01	0.12
Sensitivity to Yields		
Change Long-term Gov’t Bond Yield	-0.12	-1.51
abs(Change Long-term Gov’t Bond Yield)	-0.09	-1.15
Global Bond Excess Return	0.12	1.50
Change 90day Treasury Yield	-0.03	-0.39
Sensitivity to Volatility		
Market Volatility	-0.11	-1.33
Change Market Volatility	0.01	0.16
abs(Change Market Volatility)	-0.12	-1.49
VIX	-0.11	-1.37
Change VIX	0.03	0.36
abs(Change VIX)	-0.12	-1.46
Economic Sensitivities		
Change Consumer Price Index	0.00	-0.06
Change Producer Price Index	-0.06	-0.74
Change Default Spread	-0.04	-0.49
Change Credit Spread	0.06	0.69
Change Dollar Valuation	-0.07	-0.82
Return to Long-term Forecasted Earnings Growth	-0.05	-0.62
Diff Between LT and 2yr Earnings Growth Expectations	-0.22	-2.81
1-year Price Momentum	0.18	2.21
Return to Stocks with Higher ROE	0.07	0.92

2. Correlations are measured since inception of First Quadrant’s US Market Neutral Equity composite track record in June 1991.



As expected, the alpha from our US Equity Market Neutral product has been insensitive to the performance of the equity market. This is made clear by the insignificant -0.04 correlation of the monthly alpha to the return on the S&P 500. Because the product has

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average style exposures close to zero on size and value vs. growth, the chart also demonstrates that the returns don't derive from any average (systematic) tilt towards individual styles. To the extent to which our product has generated alpha from styles (which it has!), it has come from style timing rather than from any systematic biases in style exposure. That's what we've built the product to do, of course.

Where we do find some modest – and we should emphasize the word modest here – sensitivity is to changes in yields and changes in volatility. The sensitivity to change in yields does not appear to be directional. Mostly what matters is that when yields either rise or fall quickly, our market neutral product has a marginally more difficult time. The same thing occurs with changes in volatility. This makes sense as rapid changes in yields, in particular, will cause our model signals to change, and we wouldn't necessarily expect to profit from such changes at the time they occur. We'd expect to profit from them *after* they occur.

Also of interest is the sensitivity to momentum. What we've measured is the return on stocks in the Russell 1000 universe with the highest (upper quartile) trailing twelve-month momentum relative to the return on stocks with the lowest (lower quartile) momentum. Despite the minor role that explicit measures of momentum play in our modeling, our process does display marginal sensitivity to the performance of momentum stocks.

Finally, the numbers suggest a very interesting, albeit very intuitive, relationship between our market neutral

alpha and the performance of more speculative stocks. Perhaps the most speculative of the “fundamental” attributes of a stock is the markets' expectation for long-term returns. We say that this is speculative because there is a significant evidence that shows that analysts consistently fail to forecast long-term earnings with any accuracy. There is evidence that near-term – one and two year earnings forecasts – do have information in them, but long-term forecasts do not.

As you can see from the chart, our market neutral program is not significantly sensitive to the performance

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of stocks with strong long-term forecasted earnings growth. This means that our market neutral program isn't systematically biased towards or against growth. The chart does suggest, however, that when investors are rewarding more heavily those stocks with long-term forecasted earnings growth *over* those stocks with strong two-year forecasted earnings growth, our models do suffer. We'd like to phrase this to say that when speculation is rewarded at the expense of reasonable facts and reasonable forecasts, our models will tend to underperform. This is an observation we plan to expand upon in an upcoming Partners Message.

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Outside of these very modest sensitivities – or betas – the evidence suggests that our equity market neutral program delivers what we, using today's expanded definition of beta, would define as a beta neutral return.

Consider it to largely be “pure alpha.” That is what we think should define what market neutral is, and what its role should be.

In Short

The definition of beta has expanded to include more than just sensitivity to equity market (or bond market) return. This isn’t news to Fund of Fund managers who evaluate funds for the risks imbedded in them, but it doesn’t appear that even there this has had widespread implications yet for how we think of alpha. Alpha is, in effect, net of beta, and alpha should, therefore, be measured net of the various betas that are studied on the risk side of the equation.

We should point out that there is a practical limit to the continued separation of alpha and beta. Transactions costs, shorting constraints and manager skill sets all provide reasons for commingling the management of

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alpha and beta in certain situations. Where transactions costs are relatively high, as they are in the trading of cash securities, it will make sense to continue to hand the management of both the beta exposure and the pursuit of alpha to a single manager who can insure that all trades done have the greatest number of motivations. Long-only equities mandates, particularly in the smaller cap regions will continue to represent a more efficient approach to earning alpha from mid- to small-cap equities, for example. The skill sets required to manage merger arbitrage and convertible arbitrage may also argue for commingling beta and alpha assignments in the same portfolios. This is another topic we intend to return to in future Partners Messages.

Despite some practical limitations, this evolution in how we think of beta should concentrate our attention on the value of what we might think of as pure alpha –

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the part of return that isn’t derived from exposures to broad market or economic characteristics. Market neutral generally, and First Quadrant’s Equity Market Neutral program specifically, looks very attractive in this light. Market neutral does tend to show very little sensitivity to such broad characteristics.

