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Portfolio Strategy

Alpha Returns and Active Extensions

The relaxation of the long-only constraint within equity portfolios and the subsequent move into an active extension “120/20 strategy” can lead to material improvements in both alpha returns and alpha/tracking error (TEV) ratios. These potential benefits can be estimated by combining an alpha ranking system, a position weighting function, and a tracking error model.

There is empirical evidence that the structure of a wide range of active portfolios can be approximated by exponentially declining alpha rankings and position weightings. These alpha/weighting models can be used to explore how active extensions (and active portfolios in general) can generate alpha returns subject to prescribed risk limits.

Additional benefits from active extension portfolios include the ability to offset unproductive correlations and to facilitate specific pair trades between long and short positions. Such offsets can sharpen the intended risk exposures and lead to higher alpha/TEV ratios.

Moving into a risk-controlled active extension will generally not have a significant impact on the fund level volatility. Since most US institutions’ portfolios are overwhelmingly beta dominated, any incremental TEV will be submerged by this beta effect. Active extensions that provide positive alphas can therefore significantly increase the fund’s total return with only a minimal impact on the overall volatility.

The preconditions for realizing any of these benefits are a credible basis for producing positive alphas in both long and short portfolios, a high level of risk discipline, an ability to minimize and/or offset unproductive correlations, and an organizational ability to pursue short extensions in a benchmark-centric, cost-efficient fashion.

RECENT REPORTS

An Integrated Analysis of 120/20 Short Extension Strategies	July 27, 2006
Correlation Effects in Short Extension “120/20” Strategies	June 15, 2006
The Tracking Error Gap	May 18, 2006
Alpha Ranking Models and Short Extension 120/20 Strategies	May 16, 2006
Hedge Funds and Small Cap Betas	March 24, 2006
The Beta-Based Asset Allocation Notes: A Compilation	March 14, 2006
Beta-Based Analysis of Hedge Fund Returns	March 10, 2006
Short Extension Portfolios: An Exploration of the 120/20 Concept	January 18, 2006
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Beta-Based Asset Allocation: A Summary	November 30, 2005

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Alpha Returns and Active Extensions

Summary & Conclusions

In a benchmark-centric long-only portfolio, the ability to take significant underweight positions is limited to those few stocks with very large market capitalizations in the benchmark. By allowing a limited facility to short stocks within a risk-controlled framework, active extension strategies open the door to a fresh set of underweight positions in lesser-cap stocks.

These active extension strategies are also referred to as “120/20” portfolios. This term came from the early implementations that allowed up to 20% of the portfolio to be shorted with the proceeds from the short sales used to purchase 20% additional longs. Hence, the portfolios maintained their 100% net long exposure with gross footings of 120% long and 20% short. More recent active extension launches have been in the 130/30-140/40 range as managers have gained more comfort with this product.

A growing body of studies has addressed the potential performance benefits that can be obtained by loosening the standard long-only constraint [1-20]. Active extensions are based upon relaxation of this long-only constraint but have special features that maintain the basic risk characteristics of benchmark-centric long-only funds: 1) The percentage sold short is offset by reinvestment in beta-equivalent new longs so as to preserve the original beta target, and 2) the overweight and underweight positions are structured so as to keep the tracking error within reasonable bounds.

This removal of the long-only constraint enables active extension portfolios to provide material improvements in both the cumulative alpha and in the alpha/tracking error volatility (TEV) ratio [21-23]. Additional benefits of the active extension portfolio include the ability to offset unproductive correlations and to facilitate specific pair trades between long and short positions [24-26].

The interest in “120-20”-type active extension strategies has grown significantly as both investment sponsors and asset managers have sought higher levels of positive alpha. The acceptance of these strategies has also been enhanced because, with appropriate risk control, they can be viewed as an “extension” of traditional equity management rather than as a quantum leap into the more constrained space allocated to alternative assets.

For a base case example with correlation effects, we use a long-only portfolio that provides an alpha of 1.85% and an alpha/TEV ratio of 0.54. Without any offsets, a 20% extension increases the alpha to 3.08% and the ratio to 0.63. However, the TEV-reducing effect of offsets between the longs and shorts can raise this alpha/TEV ratio into the 0.75-0.90 range.

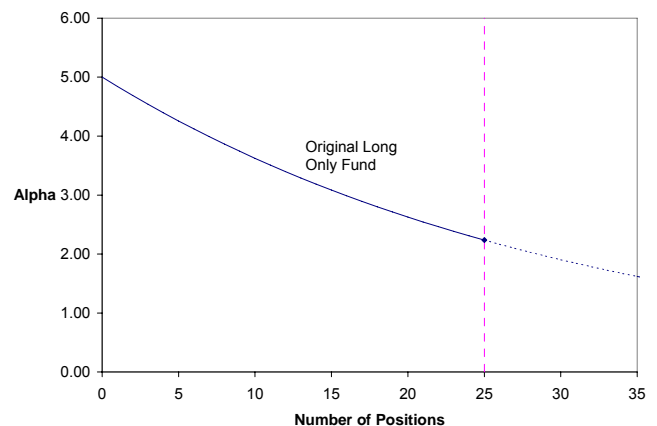
The preconditions for realizing any of these benefits are a credible basis for producing positive alphas in both long and short portfolios, a high level of risk discipline, an ability to minimize and/or offset unproductive correlations, and an organizational ability to pursue short extensions in a benchmark-centric, cost-efficient fashion

