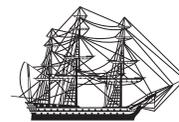


Market-Neutral Investing— Strategy Overview and Evaluation

Vanguard Investment Counseling & Research



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Executive summary. For most investors, a portfolio that includes broadly diversified stock and bond funds allocated across domestic and international markets offers substantial diversification. However, investors diversified across these asset classes remain dependent on traditional market forces (such as the economy and corporate profits for equities, and interest rates for bonds). The obvious risk, then, is that these market forces may fail to provide the kind of generous returns achieved since the early 1980s—the Standard & Poor’s 500 Index rose from 130 in 1981 to approximately 1,500 as of December 2007, while U.S. interest rates fell from the teens to the low single digits. Indeed, because of this portfolio-wide exposure to systematic risk, certain investors may benefit from a product with the ability to provide returns independent of traditional market forces.

Short-term investments such as U.S. Treasury bills and money market funds provide very low correlation to equity and bond markets, offering reliable protection against both equity and fixed income bear markets. In addition, Treasury bills stand as the asset of choice during periods characterized by a “flight to quality.” However, because these short-term investments have historically provided marginal real returns, few investors willingly hold them as part of a strategic long-term asset allocation.

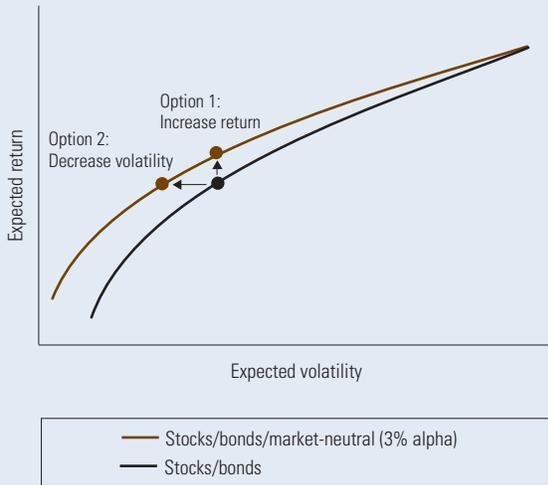
Market-neutral funds are another, perhaps more attractive, source of long-term returns designed to be independent of traditional market forces. These strategies often have a stated objective of earning a return that is 200–300 basis points above that of 3-month Treasury bills or the London Inter-Bank Offered Rate (known as LIBOR).

We offer a rationale for including a market-neutral fund in a traditional diversified portfolio. We first highlight the theory behind a market-neutral structure. We move on to detail the mechanics of a market-neutral fund and its potential role in a portfolio. Finally, we discuss how the market-neutral strategy stands apart from other “hedge fund” strategies and offer some trade-offs for investors to consider when evaluating market-neutral funds.

Authors

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Figure 1. Adding market-neutral can improve a portfolio's characteristics



Notes: This is a hypothetical illustration that is not representative of any particular investment. For stocks, we assumed an average return of 10% and a standard deviation of 20%; for bonds, we assumed an average return of 6% and a standard deviation of 7%; for market-neutral, we assumed an average return of 7% (3% gross expected alpha) and a standard deviation of 10%. We assumed a correlation between stocks and bonds of 0.25 and assumed that market-neutral is uncorrelated (0.0) to other asset classes. When moving from a stock/bond portfolio to a stock/bond/market-neutral portfolio, we assumed a constant 20% investment in market-neutral, reallocated from the bond portion of the portfolio.

Source: Vanguard Investment Counseling & Research.

Introduction: The basics of market-neutral investing

Investors continuously seek investments that, when added to an existing portfolio, are expected to improve efficiency. In other words, the ultimate goal of including a market-neutral fund in a diversified portfolio is to increase the portfolio's return at a targeted volatility, or to reduce the portfolio's volatility at a targeted return. This concept is illustrated in **Figure 1**.

Improving the characteristics of a portfolio without changing its placement on a particular efficient frontier (i.e., shifting the entire frontier up or to the left) is desirable. Market-neutral funds can facilitate this improvement by delivering the expected low correlations (to stocks and bonds) of cash but with an expected total return similar to that of intermediate-duration bonds, assuming the funds produce approximately 200–300 basis points of positive alpha.¹ When added to a diversified portfolio, a market-neutral fund's low correlation to existing assets can lead to a reduction in portfolio volatility or may permit investors to increase their exposure to riskier assets, which can subsequently result in higher expected returns.

The unique operating structure of market-neutral funds leads to these return characteristics. Most important, market-neutral managers are not prohibited from selling stocks short. In fact, market-neutral strategies are entirely free from the long-only constraint, allowing managers to short up to 100% of the portfolio value (adjusted, of course, for any cash reserve or margin requirements). The fundamental basis for removing

Notes on risk: Investments are subject to market risk. Short-selling (selling borrowed securities) entails additional risk. Investments in bonds are subject to interest rate, credit, and inflation risk. Diversification does not ensure a profit or protect against a loss in a declining market. Past performance is no guarantee of future results.

An investment in a money market fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. Although a money market fund seeks to preserve the value of your investment at \$1 per share, it is possible to lose money by investing in such a fund.

