BARRA ROGERSCASEY

Market Neutral Investing

Key Observations

- *Long/short equity has attractive benefits including being independent of market direction and uncorrelated to major asset classes. In addition long/short equity utilizes information more efficiently which leads to higher alphas per unit of risk.*

- *Long/short equity alphas are portable to other asset classes which can be helpful in both asset allocation and rebalancing of investment structures.*

- *Within U.S. equity structures, long/short is shown to decrease predicted tracking error and increase forecasted information ratios.*

- *Weak performance over recent periods has been added to the issues of complexity, derivatives and leverage that have kept many investors out of the strategy.*

Market neutral is an investment approach with many positive attributes that make the strategy appealing to investors. Market neutral investing also has some less than trivial drawbacks. This paper will discuss both the positives and negatives of market neutral investing, more specifically long/short equity market neutral, and highlight why BARRA RogersCasey believes it is a viable strategy worthy of consideration.

What Is Market Neutral?

Market neutral is an investment strategy that has received a tremendous amount of press over the past year—and not all of it positive. There have been several articles written that have chastised market neutral with captions such as the Wall Street Journal's '*Neutral' Funds Aren't Shifting Into High Gear*[1] or Morningstar's *Market Neutral Funds: Unsafe at any Speed?* and *Switzerland They Ain't.*[2]

Definition

Market neutral has become a catch-all term in which are embedded many different investment approaches with varying degrees of risk and neutrality. The common underlying thread in all market neutral strategies, if constructed properly, is that the market does not have an impact on the underlying results of the portfolio. In other words, returns generated by a market neutral portfolio are (should be) independent of capital market returns. In their most basic form, market neutral strategies seek to provide a return in excess of cash.

Types of Market Neutral Strategies

There are many types of investment strategies that have fallen under the broad umbrella of market neutral:

Long/Short Equity

The most prevalent of these strategies and probably the most easily understood is market neutral long/short equity. This approach buys a portfolio of attractive stocks, the long portion of the portfolio, and sells a portfolio of unattractive stocks, the short portion of the portfolio. The spread between the performance of the longs and the shorts provides the value added of this approach.

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[1] Karen Damato, *The Wall Street Journal*, 19 March 1999, Section C, p.1.

[2] *Morningstar Mutual Funds*, Summary Section Volume 35, Issue 3, S1.

Convertible Securities Arbitrage

Convertible securities arbitrage strategies buy convertibles long and sell the underlying stocks of the convertible short. This strategy adds value from the difference between the income on the convertibles plus the rebate[3] on the shorts and the dividend income on the shorts. Secondly, it can add value from movement of the stock price underlying the convertible security.

Futures / Index Arbitrage

This strategy seeks to take advantage of the mispricing between the futures contract of an underlying index, such as the S&P 500, and the actual underlying stocks that make up the index. In this strategy, managers will usually buy the futures and sell the stocks short.

Fixed Income, Currency and Options Arbitrage

Fixed income arbitrage strategies take advantage of pricing, spread and cash flow differentials among fixed income instruments. Currency arbitrage strategies seek to earn potential interest rate differentials between currencies or baskets of currencies. Options arbitrage strategies buy and sell options to exploit volatility differentials.

Risk Arbitrage

Risk arbitrage or event arbitrage usually revolves around merger and acquisition activity in the marketplace. Managers will buy the stock of the company being acquired and sell short the stock of the acquirer in order to take advantage of the risk premium associated with the probability of the deal actually being closed.

There are even more market neutral strategies than those briefly described above. In actuality, any arbitrage opportunity that has little or no systematic risk can fall into the definition of market neutral. Other types of long/short equity strategies (more typically defined as hedge funds) which are not designed to be market neutral, fall outside our definition of market neutral long/short equity and are not considered in the scope of this paper. The remainder of this paper will focus on the long/short equity market neutral strategy.

[3] Investors that sell stocks short receive a rebate (or interest income) on the cash proceeds from the short sales.

Long/Short Equity Background

Long/short investing is said to trace back to the late 1940s and the A.W. Jones investment partnership that bought and shorted stocks in portfolios. However, it was a long time before long/short strategies gained any real institutional appeal. The change in attitude was the result of the IRS private letter ruling to the Common Fund in 1988, which was again restated in 1995 in a revenue ruling, that determined that short sales did not create unrelated business taxable income (UBTI)[4]. Clearly, tax-exempt institutions, especially corporate and public defined benefit plans, were generally unwilling to invest in any strategy that resulted in more paperwork and taxation. So, the IRS ruling basically lifted the gates on market neutral as a viable strategy for a large pool of assets. Indeed, the longest track record for an institutional long/short equity product within the BARRA RogersCasey database begins in 1989, which corresponds to the broad viability of the strategy in institutional investment pools.

Even though the gates were opened, there has not been a flood of investment products or assets into the strategy. However, more recently there has been an increase in the number of market neutral products that have been brought to the market. Currently, BARRA RogersCasey tracks approximately thirty institutional market neutral long/short equity products. Combined, these products have less than $15 billion in assets under management.

Strategy Objectives

Long/short equity, like other market neutral strategies, seeks to provide a return in excess of T-bills. The strategy is not a pure enhanced cash strategy because of the significantly higher risk and return expectations of the strategy, but it is an absolute return investment approach. Typically, the alpha expectations of the strategy have been between 3.0% and 6.0%.

[4] *Market Neutral, State-of-the-Art Strategies for Every Market Environment*, Chicago: Irwin Professional Publishing, 1996, pgs. 1–5.

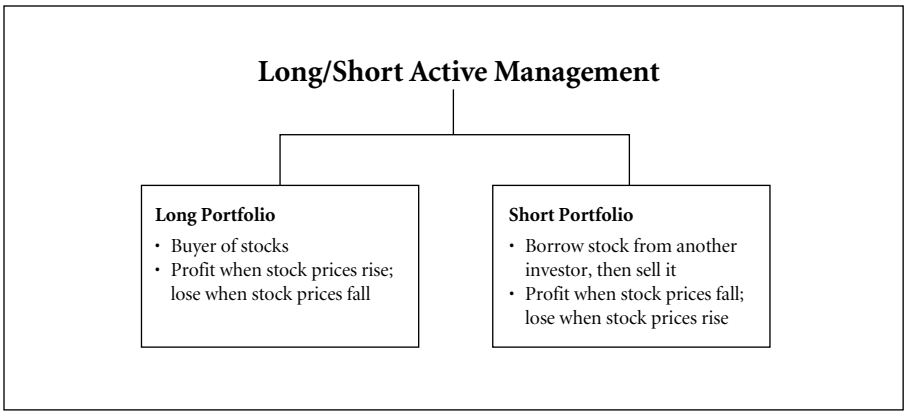

Exhibit 1

There are two primary sources of return to a long/short equity strategy as graphically represented in Exhibit 1. The first component is the long portfolio where the investor is a buyer of stocks. In the long portfolio, the investor profits when the stocks in the portfolio rise in price, on average, and lose when the stock prices fall. The second component is the short portfolio. Here the long/short equity investor borrows stocks from another investor (through securities lending channels) and then sells the stocks to generate the short portfolio. In this component, the investor profits when the stocks in the short portfolio fall, on average, and loses when these stocks rise in price. In the end what is most important, and the source of value added, is that the return of the long portfolio must be greater than the return of the short portfolio. Generating this spread between the long and short portfolios is the goal of active management in long/short strategies.