Alpha Ranking and Portfolio Weighting Models

The standard measure for the value added from active management is the alpha/TEV ratio. The first step in analyzing this ratio is to create an alpha ranking model [27]. Portfolio managers generally have some formal or informal process for classifying their prospective active positions into a descending sequence based upon their level of conviction. Alpha ranking models can be used to approximate such classifications. These alpha ranking models may take a variety of forms depending on the style of the investment fund and/or perceived opportunities in the market. Our base case ranking model is based on an exponential alpha decay with a beginning alpha of 5% that declines to 2.24% at the 25th position.

Exhibit 1

Alpha Ranking Model

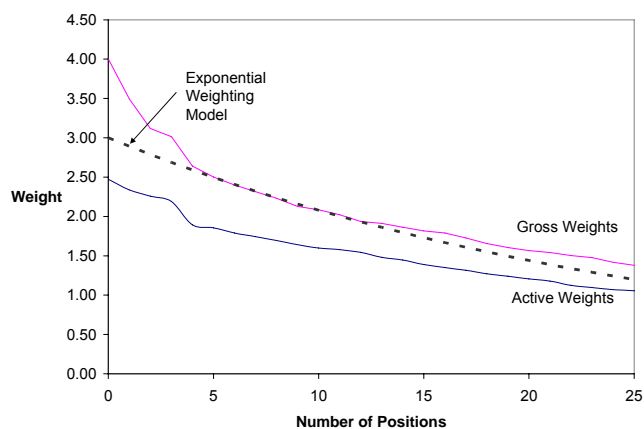


Source: Morgan Stanley Research

In theory, with a constant residual volatility, the optimal weighting for each position should be proportional to its alpha ranking. The actual sequential weights seen in practice provide empirical evidence that portfolios are at least roughly structured along these lines. Exhibit 2 displays the sequence of position weights for a sample of long-only funds. The top line represents the gross weights while the bottom line shows the active weights, i.e., the difference between the gross weight and benchmark weight. The middle dotted line is an exponential weighting function that begins at a 3% weight. This theoretical weighting function has approximately the same decay rate as the alpha ranking model in Exhibit 1

Exhibit 2

Gross and Active Weighting Functions for Long-Only Portfolios



Source: Morgan Stanley Research

Correlation Effects

The three factors that affect the TEV are the residual volatilities of each position, the portfolio weightings, and the correlations that exist between the positions.

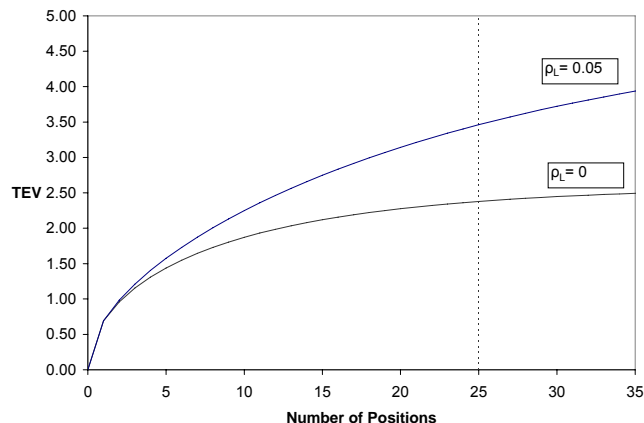
Using the exponential weighting model from Exhibit 2, our baseline long-only portfolio was constructed to have 25 “pro-active” positions with a net “activity level” of 50%. The remaining “non-pro-active” component of the portfolio serves as a source of funds as well as helping to maintain the fund’s target beta. After the 25th position, the active weight remains constant for any additional long positions added to the portfolio.

Exhibit 3 compares the TEVs for the long-only portfolio under assumed pairwise correlations (ρ_L) of zero and 0.05. In calculating the TEVs, we assume throughout a constant residual volatility of 23% for all active positions. For the 25-

position long portfolio, the TEV increases from 2.38% for the uncorrelated case to 3.46% for a 0.05 correlation. It only takes a slight increase in pairwise correlation to generate significant increases in the TEV.