¹ Alpha: A portfolio's risk-adjusted excess return versus its effective benchmark.

the long-only constraint is that if a manager's process involves identifying underperforming securities *and* that manager has demonstrated the ability to generate alpha, he should be free to apply that skill symmetrically to both position overweights and underweights (Philips and Kinniry, 2008). Market-neutral managers are freed from benchmark constraints and may apply their investment strategies across all available opportunities.

Through the process of constructing the long and short portfolios, the manager attempts to neutralize market risk exposure (hence "market-neutral"), while capturing a return that is higher than that of a risk-free asset. The spread, or "alpha," is captured by exploiting perceived inefficiencies or mispricings among related securities. Broadly speaking, managers would seek to establish long positions in underpriced securities while establishing offsetting short positions in overvalued securities. Because the short positions entail the sale of a security the manager does not own, the cash from the sale is held by a coordinating broker, who delivers to the manager a "rebate" that is generally equal to the federal funds rate minus a servicing fee (the result is a return that approximates that of cash equivalents such as the benchmark Treasury bill).² As such, true market-neutral funds generate a return that equals a spread between the offsetting long and short positions plus a return on the cash components. Consequently, security selection is critical in a market-neutral fund's attempt to achieve a return above that of cash. Of course, the magnitude and direction of the spread between the long and short positions is volatile, because of a combination of security selection, luck, or even unaccounted-for factor bets.

The mechanics of a market-neutral strategy

The operation of a market-neutral strategy, outlined in **Figure 2**, on page 4, is relatively straightforward. For this example we assume that the equity market returns 10%. We also assume that the market-neutral manager is expected to add 150 basis points of gross alpha to both the long and short portfolios (for a total of 3% gross alpha). The remaining assumptions include a federal funds rate of 4.3%, a yield on 3-month Treasury bills of 4% (since 1955 the median difference between the federal funds rate and the yield of 3-month Treasury bills has been 30 basis points), and a service fee of 25 basis points charged by the prime broker.³

Consider a \$10 million investment placed in a fund that executes a market-neutral strategy. At any point in time, the "spread" return on that \$10 million investment, $R_t^{\text{Long-Short}}$, would equal:

$$R_t^{\text{Long-Short}} = R_t^{\text{Long}} - R_t^{\text{Short}} + \text{Cash}_t^{\text{Reserve}} + \text{Cash}_t^{\text{Rebate}}$$

The first step is for the manager to set aside 5% of the total portfolio in cash to fund day-to-day operations such as redemptions and portfolio transactions. This position earns the return of a cash equivalent such as the 3-month Treasury bill, or $(\text{Cash}_t^{\text{Reserve}})$. With the remaining 95%, the manager purchases a basket of securities expected to outperform the market, earning (R_t^{Long}) . The manager then coordinates with a prime broker to sell short a basket of securities equal in value to the long portfolio and expected to underperform the market. The prime broker will hold onto the short sale proceeds as collateral and will typically deliver to the manager the rebate $(\text{Cash}_t^{\text{Rebate}})$. The manager closes out the short positions by buying back the shorted securities (at a lower price, he hopes), earning (R_t^{Short}) . The prime broker returns the difference (the sale price minus the repurchase price) to the manager, who repeats the shorting process.

- 2 The rebate on the short positions will fluctuate depending on how hard the shares are to borrow. For general collateral or securities that are easy to borrow, the rebate will be equal to the current federal funds rate minus some servicing fee. With securities that are hard to borrow, the rebate can actually be negative. The servicing fee compensates not only the broker or stock loan desks, but also the party who is lending the shares.
- 3 Effective federal funds rates have historically been slightly higher than the yields of secondary-market Treasury bills. The federal funds rate is the rate at which banks borrow from each other. Because interest paid by banks is not guaranteed by the federal government, there is a small but real risk of default. T-bills, on the other hand, are debt obligations of the federal government and convey little or no risk of default.

Figure 2. Explaining the market-neutral process

Assumptions:

