In most traditional discussions of equity investing, the focus has always been on how to pick stocks that are going to beat the market. This winner-only mentality is reflected in how analysts normally rate the stocks they are covering. There are few—if any—sell ratings issued from Wall Street. In fact, of the entire Russell 3000, only 10 stocks have a median rating below a hold (as of March 30, 2001). To be fair, there are many other reasons why analysts may be leery about placing a sell recommendation on a stock, including conflicts of interest in getting access to management and jeopardizing future potential revenue from investment banking. Regardless, investors generally are much more interested in what to buy than what not to buy.

Concentrating on outperforming securities ignores the fact that alpha can be generated by accurately predicting underperforming securities. If picking winners to overweight in a portfolio can translate into outperformance, then picking losers to underweight will have the same effect. In a long-only portfolio, a stock’s underweight is limited to its weight in the benchmark. In other words, a zero portfolio weight in a stock equates to an underweight equal to the benchmark weight (e.g., if the weight of a stock in the benchmark is 1% and a manager doesn’t hold that stock, the relative weight of that stock would be -1%). Whereas in a portfolio holding stock both long and short, the underweight restriction is largely eliminated. This opens an entire universe of research focused on underperformers that has been largely untapped.

### The Case for Market Neutral

Active returns in a long-only portfolio are derived from the active positions taken versus the benchmark. A long-only portfolio can, in theory, be broken down into two separate portfolios: a portfolio made up of the positive and negative benchmark-relative weights, and a passive portfolio made up of benchmark weights (see Exhibit 1). When portfolios are viewed in this manner, it becomes clear that only one-third of the average portfolio is made up of active weights. Alpha is generated only in the active portion of the portfolio.

A long/short portfolio allows buys to be purchased long and sells to be sold short, regardless of any benchmark. The shorted positions do not necessarily have to go down in price to help the portfolio. They may have positive returns as long as the long positions outperform them. The key to market neutral investing is maintaining a positive performance spread between the securities held long and short. The construction and integration of the long and short positions in the portfolio are also very important. These two pieces need to be optimized to truly neutralize market exposure and control risk.
Investing Mechanics: How Does It Work?

A review of short selling
Security lending and short selling of stock is a relatively complicated process and one with which traditional investors may not be familiar. In order to short a stock, the stock must first be borrowed. Therefore, a prime broker must be hired to track down and locate the required stock that will be borrowed and sold. The prime broker checks his own holdings or can tap into an institutional network, which includes banks, index fund managers, and other large institutional holders of securities that have discretionary lending programs. When the desired security is found, the cost to borrow it is determined based on the available supply and the amount that is to be shorted.

When securities are borrowed and then sold, the cash proceeds are held by the stock lender as collateral and earn a set amount of interest for the portfolio called the “short rebate” (usually the Fed Funds rate minus 25 to 60 basis points). A fee, commonly referred to as the “haircut,” is deducted from the short rebate and split between the short lender and prime broker based on the difficulty of finding and shorting the desired stock. Typically, the short rebate earns more interest for “easy-to-lend” stocks (because the haircut is less) and less interest for “harder-to-lend” stocks.

As a rule, short sales require collateral equal to 150% of the short sale amount. While the proceeds from the short sale cover 100% of the short initially, the long portfolio can be used to cover the remaining 50% of required collateral (long positions can only be used as collateral up to 50% of their market value). In addition, a small variation margin account, usually 3% to 5% of the total amount invested, must be set up and held at the custodian or prime broker. This variation margin is used as a liquidity buffer allowing the short positions to be marked to market on a daily basis to cover changes in collateral resulting from price movements in the short positions.

Sources of return
There are several sources of return available for a market neutral investment. The main source is the performance difference between the long and short portfolios, where the manager’s stock-picking ability has the most impact. In addition to price movements, dividends received on the long portfolio contribute to performance while dividends occurring in the short portfolio must be reimbursed and count against the overall performance. The short rebate provides interest income from the short positions and finally, interest income is earned on the variation account.