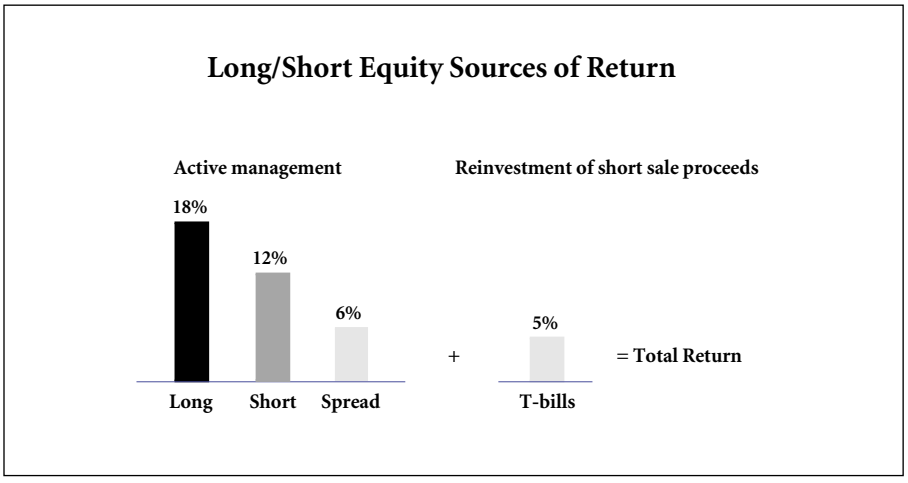

Exhibit 2

The second source of return is not generated by active management, but rather is due to the mechanics of the strategy. When the manager sells the stocks short, he or she receives proceeds from the sale. These proceeds are typically reinvested in T-bills and thus become the second source of return and the benchmark generating component of the strategy.

How Does Long/Short Work?

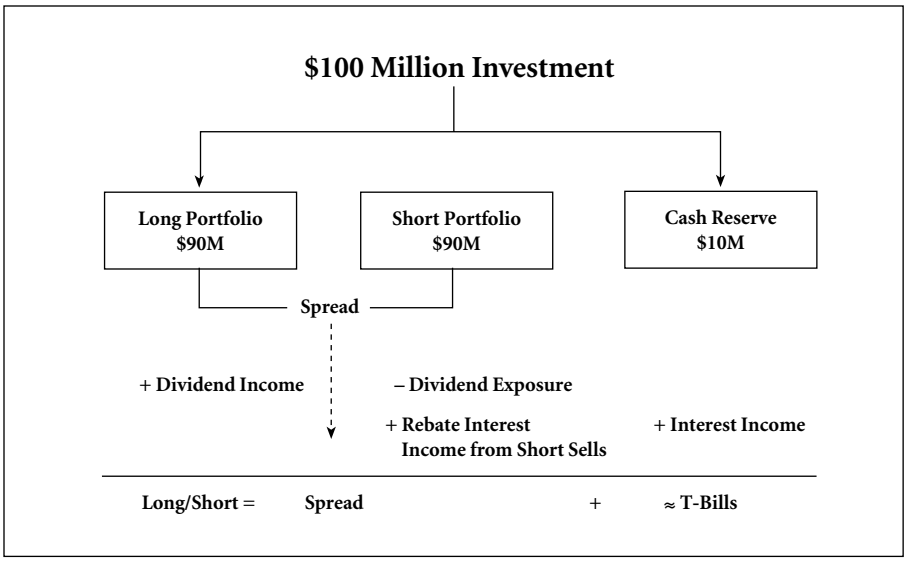

Exhibit 3

So, how does long/short actually work? When starting with an initial investment of $100 million, $90 million is used to buy a long portfolio of attractive stocks and an equal amount is sold short with borrowed, unattractive securities. The remaining $10 million is set aside as a cash reserve that is used as a margin account for the daily mark to market of the short portfolio. As shown in Exhibit 3, the primary sources of return in the strategy are the spread between the long and short portfolios and the rebate interest from the short sales of stock. There are some other, more modest, components to the return. The long portfolio receives dividend income, but is generally offset by dividends on the short portfolio that have to be paid to the actual owner of the borrowed stock. Additionally, all of these other small components, when combined with the interest earned on the proceeds of the sale of the short portfolio, approximate the return to T-bills. Thus, through these mechanics, long/short equity strategies generate T-bills plus an alpha return.

Benefits of Long/Short Equity Investing

The following section provides further detail on the advantages of market neutral investing. Returns generated by the strategy are independent of the direction of the market. Long/short returns are not only broadly uncorrelated to stocks and bonds but also to equity style returns and the active returns of equity managers. Another benefit is that long/short equity strategies use information more efficiently, which has resulted in higher risk adjusted returns. Finally, the alpha generated from long/short equity is portable to other asset classes which can be beneficial to rebalancing and asset allocation.

Independent of Market Direction

The table below illustrates that long/short strategies can provide alpha in any market environment. In the up-market scenario, the S&P 500 returned 20%. In this case the long portfolio actually trailed the S&P 500, which is quite typical of active managers in an extremely strong market. The short portfolio rose 12%, a negative return for a short investor. The net result is a 4% spread between the long and the short portfolios, which when combined with T-bills, provides for a 9% total return. Thus, even when active management on the long portfolio trails the market, the strategy can still outperform ***if*** the short portfolio performs worse than the long portfolio.