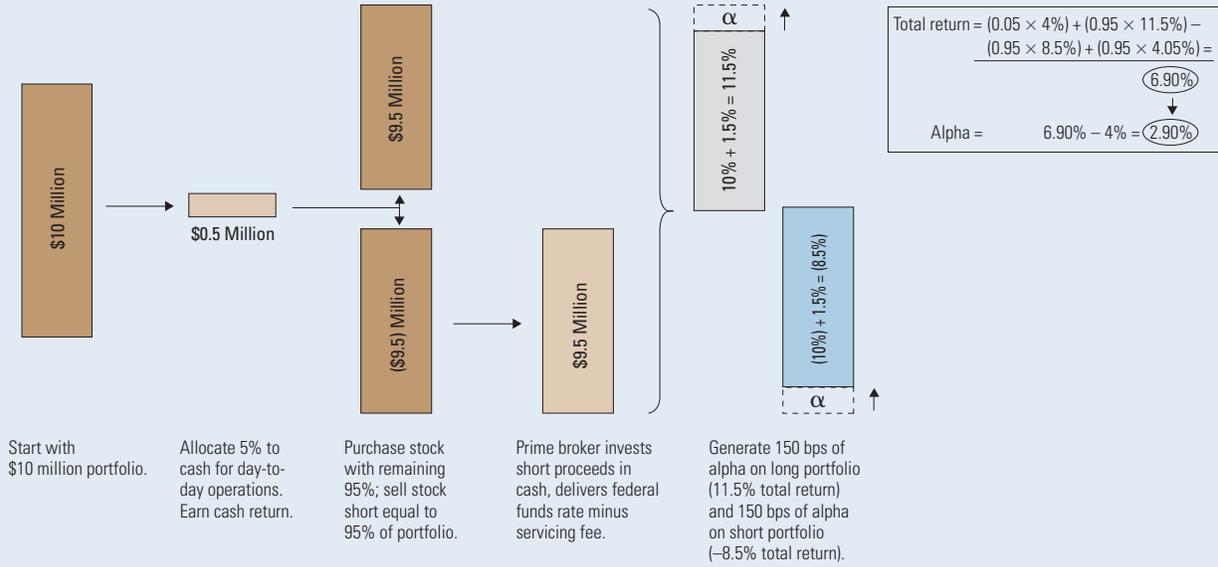
Stock market return = 10%

Portfolio alpha (long and short) = 1.5%

Federal funds rate = 4.3%

Prime broker service fee = 0.25%

Treasury bill yield = 4%



Note: This is a hypothetical illustration that is not representative of any particular investment.

Source: Vanguard Investment Counseling & Research.

Assuming the manager is successful at delivering 150 basis points of alpha on both the long and short portfolios, the total return for the fund (gross of any expenses and management fees) would be 6.90%. We itemize the total return in the right-hand portion of Figure 2. The alpha is the fund's total return less the yield on a Treasury bill (since a risk-averse investor could have invested the original \$10 million in cash).⁴ In other words, we can think of a stand-alone market-neutral fund as alpha ported on top of cash. In this example, the total gross alpha delivered by the market-neutral manager was 2.90%, (compared with an expected alpha of 300 basis points). Depending on the fee and cost structure, the actual net alpha delivered to the client may be marginally or significantly lower. Of course, if alpha is negative, the investor would be better off not investing in the market-neutral fund.

There are many combinations by which a manager may achieve a positive (or negative) spread on the long and short trades. For example, if both the long and short positions appreciate, but the longs appreciate more than the shorts, then the strategy will be successful. Similarly, if both positions lose value, but the shorts lose more than the longs, the strategy will be successful. In this case, the negative return on the basket of stocks sold short would translate into a positive return for the manager. In the best-case scenario, the manager would earn a significantly positive excess return when the return of the long investment was positive and the return on the basket of stocks sold short was negative.

4 While the benchmark for most market-neutral funds is the three-month Treasury bill, investing in a market-neutral fund is very different from investing in Treasury bills. Treasury bills are issued and backed by the federal government, have a stated fixed rate of return, and are not expected to experience price volatility. Market-neutral funds are not backed by the federal government, may produce a negative return, and may experience price volatility.

In the worst-case scenario, a long-short strategy would earn a significantly negative absolute return. This could result if the net long investment posted a negative return and the net short position realized a positive return. Of course, if the basket of longs and shorts earn exactly the same return (with, say, each basket up 4%, for example), then the long and short portfolios will offset each other, and the portfolio will earn the return of cash equivalents.

Performance expectations for a market-neutral strategy and its role in a portfolio

Forming appropriate performance expectations

Assuming positive alpha, investors in market-neutral funds should expect an annual return only modestly higher than the return from cash investments. This is in contrast to the commonly held view of hedge funds as high-risk, high-return investment vehicles. In fact, market-neutral funds are fundamentally different from other classes of hedge funds.⁵ Because market-neutral funds seek to offset market risks, taking only idiosyncratic risks (as outlined in Figure 2), we would expect lower volatility and downside risk than with other types of hedge funds, with commensurately lower returns. Of course, every fund is unique, and any particular fund faces the risk that the strategy might not perform as expected.

Figure 3, on page 6, plots the average trailing 12-month returns for market-neutral funds and their relationship to both the 3-month Treasury bill (left panel) and the equity market (right panel). As expected, the left panel shows that on average market-neutral funds have tracked the returns for cash with a modest amount of volatility. For example, as interest rates have changed over the past 10 years, annualized returns for market-neutral funds have also changed—with lower year-over-year returns from 2001 through 2003 and incrementally higher year-over-year returns from 2003 through 2007.

At the same time, because of their relationship to both interest rates and the yields of cash investments, risk-controlled market-neutral funds should not be expected to consistently outperform stocks during bull markets. As the right panel of Figure 3 demonstrates, market-neutral funds significantly underperformed the broad U.S. stock market during the two bull markets covered in this time period. And given that the returns for equity markets have tended to be positive, investors should expect market-neutral products to underperform market-oriented products over extended periods.