How does a market neutral portfolio work?
For an example of how a market neutral portfolio would function, assume that a manager has $100 million to invest (see Exhibit II). First, the $100 million would be used to purchase $95 million of securities for the long portfolio held at the prime broker. Secondly, $95 million worth of shortable securities would be borrowed from stock lenders through the prime broker and sold off. The $95 million in cash proceeds from that sale would then be held as collateral by the prime broker and would begin earning the short rebate interest rate. Lastly, the remaining $5 million would be held in a variation margin account to cover the daily mark-to-market of the short position.
Market Neutral Portfolio Construction Methods

There are several methods that can be used to integrate the long and short portions of a market neutral portfolio. The most basic method is to make the long and short portfolios dollar neutral, i.e., the dollar amounts of the long and short portfolios are equal. While this unsophisticated method works in theory, it leaves the portfolio exposed to various types of risk factors. In a dollar-neutral market neutral portfolio, the long and short portfolios can essentially be created separately. While this may be desirable from a pure stock-picking standpoint, as it does not restrict a manager at all, it leaves the portfolio exposed to a huge amount of risk from unhedged exposure to various factors. Examples of possible risk factors would be unhedged sector exposures, industry exposure, cap size exposure, a beta differential between the portfolios, value/growth exposure, or other risk factors derived from multi-factor models (e.g., BARRA’s). While exposure to some other factors could be by choice, the market neutrality of the portfolio is tainted because ideally, there should be no correlation to any individual market attribute.

To utilize a more stringent level of risk control in portfolio construction, the long and short portions of a market neutral strategy can be optimized to reduce risk by incorporating a risk modeling optimizer with the manager’s buy and sell lists. Thus, the long and short positions can be constructed with the same aggregate risk characteristics and will counteract each other when combined. While this process would again put constraints on the portfolio manager’s ability to invest the portfolio, it is the most effective way to eliminate unwanted risks and generate a portfolio that is truly neutral to market effects.

Unintended style exposure (when the style exposure of the long and short portfolios are not properly matched) has caused problems for market neutral managers recently, due to the huge performance spreads that have developed between value and growth and large-caps and small-caps. The performance spread between value and growth exploded wildly in favor of growth in the latter half of 1999 and first quarter of 2000, and then reversed itself through the end of that year. A similar disparity occurred in large- and small-caps in 1998 and again in the beginning of 2000. If, for example, the short portfolio had a slight growth tilt and the long portfolio had a slight value tilt in the latter half of 1999, the performance differential
between growth and value would have hurt the portfolio. Any inadvertent style bets cause the portfolio’s neutrality to decrease. Performance can then be affected by factors other than the manager’s stock-picking prowess.

Benefits of Market Neutral Investing

Benefits for the plan sponsor: Low correlation and portability of alpha

As the performance of a long/short market neutral portfolio is essentially the performance differential between the individual long and short portfolios, the overall portfolio should exhibit zero correlation with the markets in which it is invested. Holding both long and short positions achieves low correlation through the cancellation of systematic market performance.

Every stock has both systematic and non-systematic factors. Systematic factors are macro-economic market factors that cannot be minimized through diversification; non-systematic factors are company-specific factors. Therefore, by integrating long and short positions, the systematic market performance can be cancelled out. Performance is generated solely by firm-specific factors, which creates a perfect environment for a manager with stock-picking prowess. While the level of market correlation is low, it will be dependent on the degree of neutrality designed into the construction process. A properly constructed market neutral portfolio should have very low correlation with every major asset class and would offer excellent diversification benefits when viewed in the context of an entire asset allocation plan. Exhibit V illustrates these low correlations. All six market neutral managers exhibited very low correlation with a wide range of asset classes, including equity indices, fixed income, and real estate.

**Exhibit V**

<table>
<thead>
<tr>
<th>Eight-Year Correlations Ending December 31, 2000</th>
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<tbody>
<tr>
<td>Market Neutral Manager 1</td>
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<td>1.00</td>
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<td>0.43</td>
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<td>0.10</td>
</tr>
</tbody>
</table>

Source: Fidelity Management Trust Company
neutral managers shown are invested in U.S. domestic equities, yet their correlations to both small- and large-caps are extremely low.

In addition to having low correlation to any specific asset class, market neutral managers exhibit very low correlation to each other. As each manager’s area of expertise in generating alpha is different, it is only natural that their portfolio returns will be unrelated. Therefore, not only are market neutral portfolios excellent for diversification purposes, but combining several market neutral managers together can result in an even better risk/return profile. Exhibit V also includes a correlation matrix comparing the six market neutral managers to each other. As expected, they are uncorrelated. Furthermore, as more market neutral managers are added to a lineup, their low correlation causes the overall risk of the combination to fall dramatically, as shown in Exhibit VI.