	Up Market	Down Market	Flat Market	Perverse Spread
S&P 500	20%	–20%	0%	20%
Long–Short Strategy				
Long Portfolio	+16	–17	+6	+16
Short Portfolio	–12 (+12%)	–+21 (–21%)	2 (+2%)	–22 (+22%)
Long/Short Spread	4%	4%	4%	–6%
T-bill Return	5%	5%	5%	5%
Total Return	9%	9%	9%	–1%

Table 1

Likewise, in a 20% down market, the long portfolio fell 17% and the short portfolio fell 21%, a positive return for a short investor. Again, the net result is a 4% spread and a 9% total return. Finally, in a flat market, the longs rise 6%, the shorts gain 2%, a negative for the short side, but the result is again a 4%

spread. Clearly, one of the most attractive features of long/short strategies is that it doesn't matter what the S&P 500 does, just a positive spread between the long and the short portfolios is essential. When the spread between the long and shorts is perverse, returns of long/short strategies will trail T-bills. This scenario is shown in the last column of Table 1.

Long/Short Equity is Uncorrelated to Stocks and Bonds

Market Neutral vs. Broad Markets
9 Years Ending December 31, 1999

	MN #1	MN #2	S&P 500	FR2000	EAFE	LB AGG	T-Bills
MN #1	1.00						
MN #2	0.37	1.00					
S&P 500	-0.18	-0.23	1.00				
FR2000	-0.16	-0.37	0.77	1.00			
EAFE	-0.20	-0.24	0.67	0.52	1.00		
LB AGG	0.27	0.31	0.16	-0.01	0.02	1.00	
T-Bills	0.12	0.02	0.31	0.01	-0.05	0.46	1.00

Table 2

Table 2 examines the correlation of market neutral strategies versus broad market classes. The data looks at quarterly results of the broad market proxies beginning with the first quarter of 1991 through the fourth quarter of 1999. The number of observations is somewhat limited due to lack of lengthy market neutral track records. MN #1 and MN #2 represent two market neutral managers with very different approaches to investment in long/short equity. The S&P 500 is the proxy for U.S. large capitalization stocks, while the Russell 2000 (FR2000) represents U.S. small capitalization stocks. So, despite investing in both large and small cap U.S. stocks, the long/short equity portfolios are negatively correlated to the U.S. indices. The long/short portfolios were also negatively correlated to international stocks, as proxied by the MSCI EAFE index. What is seen during this time period is the relatively high correlation between large cap and small cap stocks at 0.77, as well as between the S&P 500 and EAFE at 0.67. The long/short managers were, however, positively correlated to both U.S. bonds and cash, represented by the Lehman Brothers Aggregate

Index and 90-day Treasury Bills, respectively, but at correlations of 0.3 or less, the strategies are basically uncorrelated to these asset classes as well. It is also worth noting that the correlation between the two long/short managers is quite low at 0.37, suggesting that there are diversification benefits in a multi-manager market neutral structure.

Market Neutral vs. Equity Style Indexes
8 1/2 Years Ending December 31, 1999

	MN #1	MN #2	FR1000V	FR1000G	FR2000V	FR2000G
MN #1	1.00					
MN #2	0.37	1.00				
FR1000V	-0.01	-0.08	1.00			
FR1000G	-0.27	-0.32	0.70	1.00		
FR2000V	0.08	-0.17	0.80	0.43	1.00	
FR2000G	–0.30	–0.45	0.66	0.82	0.68	1.00

Table 3

The next test was the correlation of these same long/short portfolios to U.S. style indices (limited to 8.5 years of history). In this case, we used the Russell 1000 Growth and Value and the Russell 2000 Growth and Value as proxies for large cap growth and value and small cap growth and value, respectively. Table 3 demonstrates that the long/short strategies are not correlated to any of the styles. However, the results are interesting in that the returns of these long/short managers are more negatively correlated to the growth styles than the value styles. Most long/short equity managers, especially quantitatively-based long/short managers, have significant valuation components to their investment processes and thus the results are not all that surprising.

So, despite being largely uncorrelated to either growth or value, the fact that there is some information on the relative correlations between the portfolios and growth and value has implications for the implementation of long/short strategies that will be explored later.

Market Neutral vs. Peer Group Medians
8 1/2 Years Ending December 31, 1999

	MN #1	MN #2	LC Alpha	LV Alpha	LG Alpha	SC Alpha	SV Alpha	SG Alpha
MN #1	1.00							
MN #2	0.47	1.00						
LC Alpha	-0.10	-0.13	1.00					
LV Alpha	-0.23	-0.46	0.30	1.00				
LG Alpha	0.28	0.33	0.50	–0.44	1.00			
SC Alpha	0.12	–0.17	0.22	0.40	–0.02	1.00		
SV Alpha	–0.29	–0.43	0.32	0.64	–0.39	0.56	1.00	
SG Alpha	0.18	–0.18	0.06	0.09	0.09	0.48	0.19	1.00

Table 4

Finally, Table 4 considers how the value added (alpha) of long/short equity managers versus T-bills is correlated with the value added (alpha) of the various median equity managers versus their appropriate benchmarks. For example, the large cap core alpha (LC Alpha) is the return of the median manager minus the return of the S&P 500 benchmark, measured quarterly, over the eight and one-half years time period. What is being measured is the correlation of the value added of the median manager over this time period versus the value added of the long/short managers. Likewise, SG Alpha is the median small cap growth manager's outperformance versus the Russell 2000 Growth index. The results again show that the alphas of the long/short portfolios are not highly correlated to the alpha generating capabilities of the median managers in the large and small cap core, growth and value peer groups. Additionally, the alphas of the two long/short portfolios also have a relatively low correlation. Thus, one can conclude that long/short equity is a good diversifier.

More Efficient Use of Information

Another highly touted aspect of long/short investing is that the strategy uses information more efficiently. Managers typically develop elaborate processes that rank the attractiveness of stocks from highest to lowest using various inputs. However, long only portfolio managers consider only the top portion

of the ranking output and discard the information about the worst ranking stocks. The short side of a long/short portfolio takes advantage of this typically discarded information. Moreover, much of the investment community is focused on which stocks to buy, not which stocks to sell short, and therefore an argument can be made that there are greater information inefficiencies on the short side of the portfolio. Additionally, long only managers are inherently constrained to the size of the underweight position in any given security (its largest underweight versus the benchmark is constrained by 0% or, in other words, the benchmark weight of the security). In contrast, a long/short manager is not constrained by the benchmark weight of the stock and can have a greater underweight in that security. Long/short investing not only utilizes more information, but some of the information used is less efficient and provides for greater opportunity. Long/short portfolios, therefore, have the value added or alpha from the typical long portfolio but also have the value added from short side. This "double alpha" with a moderate increase in risk provides for a better information ratio[5] than long only strategies.