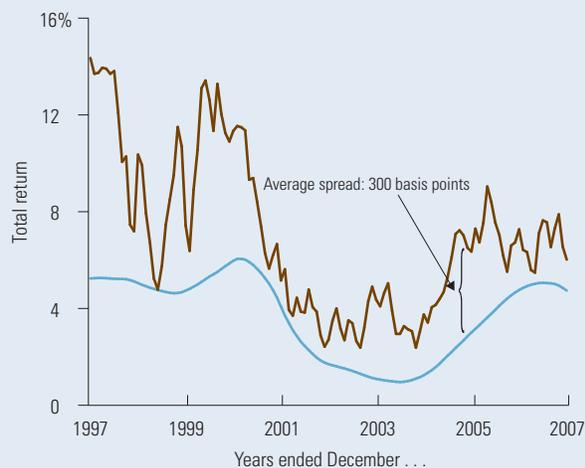
This is particularly important for investors who add a market-neutral product by reallocating existing equity holdings, because those investors are trading the market beta and the equity risk premium associated with that beta for an unknown alpha.⁶ In fact, over the period analyzed in Figure 3, market-neutral funds trailed the U.S. stock market by an average of 200 basis points annually. In other words, it has been difficult, on average, for market-neutral managers to consistently find and deliver alpha in excess of the equity risk premium. However, the value of a portfolio that is independent of market forces was clear during the bear market from 2000 through 2002. As with bond investors, market-neutral investors on average received protection from the bursting of the stock market bubble. And while they can offer a form of bear market insurance for equity investors, market-neutral products have provided the added benefit of low correlation to the bond markets, a function of the cash component of returns.

⁵ For more on the differences among hedge fund categories, refer to the Appendix, which starts on page 11.

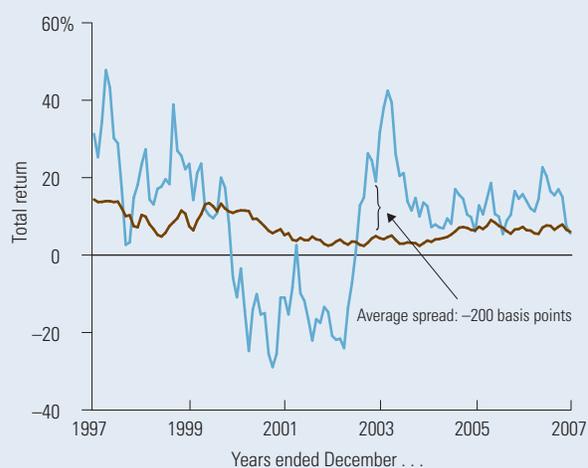
⁶ Beta: A measure of the volatility of a security or a portfolio relative to a benchmark.

Figure 3. The relationship between market-neutral funds, cash, and stocks

Trailing 12-month returns for market-neutral funds and cash



Trailing 12-month returns for market-neutral funds and equities



Notes: When we looked at the database in February 2008, the market-neutral category included 1 fund as of January 1995, and 239 funds that had reported returns as of December 2007. Because hedge funds report returns on a delayed basis, we expect that the actual number of funds is higher than 239. For example, 281 equity market-neutral funds had reported returns as of September 2007. The U.S. stock market is represented by the Dow Jones Wilshire 5000 Index.

Source: Fund returns are from the Lipper TASS hedge fund database. Data include live and dead funds from January 1995 through December 2007.

Because of the long-term benefit of the equity risk premium, investors may choose to replace a portion of an existing broadly diversified fixed income allocation with a market-neutral fund. In this case, investors must be aware of the term-structure and credit-spread premiums they are giving up by reallocating, as well as the anticipated direction of interest rates. If the future path of interest rates is unknown or is not considered, then the best guess

for the return investors would give up by moving from bonds to Treasury bills (essentially, market-neutral with 0% alpha) would be the term and credit premiums of bonds over cash—shown in **Figure 4**, on page 7, to be approximately 200 basis points on average. This implies that absent an interest rate forecast, investors should require approximately 200 basis points of excess return, on average, for the strategy to make sense.

Figure 4. Without a view on interest rates, the yield spread between bonds and Treasury bills can help frame alpha expectations

Term-structure and credit-spread premiums between the Lehman U.S. Aggregate Bond Index and 3-month Treasury bills



Note: Data are through December 31, 2007.

Sources: Data provided by Lehman Brothers and the Federal Reserve Board.

However, because interest rates have a more significant impact on the total returns of bonds than on the returns of cash, many investors may believe it is essential to consider the direction of future interest rates. To illustrate a framework for evaluating the relative impact of interest rates on market-neutral funds, we present **Figure 5**, on page 8, which shows the rolling 10-year total return differential between bonds and cash in brown and the yield of cash in

blue. Interestingly, while the average return spread since 1926 has been 164 basis points (with a 5.51% annualized return for bonds and a 3.87% annualized return for cash), this spread has varied tremendously across time.

For example, the extended period of rising interest rates from the 1930s through 1981 led to significant outperformance by cash. In essence, because of their low expected correlation to bonds (a direct result of their core cash holding), market-neutral funds can offer diversification relative to nominal bonds during periods characterized by rising interest rates. On the other hand, the extended period of interest rate cuts from 1981 through 2003 led to significant outperformance by bonds over cash. This environment would prove more challenging to market-neutral funds, again because of their core cash holding. Overall, because market-neutral funds target a modest premium over the returns of cash, an extended period of rising interest rates would help their performance compared with that of bonds, while a prolonged period of falling interest rates would make the return hurdle more difficult to overcome consistently.