**Alpha portability**

A growing area of interest from an asset allocation perspective is the “portability” of market neutral alpha to other asset classes. This allows performance that is generated in inefficient asset classes (like small-cap) to be “ported” to more efficient asset classes, like investment-grade fixed income or large-cap equities. A market neutral portfolio is made up of three main pieces: the long equity positions, the shorted equity positions, and a cash pool resulting from selling the short positions. Because the long and short portions cancel each other out to a net zero equity exposure and the remaining exposure is cash, the portfolio benchmark is the risk free rate (T-bills). By equitizing the cash pool with long derivatives, the market neutral alpha can be ported to other markets, usually via futures or swaps.

The alpha portability process is best illustrated by a simple example (leaving out the variation margin). Let's assume that $100,000 is available for investing. First, $100,000 of equities are purchased. Then, $100,000 of equity securities are borrowed and sold (shorted), thereby generating $100,000 in cash. This cash is then invested in T-bills. The net equity exposure is now $0 since the $100,000 in equities held long and the $100,000 in equities shorted cancel each other out. If the two sets of securities move in tandem, the net return will be the T-bill rate on the cash pool. If there is a differential in performance, the return will be the differential plus the T-bill rate. If this portfolio were then equitized with S&P 500 futures, $100,000 of futures exposure would need to be purchased. Because cash equitized with S&P futures performs like the S&P 500, the resulting performance would be the return on the S&P 500 plus the performance differential between the long and short positions, thus porting the market neutral alpha onto the S&P 500. An example of this is shown in Exhibit III.

In addition to alpha, other portfolio characteristics can be ported as well. Both tracking error and information ratio can theoretically be ported from any asset class with a suitable derivative. Therefore, if a superior information ratio can be generated in an inefficient asset class, it can be ported to more efficient asset classes, like large-cap equities, where high information ratios have been difficult to achieve historically.

**Benefits for the manager: Freedom from benchmark constraints**

One of the biggest benefits for managers of market neutral portfolios is the elimination of the constraints imposed by having a benchmark. If a manager has a negative outlook on a stock, the most that he or she can do in a long portfolio is underweight that stock as much as possible. Since the median weight of a stock in the S&P 500 is 0.08% (and about 0.005% in the Russell 3000), underweighting a stock to a zero weight does not have a huge impact on the overall portfolio. In contrast, on the positive side, the same stock could be overweighted by several percent and could thereby have a huge effect on performance. This is part of the reason that the majority of research on stock selection concentrates on winners only. Having a long/short portfolio removes this non-negative restriction. By allowing negative weights of stocks to have an impact on the portfolio, a manager that can accurately predict that underperformers will be rewarded.
An additional constraint that benchmarks impose on long portfolios is caused by the containment of residual risk. This risk can be defined as benchmark-relative risk that is commonly quantified through tracking error. If a particular stock is overweighted or underweighted, the size of the weighting difference versus the benchmark increases the level of residual risk in the portfolio. As a result, a manager who is trying to control residual risk would have fewer weighting differences from the benchmark. Managers are accused of “hugging” the benchmark if they go overboard with this process and end up creating an index fund. If a portfolio manager has no opinion on a stock that has a large weighting in his or her benchmark, like a Cisco or a GE, and the manager wants to minimize residual risk in the portfolio, something close to a benchmark weighting in that issue must be held. That portion of the portfolio is essentially passive. In fact, the only true active positions in a portfolio are those that have deviations from benchmark weights. The effort to contain residual risk often limits the ability of a manager to generate alpha.

By removing the need to converge on a security’s index weights to contain risk, a manager is able to concentrate solely on the area of the market where he or she can add the most value. For example, assume that a manager who has a lot of insight into the banking industry purchases a bank stock he likes and shorts an equal proportion of a bank stock he thinks will do poorly. If his predictions are right and the stock he bought outperforms the stock he shorted, he gains positive alpha regardless of how bank stocks, or the market in general, perform. His performance is based solely on his stock-picking ability. Along the same lines, if a manager doesn’t have any opinion or insight into bank stocks, they need not be included in the portfolio at all. In fact, there is no need to have any representation in a sector where the manager has no expertise. Whenever a manager sees an opportunity, he or she is able to exploit it because there is no benchmark constraint. In doing so, information and analysis is used much more efficiently and portfolio assets can be applied to generating alpha instead of being soaked up replicating the benchmark.

**Challenges of Market Neutral Investing**

Although there are many benefits to market neutral investing, there are drawbacks as well. These include issues associated with shorting securities, higher levels of portfolio turnover, and management expenses.