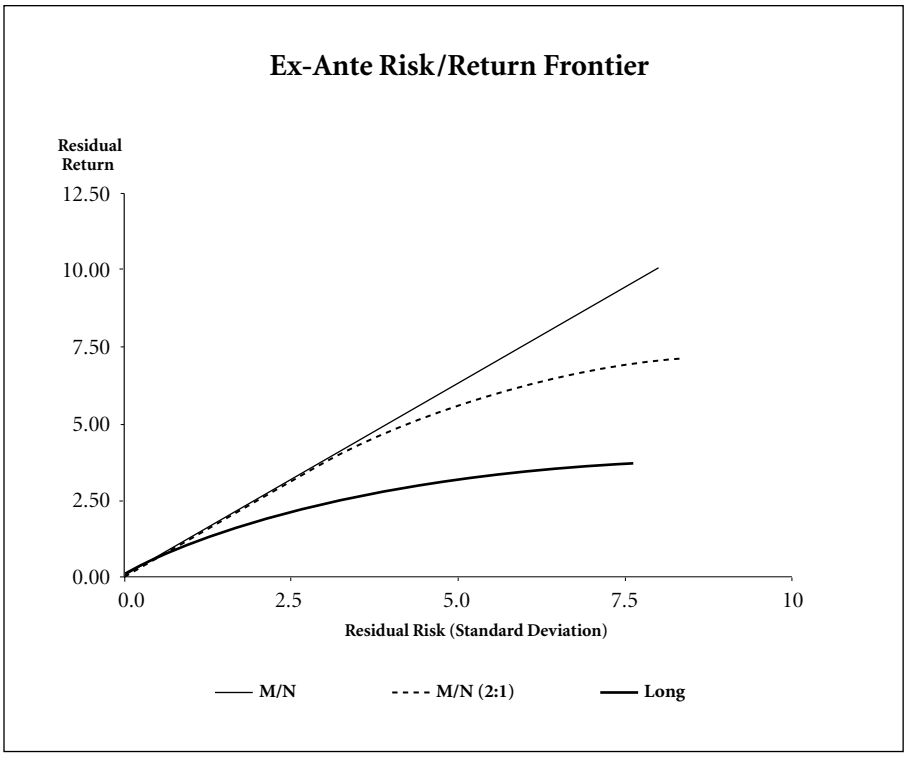

Exhibit 4

[5] Jason Lejonvarn and Claes Lekander, *The Case for Market Neutral*, BARRA.

Our colleagues at BARRA tested the "better information ratio" concept with theory. According to the results of their study[6], which is graphically represented in Exhibit 4, long/short equity is more efficient, in a mean variance context, than long only strategies and provides for better information ratios. What BARRA's analysis concluded was that market neutral portfolios with high residual correlation between the longs and shorts gives an investor double the return and double the risk. But, if the manager can build a long/short portfolio with the long and short sides having uncorrelated residual returns, then the risk increases only 1.4 times. Thus, long/short investing provides for better information ratios so long as investment managers have skill in stock selection and portfolio construction, thereby lowering residual return correlations. Another interesting result of the BARRA research was that at low levels of risk (1.0% and less), market neutral strategies and long-only strategies had very similar results. This is due to the fact that at lower risk levels, long/short strategies are over-constrained and cannot take full advantage of the information edge. The more institutionally-oriented long/short equity strategies constrain long/short leverage to two times (largely due to Regulation T[7]), and this strategy begins to weaken relative to the unconstrained leverage version at approximately 4.0%. This is in contrast to the unconstrained leverage strategy which does not erode at higher risk levels.

Alpha Portability

Another positive attribute of long/short equity strategies is the flexibility these strategies provide in an asset allocation and implementation context. The alpha that is generated by the long/short equity strategy can be left as a cash + alpha strategy or the alpha may be "ported" to any other asset class through the use of futures. The "portability" of the alpha enables investors to increase/decrease their stock/bond/cash allocations or to rebalance their fund structure as required through the use of an alpha generating investment vehicle. This can be done more cost effectively as using these instruments to change the asset allocation allows the investor to transact without actually buying or selling individual securities as may otherwise be necessary. The use of portable alpha strategies, like long/short equity, may in fact lower the costs of an asset allocation/rebalancing policy without giving up alpha potential.

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[6] Information ratio is defined as: $\left(r_p - r_b\right)/\sigma_{pb}$ where r_p is the return of the portfolio, r_b is the return of the benchmark and σ_{pb} is the deviation between r_p and r_b.

[7] Regulation T requires that broker dealers retain 150% of the value of the short securities as collateral.

Market Neutral in Investment Programs

Despite implications of long/short being a separate asset class based upon its low correlation to other asset classes, it is not an asset class. BARRA RogersCasey considers investments to be a distinct asset class when meeting the following four criteria: that it has a correlation of less than 0.7 relative to other asset classes; that it is broadly investable by institutional investors; that it adds value in a total portfolio framework; and lastly that it makes intuitive sense. Long/short equity, and all market neutral strategies for that matter, fall short on the last point. In effect, long/short equity is nothing more than a sophisticated portfolio construction technique designed to take advantage of information more fully within the equity market. The results are really the same as a diversified U.S. equity program wherein total active managers consistently go "long" some stocks and have positive active weights, and "short" other stocks which in effect gives them negative active weights. The difference between market neutral and more traditional active management is that market neutral, by way of its portfolio construction techniques, eliminates the effect of the market, and can also be more aggressive in its stock shorting and amplifies the approach by using leverage.

Two Ways to Implement Market Neutral in Investment Programs

So, if not an asset class, how does one implement long/short equity or various other market neutral strategies in an investment program? The next section examines this question in detail.

Absolute Return

In its purest form, long/short is an absolute return strategy with return and risk expectations in excess of Treasury bills. Many investors have looked to market neutral as one of several strategies that partially comprise the investors strategic allocation to alternative investments.

Alpha Transfer

As was earlier pointed out, among the conceptual benefits of long/short equity is the portability of its alpha. Using futures, the long/short alpha can be applied to any asset class and many investors have utilized this approach. Treasuries with a 4% alpha expectation certainly has appeal, and long/short may be best utilized as an alpha transfer strategy. However, investors who are new to the

concept may find it more intuitive to think of long/short equity as an enhancement or alternative for their equity program and the following section will focus on long/short in equity structures.

Structuring Long/Short Equity in an Equity Program

Market neutral is clearly an active strategy with higher risk and return expectations than more traditional long only strategies. Therefore, long/short is not a substitute for passive investment. However, long/short strategies are generally implemented in equity structures with S&P 500 futures. These strategies are also risk controlled and usually have insignificant style tilts. Therefore, one can consider long/short strategies an aggressive core strategy.