When determining an asset allocation for market-neutral funds, then, investors must weigh the alpha expectation for the market-neutral manager against expected return volatilities and correlations, the expected level of short-term interest rates (and whether they are expected to remain steady, increase, or decrease), and the term-structure and credit-spread premiums.

Figure 5. The anticipated return spread between the bond market and cash can help frame alpha expectations

Rolling 10-year annualized total return spread between bonds and Treasury bills and Treasury bill yields



Note: Data are through December 31, 2007.

Sources: Authors' calculations using data from the Federal Reserve Board and Lehman Brothers.

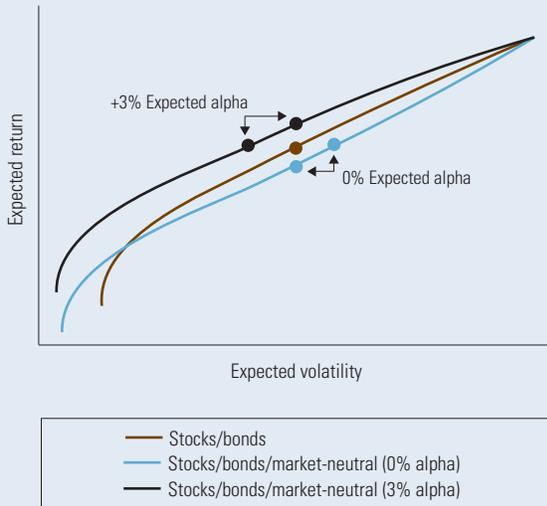
The strategy's role in a portfolio

Low correlation to both stocks and bonds, an expected premium over the return from cash, and expected protection from bear markets in both stocks and bonds support the case for including market-neutral funds in a well-diversified portfolio. In light of these considerations, we revisit the investment case for including a market-neutral fund in a balanced portfolio in **Figure 6**, on page 9. In all instances the portfolio containing an allocation to a market-neutral fund that generated positive alpha (represented by the black line) was more "efficient" than a portfolio of just stocks and bonds (represented by the brown line), albeit by a modest amount. However, if the market-neutral manager fails to deliver alpha, the investor can expect a long-

term *volatile* cash-like return, represented by the blue line, which is noticeably less attractive than the base portfolio consisting of only stocks and bonds. In other words, deciding whether to allocate a portion of a diversified portfolio to a market-neutral strategy depends entirely on the expectation that the manager will deliver positive alpha over the long term.

While market-neutral strategies can be very effective for clients—providing portfolio diversification and potentially larger allocations to higher-returning betas—adoption of these strategies has been slower than would be expected. Although we can only speculate as to the reasons for the tepid response, it seems most likely that investors in hedge funds have come to expect outsized returns—something market-neutral

**Figure 6. Impact on a portfolio:
Success depends on positive alpha**



Notes: This is a hypothetical illustration that is not representative of any particular investment. For stocks, we assumed an average return of 10% and a standard deviation of 20%; for bonds, we assumed an average return of 6% and a standard deviation of 7%; for market-neutral with 0% alpha, we assumed an average return of 4% and a standard deviation of 10%; for market-neutral with 3% alpha, we assumed an average return of 7% and a standard deviation of 10%. We assumed a correlation between stocks and bonds of 0.25 and assumed that market-neutral is uncorrelated (0.0) to other asset classes. When moving from a stock/bond portfolio to a stock/bond/market-neutral portfolio, we assumed a constant 20% investment in market-neutral, reallocated from the bond portion of the portfolio. Source: Vanguard Investment Counseling & Research.

funds simply have not delivered in a risk-controlled framework. Investors may therefore believe it is challenging to effectively incorporate a stand-alone market-neutral product into an existing portfolio, particularly since the standard hedge fund fees of 2% of assets and 20% of profits quickly transcend any expected alpha.⁷ It's also possible that investors are pessimistic about the ability of managers to consistently capture alpha (even before fees) and

may therefore be more interested in the alternative betas that characterize many other hedge fund strategies. Finally, hedge fund managers themselves may not find a market-neutral strategy as profitable as an opportunistic strategy through which higher gross returns and fees may be pursued.

Conclusion

Investors concerned that the success of their portfolios depends entirely on the positive trajectory of equity and fixed income markets may benefit from allocating part of their portfolios to a return source that is largely independent of traditional markets. For these investors, market-neutral funds can play an important role. However, the challenge so far has been to determine how a market-neutral fund fits into a strategic asset allocation. Because of the market-neutral fund's low expected return premium and reliance on manager skill, investors may view the potential for lower returns as outweighing the diversification benefits. Additionally, other investors may simply choose to invest in opportunistic hedge fund strategies, accepting the higher risks in hopes of getting higher returns. While opportunistic hedge fund strategies may play a role for some investors, we believe that many investors who are interested in hedge fund strategies may benefit from a highly risk-controlled limited-leverage product, such as a market-neutral fund. In the end, the decision to include a market-neutral strategy in a diversified portfolio rests with expectations for positive alpha. If investors don't believe a manager can deliver positive alpha, they should focus primarily on traditional asset classes and strategies.