**Short-selling constraints**

Operational implications related to selling securities short increase the complexity of market neutral investing. Not all stocks will be available for shorting. Even if they are available, less liquid issues are expensive to short due to the opportunity and trading costs associated with the securing and administering of the shorts. Even then, it is not always possible for the manager to short the specific stocks he or she wants in the volume that they are needed. Many of these problems can be alleviated by covering a large enough universe of stocks and generating enough depth in shorting ideas that liquidity problems and trading costs can be avoided so as to not hinder the short side of the portfolio.

Short positions are perceived as being more risky than long positions due to their potential for unlimited losses. Since share prices can only fall to zero, but can rise infinitely, theoretically there is no limit on the downside losses for a short position. In practice, however, this risk is minimized through the integration of the short and long positions.

There are some legal requirements that have the potential to interfere with the use of short positions. In the United States, SEC
Rule 10a-1 allows exchange-traded shares to be shorted only at a price higher than the last trading price or equal to it if that last trading price was higher than the previous trading price. This can, however, be circumvented through the use of basket trades. Other countries, like Denmark and Germany, outlaw the short selling of equities altogether, although there are synthetic products that can be used in their place. Also, many institutional pension plans have restrictions on the use of leverage and short selling in their investment policy statements. These would have to be amended to allow for their investment in this type of strategy.

Trading
Long/short market neutral portfolios generally have higher levels of trading than long-only portfolios of similar size. This is because there is trading going on in both the long and short portfolios. Additional trading activity may be generated through the rebalancing process needed to maintain the neutrality of the entire portfolio. If the long positions appreciate and the short positions fall in value, some trading is necessary to realign the market exposures of the portfolio.

Fees
Due to the complexity of market neutral portfolios, management fees for these portfolios are generally higher than those for standard long-only portfolios. However, market neutral portfolios are considered more “fee efficient” than long portfolios since they lack the passive component that typically accounts for two-thirds of a portfolio. If 40 basis points were charged for a normal long-only portfolio, an equivalent market neutral manager could manage one-third of the assets and charge 120 basis points for an equivalent “active-management-per-fee” basis.

Market liquidity
There are also some challenges associated with equitizing market neutral portfolios that vary based on market liquidity. For example, small-caps generally cost about twice as much as large-caps to equitize. Equitizing using international futures is even more expensive and may involve the hedging of currency exposure, which adds additional costs. Any exposure mismatch that occurs when the futures and portfolio exposures are not properly synchronized—this is commonly called basis risk—can also add additional opportunity costs and will affect tracking error. While these costs can add up, they can be minimized through diligent portfolio supervision.

Other Types of Market Neutral Investing
While this paper mainly concentrates on long/short equity market neutral investing, there are many other types of market neutral investing. There are a number of hedge funds and trading desks that utilize certain methods, mainly through arbitrage arrangements, to exploit pricing inefficiencies in the market. Several examples of other market neutral strategies are:

- **Convertible Arbitrage** where convertible bonds, stocks, and warrants are hedged against the underlying stock of each security.

- **Fixed Income Arbitrage** where mispriced securities are purchased and hedged with other securities to capitalize on pricing anomalies while minimizing interest rate and other systemic market risks.

- **Merger Arbitrage** where pricing differences are exploited between two companies that are merging or where one is acquiring the other.

Market Neutral: Worth Investigating
Market neutral investing can be of great strategic value for plan sponsors. Its low correlation to other asset classes and distinctive risk/return profile make it extremely helpful for diversifying risk in the traditional sense. From a manager's perspective, alpha generating ideas are easier to implement due to market neutral's lack of benchmark constraints and its shorting ability. From a plan sponsor's standpoint, market neutral's alpha portability allows for the separation of the asset allocation decision from the alpha generation decision. Managers can be hired for their ability to generate alpha regardless of their field, because their alpha can be simply “ported” to the area where it is needed. While some of these ideas may seem radical, the flexibility and utility market neutral investing offers make this type of strategy well worth investigating.
Acknowledgements

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Additional Sources


Biography

Marshall Hurd is a Senior Investment Analyst in Strategic Services at Fidelity Management Trust Company. In this role, he is responsible for performing asset allocation studies and conducting portfolio construction analysis. Marshall earned his B.A. in Engineering from Dartmouth College and his B.E. in Electrical Engineering from the Thayer School of Engineering at Dartmouth. He is a CFA charterholder and is a member of the Boston Security Analysts Society.