The next series of charts examines the benefits of long/short strategies within U.S. equity structures both from a predicted risk viewpoint as well as a risk adjusted return perspective. In the first case, the benefits of long/short equity are examined in a traditional U.S. equity structure with large cap and small cap as well as growth and value investments. In the second case, a risk controlled equity strategy is added to the structure. Once again, the benefits of long/short are examined in this more risk controlled case.

Case #1

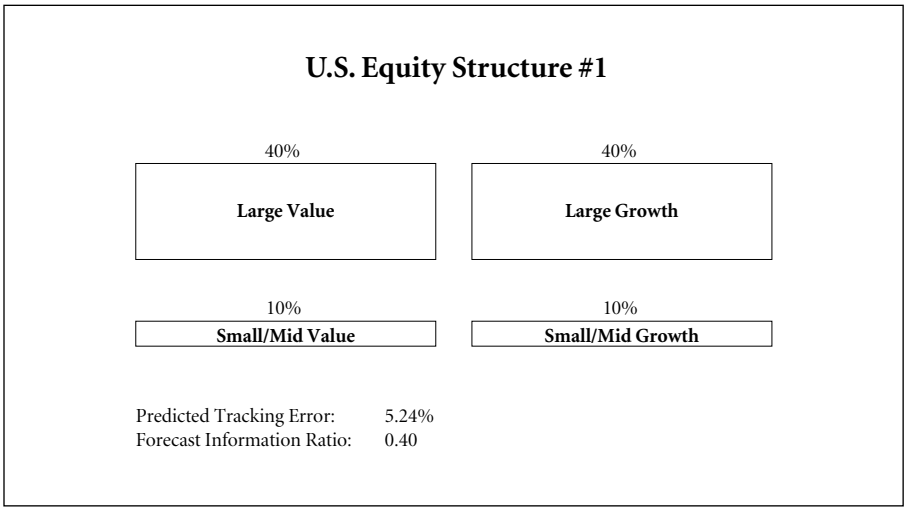

Exhibit 5

In this first structure, each of the managers is a traditional active manager. 80% of the structure is allocated to large cap managers, equally split between growth and value. 20% of the structure is small/mid mandates, again split between growth and value. Using BARRA's Aegis risk software, the predicted

risk, or tracking error of this structure relative to the overall fund's benchmark, the Russell 3000, was estimated to be 5.24%. The structure's forecasted information ratio is 0.40.[8]

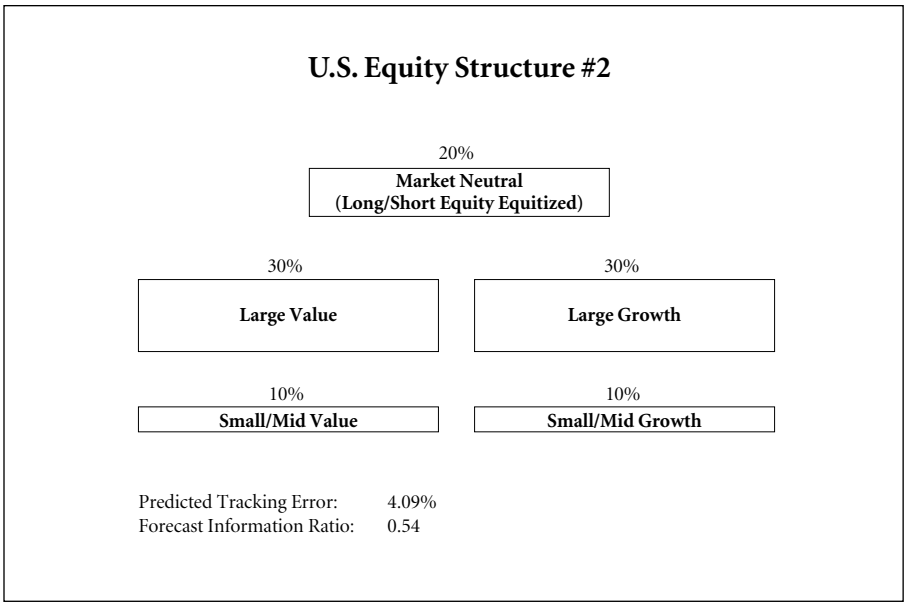

Exhibit 6

The equity structure in Exhibit 6 is the same as Exhibit 5 with the exception that 20% of the large cap allocation is moved into equitized long/short equity. Two long/short portfolios are used, each having a total of 10% of the structure and are equitized with S&P 500 futures. The results in this case show that the predicted tracking error falls from 5.24% in the structure without long/short to 4.09% in the second structure. Additionally, the forecast information ratio increases by more than 25% to 0.54, as assets were pulled from the active large cap managers (lowest predicted information ratios) to long/short equity (highest expected information ratio).

[8] Information ratio estimates are based upon BARRA RogersCasey's expectations of the ability of first quartile managers within U.S. equity segments. Large Cap Value and Growth = 0.35. Small Cap Value and Growth = 0.6. Large Cap Risk-controlled = 0.5 and Long/Short = 1.0. Absolute numbers forecasted for information rations are simply estimates and therefore may be off slightly. On a relative basis, there is greater confidence, and Long/Short equity's higher information ratio is supported by BARRA's research reviewed previously in this brief.

Case #2

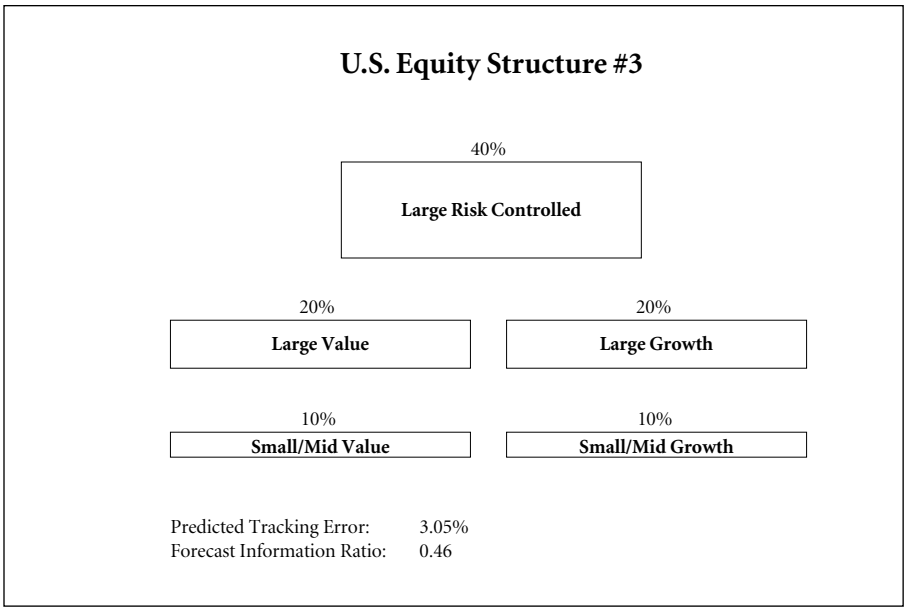

Exhibit 7

The U.S. equity structure #3 (Exhibit 7), perhaps depicts a more typical structure with a substantial allocation to large cap risk-controlled, or enhanced index, strategies. This structure has approximately 40% of the assets in risk-controlled strategies, 40% in large cap growth and value and 20% in small/mid cap growth and value mandates.