7 With an expected cash return of 4%, a market-neutral manager targeting 300 basis points of excess return net of fees (or, a 7% total return after fees) would likely be forced to generate a gross return of at least 9.95%. For this example, we assume that the hedge fund charges a 2% management fee and a 20% performance fee on excess return. Half of the management fee is deducted on the first day of the year, and half on the last day. Performance fees are calculated and deducted on the last day of the year. Based on the calculation of fees, the net return on a gross return of 9.95% is 7.00%, or 300 basis points over the expected cash return.

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Appendix

Differentiating market-neutral funds from other “hedge funds”

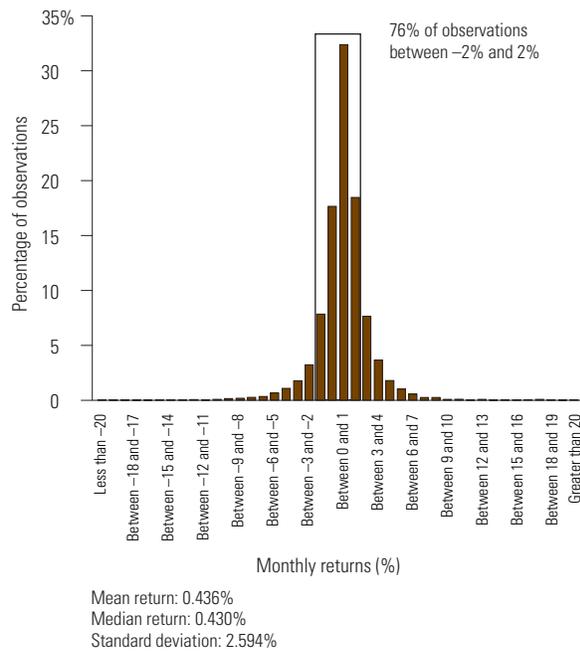
Equity market-neutral strategies operate very differently than do the diverse array of strategies represented by most hedge funds. While the original hedge funds were designed to eliminate market risk (similar to the market-neutral process described in Figure 2), today the bulk of investors’ dollars have been invested in strategies that are more opportunistic and whose primary goal is to seek higher returns and diversification.⁸ However, research has shown that these opportunistic strategies tend to be less independent of traditional

market forces than the name “hedge fund” would imply (Kat and Palaro, 2006).⁹ This means that while investors may be turning to the hedge fund market to obtain diversifying return streams, in aggregate they have been receiving far less diversification than they had expected.

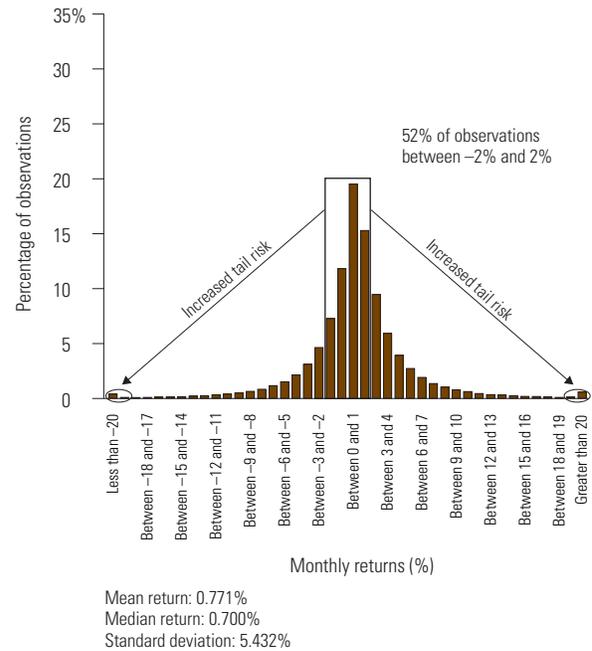
As with any strategy, expected returns must stem from some combination of beta (returns for bearing systematic risks) and alpha (returns from manager skill). As a result, expectations for high returns are based on the notion of being compensated either for bearing risk or for investing with a particularly skillful manager. While the allure

Figure 7. Distribution of monthly returns for market-neutral and opportunistic funds

Equity market-neutral



Opportunistic hedge funds



Notes: The opportunistic group includes funds in the following categories: long-short equity, dedicated short bias, global macro, event-driven, managed futures, emerging markets, and multistrategy. There was 1 equity market-neutral fund and 53 opportunistic funds as of January 1995. There were 239 equity market-neutral funds and 2,646 opportunistic funds as of December 2007.

Source: Fund returns are from the Lipper TASS hedge fund database. Data include live and dead funds from January 1995 through December 2007.

8 Cash flow data were provided by Tremont and Hedge Fund Research.

9 See also Hasanhodzic et al. (2006) and Jaeger et al. (2005).

of a manager's skill has been one of the main reasons for the interest in hedge funds, experience and research have shown that the risk and reward continuum extends to hedge fund strategies as well. Indeed, it's becoming increasingly clear that with hedge funds, expectations for high returns should be accompanied by expectations for high risks (including risks beyond the typical measure of return volatility). High historical returns for many hedge funds may simply be compensation for systematically choosing to bear non-normal risks, which may help explain the seemingly random "blowups" in the hedge fund universe over time.

In **Figure 7**, on page 11, we compare the monthly return distributions for market-neutral funds and opportunistic funds. While it's clear that opportunistic hedge funds tend to provide greater average returns and volatility than market-neutral funds, opportunistic funds are also marked by a much greater probability of extreme returns. This is not unexpected, given that the majority of market-neutral funds operate in a more risk-controlled framework. Such a framework engenders lower degrees of leverage, increased liquidity, lower tracking error, and generally lower cost drag. Hedge funds with an opportunistic focus, on the other hand, tend to employ strategies that are more concentrated, focused on events, or tactically driven, leading to higher tracking error, illiquidity, and higher cost drag. And most hedge funds operate with limited regulation and oversight. This can lead to additional risks for investors.

It is important to note, however, that while the distribution of monthly returns for the equity market-neutral funds observed in the Tremont database is narrower than that for opportunistic strategies, the distribution is still wider than expected given the assumption that most market-neutral funds operate in a highly risk-controlled framework. Indeed, if all market-neutral funds operated within such a framework, closer to 100% of the monthly

observations might be expected to fall in a relatively tight range around the return of the Treasury bill, say, between -2% and +2%. However, experience has shown that this is not the case. For example, in **Figure 8**, on page 13, we show the monthly distribution of returns for market-neutral funds that reported to the Tremont database and had at least 60 months of returns as of December 2007. While a large majority of observations were within a range of +2% and -2% around the Treasury bill return (represented by the dark brown and dark blue bars), in any given month a pool of observations occurred well beyond that range.

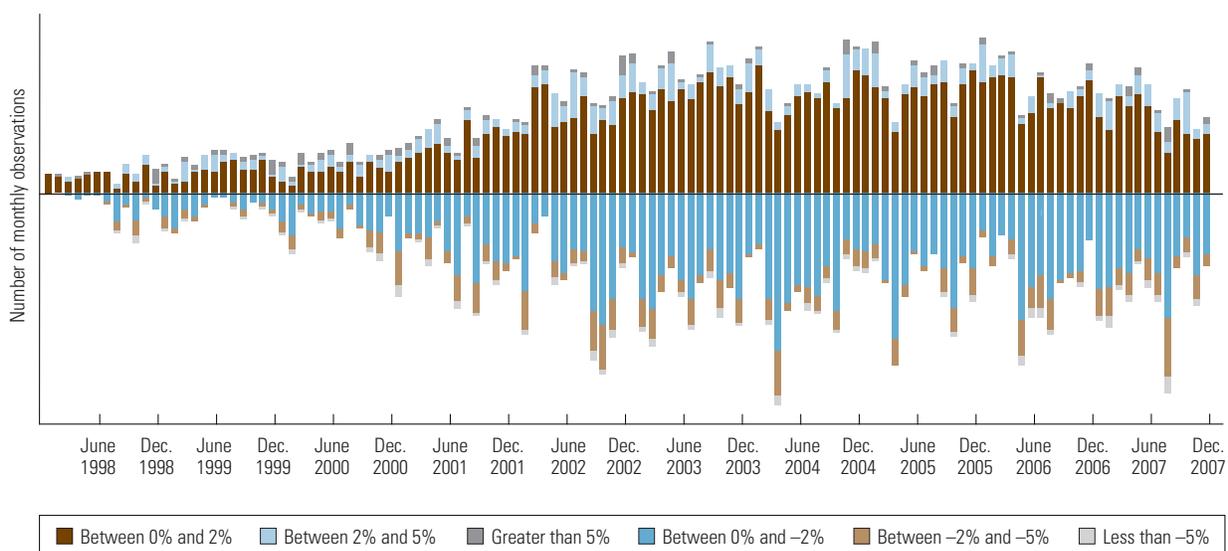
Figure 8 also sheds light on the diversity of processes used by these funds. In any given month, we see funds with positive and negative returns. If similar strategies and processes were used by funds throughout the peer group, we would expect to see a more defined pattern in the return distributions.¹⁰ For investors who use more than one fund or funds that employ multiple strategies, imperfect correlations are desirable to reduce the volatility of the funds' returns. This is particularly true if one or more of the strategies used by a fund are more concentrated and prone to larger deviations from the return of cash.

The primary implication of such diversity is that while each market-neutral strategy may have a stated objective of mitigating or eliminating systematic market risk, both the investment processes used and the degree of hedging may differ from fund to fund. In essence, to be market-neutral, a fund simply must be dollar-neutral, with an equal amount of dollars both shorted and invested long. However, in terms of risk control, portfolio concentration, and factor bets (on size, style, and sector), each market-neutral fund may be quite different. It is therefore important to carefully examine a fund's performance across various market conditions and to understand the process being used.

¹⁰ Kat (2003) found that equity market-neutral funds correlated at an average of 0.23 to other market-neutral strategies. Kat makes it clear that "... although funds may be classified in the same strategy group, this does in no way mean that they will produce similar returns."

Figure 8. Not all market-neutral funds adhere to strict risk-control standards

*The monthly distribution of market-neutral fund excess returns versus cash:
Funds with at least 60 months of reported returns as of December 2007*



Notes: We identified 82 funds with at least 60 months of returns. Of those, 5 funds reported 120 months of returns and 29 funds stopped reporting at some point before December 2007. Monthly excess returns are reported in excess of the return of the 3-month Treasury bill.