This structure has the lowest predicted tracking error, as one might expect, with the allocation to risk-controlled strategies. Secondly, the information ratio is also higher than the original structure. This is due to the fact that the risk-controlled strategies have a lower risk profile than more traditional active large cap portfolios; and in addition, the expected information ratio of the risk controlled strategies is higher.

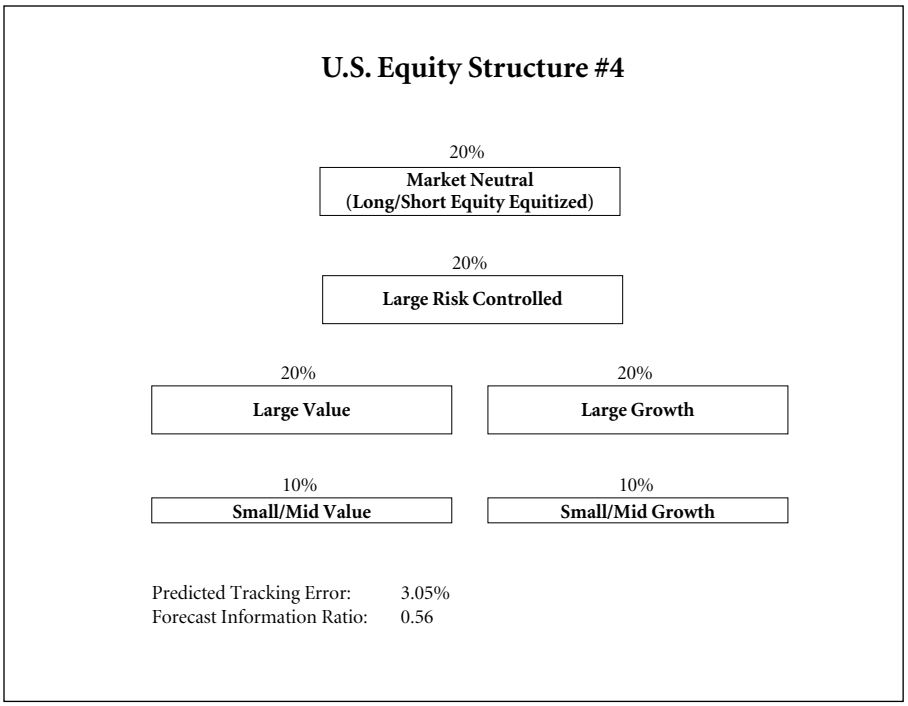

Exhibit 8

U.S. equity structure #4 (Exhibit 8) is consistent with the structure #3 with the exception that 20% has been allocated to long/short equitized strategies, reducing the allocation to the risk controlled large cap managers by 20%. Here, the predicted tracking error is similar to the lowest among the four structures and yet the information ratio is the highest.

	Structure without Long/Short Equity	Structure with Long/Short Equity	Percent Improvement
Case #1			
Predicted Tracking Error	5.24%	4.09%	22%
Forecast Information Ratio	0.40	0.54	35%
Case #2			
Predicted Tracking Error	3.05%	3.05%	0%
Forecast Information Ratio	0.46	0.56	22%

Table 5

In examining the results of Case #2 implementing long/short equity mandates into structure #1 makes a dramatic improvement in both the predicted tracking error as well as the forecast information ratio. In Case #2, long/short equity does little to the overall underlying predicted risk of the structure, as there is basically no change in tracking error. However, the source of risk is improved. More risk is attributable to stock selection with the implementation of long/short equity, while less risk is coming from style and industry allocation. Additionally, even with risk controlled structures, the forecast information ratio significantly improves. Thus, market neutral brings greater diversification benefits to structures with higher tracking error than those that are already highly risk controlled. However, in both of these cases, market neutral is beneficial to return.

Issues with Long/Short Investing

So, if there are so many benefits to market neutral investing, why have not more long/short equity strategies been implemented? Table 6 compares the issues facing long/short equity shortly after its inception as a broadly viable institutional product and the issues with long/short today.

Early 1990s	**Today**
Risk Control	Leverage
Portfolio Visibility	Derivatives
Short Track Records	Complexity
Leverage	Fees
Derivatives	Short Selling Stigma
Complexity	Capacity
Fees	Short-Term Performance
Short Selling Stigma	
Capacity	

Table 6

Clearly there has been progress on some fronts. Risk control techniques have improved and managers are better able to define and isolate the risks in their portfolios. Portfolio visibility is less of a problem as there are more tools available through which portfolio managers' activities can be more closely monitored. The issue of short track records for the strategy no longer exists, but several products have been launched over the recent past and these products face the problem of having short track records. However, other issues with

long/short equity continue, and some investors will always find the "selling"of corporate America unsavory. However, the broader problem facing long/short is the *short-term* track record, a problem that will be discussed in the next section.

Complexity

The strategy is complex. Investors, despite the potential benefits, are thwarted by the communication challenges of the strategy. What market neutral is and how it works are not always self-evident. Additional complexities arise in the administrative details of the strategy and the importance of the prime broker.

The prime broker provides securities for market neutral investors to sell short through securities lending channels. The prime broker assumes responsibility for the collateral requirement under Regulation T which mandates that 150% of the value of the short portfolio be put up as collateral. The prime broker also performs the daily mark to market settlement between the cash reserve account and the cash rebate account due to price fluctuations of the stocks sold short. The prime broker also negotiates the rebate rate for the stocks that are being borrowed for shorting. Prime brokers facilitate the strategy, and in actuality, it is the prime broker that holds the investor's assets on behalf of the investment manager.