Source: Fund returns are from the Lipper TASS hedge fund database. Data include live and dead funds from January 1998 through December 2007.

Differentiating market-neutral strategies from arbitrage strategies

Equity market-neutral funds are often closely associated with other “nondirectional” strategies such as convertible arbitrage, fixed income arbitrage, and merger arbitrage because each of these strategies tends to operate independently from traditional market forces.¹¹ However, it’s important to point out that equity market-neutral strategies are a distinct kind of nondirectional hedge fund strategy.

While arbitrage strategies are often considered nondirectional, they have experienced return patterns that have at times looked quite different from those of true equity market-neutral strategies. Relative-value managers such as those who practice fixed income arbitrage or convertible arbitrage bet

on a convergence (or divergence) of prices that they believe are misaligned. For example, a convertible arbitrage manager may purchase the convertible bonds of a given company and short the stock of that company, believing that the prices of the two securities are out of equilibrium and are due to revert back to equilibrium. In most circumstances, the trades work out as expected, but there is the chance for that one trade that works against the manager, producing losses far in excess of the gains from the successful trades. This tends to result in return distributions that are highly negatively skewed. Because of the high probability of consistent small returns combined with the low probability of random catastrophic loss, these trades are sometimes referred to as “picking up nickels in front of a steam roller.”

¹¹ Nondirectional strategies adhere most closely to the original intent of hedge funds, whereby long and short positions are established in securities that share similar risk-factor exposures. In this way, nondirectional strategies are generally “risk neutral” to the market. The potential excess return from nondirectional strategies emanates from identified mispricings among the related securities held in the long and short positions. For more on the differences between nondirectional and opportunistic strategies, see Philips (2006).

Compounding the potential dangers of the adverse trade is the use of leverage. Often, arbitrage strategies use far greater degrees of leverage than traditional equity market-neutral strategies—typically a result of operating in smaller or less liquid markets such as the convertible bond market. While leverage does not increase skill, small, consistent gains may be amplified, leading to attractive risk and return attributes. However, leverage can also amplify the rare losses to extreme levels. For example, a fund that is leveraged 10 to 1 would require only a 10% loss to the underlying holdings to become insolvent. This leads to return patterns that are significantly negatively skewed.

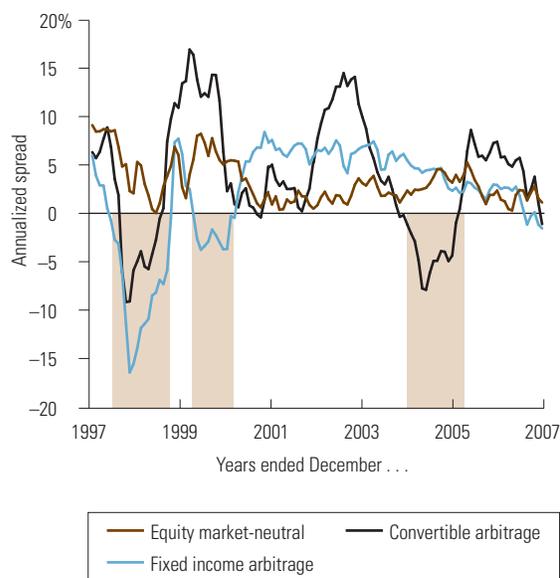
This means that there are a disproportionate number of large negative returns, which serves to pull the mean return significantly below the median return. The lack of a normal distribution is important for several reasons. Most obviously, traditional risk management is formulated under normal statistical assumptions; as a result, multistandard deviation events are not effectively considered. Value-at-risk (VaR) measures based on normal return distributions do not effectively model characteristics such as excessive negative skew. This leads to an underestimation of the probability of large losses and often an inability to protect a fund from collapse.

On the other hand, recalling Figure 7, we see a normal distribution for market-neutral funds. This means that there are a similar number of observations on either side of the mean. The normal distribution for equity market-neutral funds likely stems from an investment strategy concentrated in primarily liquid, continuously priced assets.

In Figure 9 we translate this concept into a format that is perhaps more meaningful—the propensity for significant negative deviations from the return of cash investments. Because of illiquid markets, greater leverage, and more concentrated strategies, both convertible arbitrage and fixed income arbitrage funds have experienced significant downside returns relative to cash (indicated by the shaded regions), while equity market-neutral strategies have more consistently generated positive, albeit smaller, spreads.

Figure 9. Negative skew can lead to significant underperformance versus a cash benchmark

12-month rolling spread between T-bills and nondirectional hedge funds



Notes: There was 1 equity market-neutral fund, 2 fixed income arbitrage funds, and 0 convertible arbitrage funds as of January 1995. There were 239 equity market-neutral funds, 176 fixed income arbitrage funds, and 62 convertible arbitrage funds as of December 2007. (For comparison, there were 281, 206, and 101 funds, respectively, as of September 2007.)

Source: Fund level returns are from the Lipper TASS hedge fund database for funds categorized as fixed income arbitrage, convertible arbitrage, and equity market-neutral. Data include live and dead funds from January 1995 through December 2007.



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