Expensive to Implement

Long/short equity strategies are more expensive than long only strategies. Not only are the management fees higher (most market neutral strategies charge 1% plus some share of the profits), but also turnover is higher and portfolios are more costly to implement.

Trading is more expensive in market neutral strategies—there is usually at least twice as much trading and short selling is clearly more complicated. In order to address the cost of implementation, long/short managers have moved to using principal or packaged trades instead of agency trades. In principal trades, the manager packages all trades together and sends, to brokers, the characteristics of the entire basket of stocks on which to base their bids. Lowest price generally wins.

However, liquidity of the overall market has an impact on principal trading. In the fall of 1998, one of the major players left the principal trading market because it was no longer willing to put up its own capital in the trading effort.

This caused the principal trading costs (bids) to more than double. Many investment managers went back to agency trading until the principal player came back into the market and normal pricing was restored.

There is potentially an additional expense when using a long/short strategy with futures. Investing in futures requires firms to manage rollover risk. Liquidity can be an issue in less common indices which can make such futures more expensive to trade.

Capacity

The capacity of long/short equity strategies is limited. Investment managers face constraints on the short side of the portfolio as liquidity within this segment is an issue. Assets under management for long/short products have remained under $2 billion as managers have closed their products at that level and below depending upon the number of stocks and market capitalization of their investment universe.

The "D" and "L" Words

The more eye-catching issue is the strategy's use of derivatives and leverage. But these issues can actually be avoided. Derivatives need not be used unless the alpha is going to be "ported" to a different asset class. In its standard form, long/short equity does not use derivatives. Leverage is typically a standard component of the strategy—limited in practice to institutional investors at 2:1 because of regulations[5]. However, investors concerned with leverage, or investors that have had guideline limitations on leverage, have circumvented this issue by implementing only 50% of their allocation to long/short, thus reducing leverage from 2:1 to 1:1.

Market Neutral Results

Exhibit 9 shows how bad the environment has been for long/short equity over the past year. Market narrowness was amplified in the strategy as the median long/short manager trailed the t-bill benchmark by over 400 basis points during 1999 (on a gross of fee basis). Even the first quartile manager would have trailed its target net of fees.

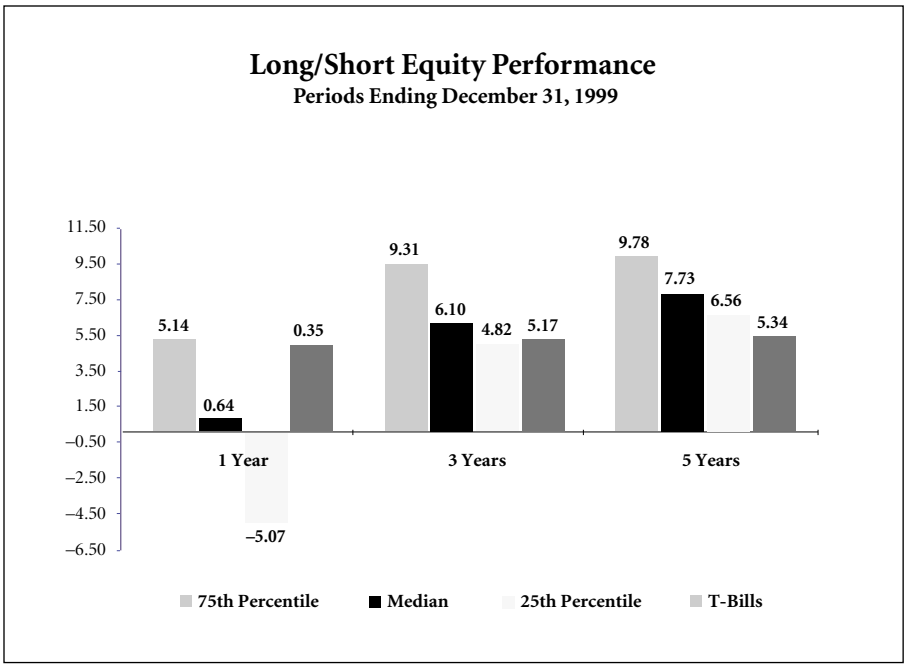

Exhibit 9

Over the three- and five-year periods ending December 1999, the results are significantly better. In the three year time period, the median manager outperformed T-bills, and over five years, even the third quartile manager surpassed the cash benchmark.

Exhibits 10 and 11 reveal some interesting insights on long/short equity performance. The long/short universe was divided into three groups based upon the philosophical underpinnings of each manager's investment process. The core, growth and value managers were then plotted in risk/return scattergrams.

Over the eight-year period ending December 1999, the more core-oriented managers were bunched together at risk levels close to bonds and returns slightly in excess of bonds. Value oriented managers, on average, had a similar return as the core managers, but had much higher volatility. Growth is absent from this graph due to the fact that managers who are growth oriented are relative newcomers to the long/short strategy.

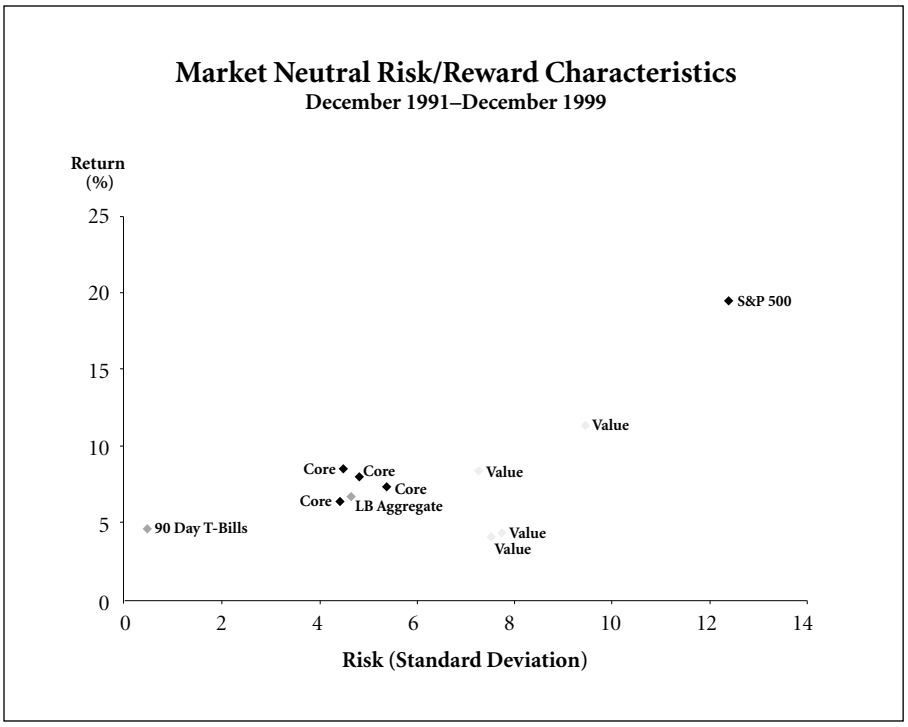

Exhibit 10

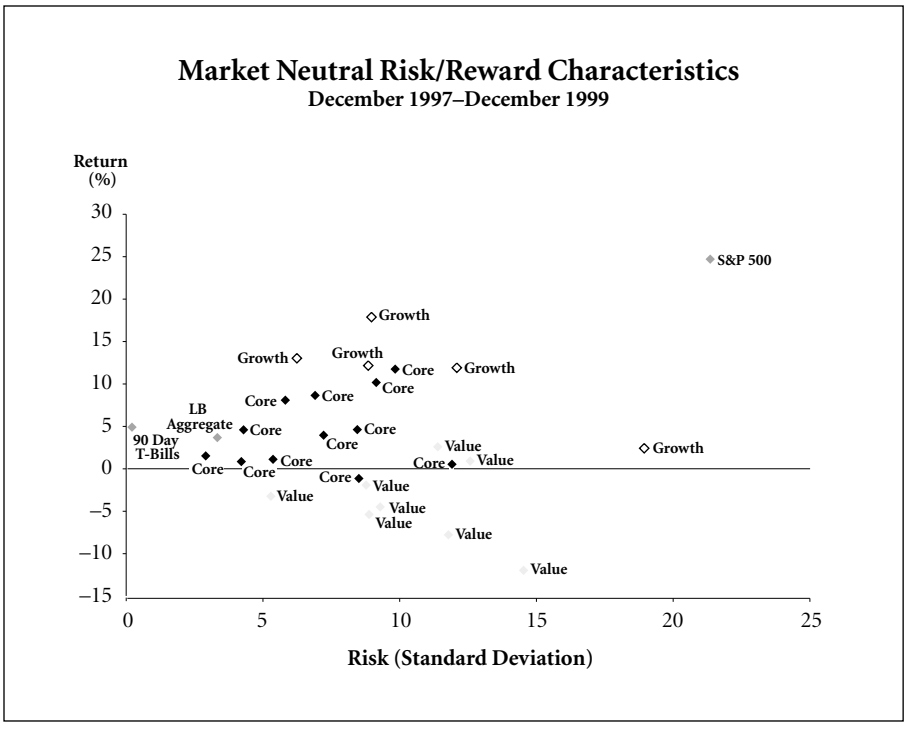

Exhibit 11

If one looks at more recent performance with the expanded universe, the results are stark. Despite being market neutral, long/short equity managers were influenced greatly by the relative performance of growth versus value in the U.S. equity market over the past two years.

Long/short managers with slight growth biases were the top performers while managers with a value orientation were heavily penalized. In most cases, the managers have been controlling for factor or style biases, but clearly are not neutralizing these biases.

Implications Given The Results

Investors need to be aware of the different approaches and styles on which long/short strategies are based.

Style

The results of growth and value biases in investment approach were dramatically apparent over the past few years. As was shown above, value and growth biases, no matter how slight, had a significant impact on the performance of individual investment manager portfolios. Thus, to better diversify and/or control the volatility within a long/short mandate, investors should be wary of "loading up" on any one style of long/short equity. Rather, investors should focus on core managers or offset value-oriented managers with growth-biased managers, especially if short term performance is a concern.

Portfolio Construction Techniques

Investment managers also use various approaches in building long/short portfolios including pairs trading, multi-step optimization and simultaneous optimization. Pairs trading is the original and the simplest long/short approach, but controlling risk and other more systematic exposures is problematic. Multi-step optimization, the next advancement in long/short portfolio construction, is better than pairs trading in controlling risks; however, this approach fails to take advantage of one of the key concepts of long/short investing, the more efficient use of information. Optimizing the long portfolio to the S&P 500 and then the short portfolio to the long portfolio, would likely force investment into most, if not all, sectors of the market, even if there is little information (spread) between the longs and shorts within that sector. This method diminishes the information content and is sub-optimal. The latest approach is

simultaneous optimization. In the simultaneous optimization method, the long and short portfolios are optimized together, benchmarks are not considered and information is used more efficiently. This is the purest form of long/short investing and would thus be the preferred method of constructing portfolios.

Neutrality

Investment managers also differ in the forms of neutrality in their long/short portfolios. In the past two years, failure to maintain style neutrality caused many managers to compound portfolio problems in a difficult market environment. Most strategies will be dollar and beta neutral, but fewer will be sector/industry, capitalization and factor neutral. Arguably, the more "neutral" a long/short portfolio the better, as systematic risk diminishes (as does the residual return correlation of the long and short portfolios) and stock specific risk, the object of long/short, increases.

Conclusion

There are many ways in which to invest in market neutral, all of which seek to take systematic risk out of the investment equation. Among the most common market neutral approaches is long/short equity. Long/short investing has been an investment strategy for some period of time, but clarification of the tax consequences of the approach has made the strategy viable for institutional investors for only the past decade. Over the past few years, there has been a significant increase in the interest in less traditional investment approaches and, as a result, there have been several new long/short products brought to the marketplace as demand has increased.

Long/short equity investing has several benefits. The strategy is uncorrelated to other asset classes. The alpha generated by long/short managers is uncorrelated to the alpha generated by U.S. equity managers. Moreover, the alpha generated by long/short managers has low correlation to one another. Thus, long/short equity is an excellent diversifying strategy as was shown in the two case studies in which equitized long/short portfolios were added to typical U.S equity structures. The results of the case studies confirmed the diversifying benefits of the strategy, as risk was lowered and information ratios improved. Long/short equity also provides flexibility in asset allocation and rebalancing due to the portability of the alpha generated by long/short equity and, moreover, market neutral in general. Long/short has the intellectual appeal of using

information more efficiently and, because of the way it is structured, provides for higher returns per unit of risk.

Long/short investing also has its drawbacks. The strategy is complex, it is expensive and typically uses leverage and derivatives when implemented. More recently, its biggest drawback is performance. BARRA RogersCasey acknowledges the issues involved with long/short equity investing and recent performance shortfalls. However, we believe that the benefits of the strategy outweigh the ongoing issues and like all active management strategies, market neutral will go through periods of relative weak performance. Over the longer term, long/short equity investing should provide attractive risk adjusted returns as well as greater diversification and flexibility within investment programs.

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