Exhibit 3

Long-Only TEV: Correlated vs. Uncorrelated



Source: Morgan Stanley Research

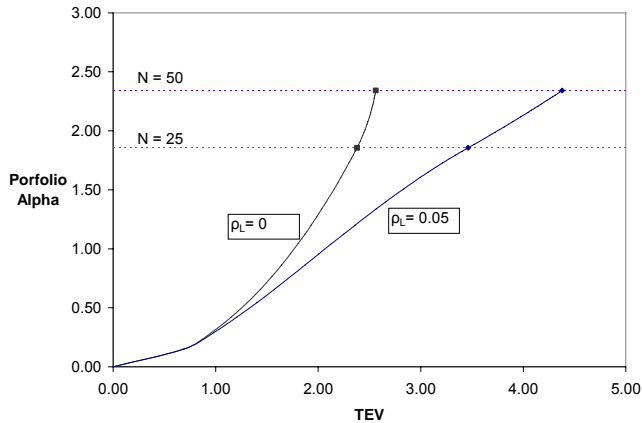
Alpha/TEV Ratios

The alpha ranking model can be combined with the exponential weighting function to generate a cumulative portfolio alpha. Exhibit 4 displays this portfolio alpha as a function of the TEVs from Exhibit 3. In the uncorrelated case, the alpha continues to rise as more positions are added to the portfolio while the TEV stays within a 2-2.5% range. This suggests that under the assumption of a zero correlation, more positions should continue to be added to the portfolio since the cumulative alpha increases faster than the portfolio’s TEV. This is also evidence that in order to get TEVs greater than 3% (which is what is observed in actively managed long-only equity portfolios), there must exist some degree of positive correlations among the long positions. [28]

With a 0.05 correlation, the alpha and TEV increase at nearly the same rate as more positions are added to the portfolio, leading to a roughly constant alpha/TEV ratio. In this situation, the investor may sacrifice a higher TEV (if it can be tolerated) for the higher alpha portfolio even without any corresponding improvement in the alpha/TEV ratio itself.

Exhibit 4

Long-Only Alpha vs. TEV: Correlated and Uncorrelated



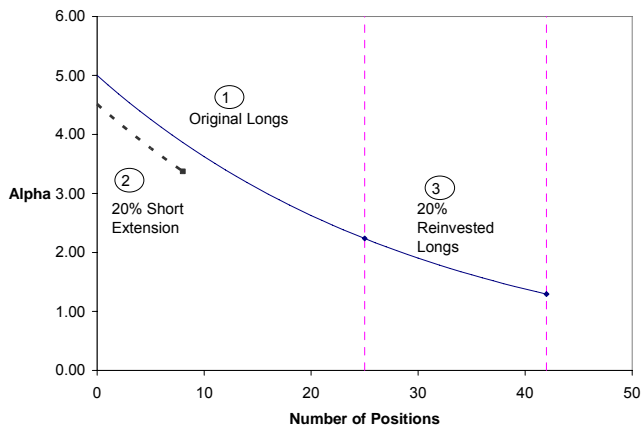
Source: Morgan Stanley Research

The Short Extension

The ability to take short positions provides access to a fresh set of underweights. In the following analysis, these new underweights are assumed to have alphas that coincide with the corresponding long-only alpha model, less some given shorting cost. Exhibit 5 schematically depicts a 20% short extension. The short portfolio is based on an alpha ranking model that follows the original long-only 5% declining alpha ranking model but with a 0.50% reduction to account for shorting costs. This model also assumes that the short portfolio follows the same exponential weighting model as the long portfolio. The proceeds generated by the shorts are then reinvested into the new long positions.

Exhibit 5

Alpha Rankings for Short Positions



Source: Morgan Stanley Research

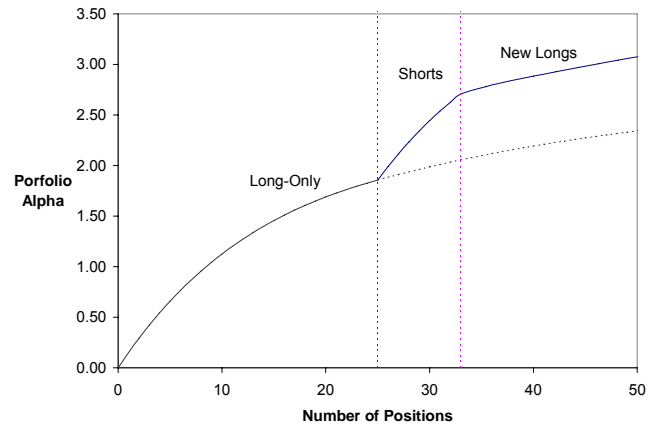
The proceeds from the shorts could theoretically be reinvested to increase the weight invested in the highest-alpha long positions. However, most portfolios will have already established their maximum allowable weight in these high-ranked positions, so we take the more conservative approach and reinvest the proceeds starting with the 26th ranked long position.

Note that because of the front-end loading from the exponential weightings, the 20% extension is achieved with only 8 new short positions. The 20% funds are then reinvested into new longs from the 26th to 42nd position, where the position weight was assumed to be fixed at the 1.2% minimum.

Exhibit 6 displays cumulative portfolio alpha as a function of the total number of positions for the long only and a 120/20 portfolio. The biggest boost in alpha comes from the 8 new short positions that come from the early part of the alpha ranking model. The 17 new longs consist of the tail end of the alpha ranking model and weighting function. Since these are lower-grade alpha sources, these new longs do not provide as significant a benefit as the new shorts.

Exhibit 6

Active Extension Impact on Portfolio Alpha

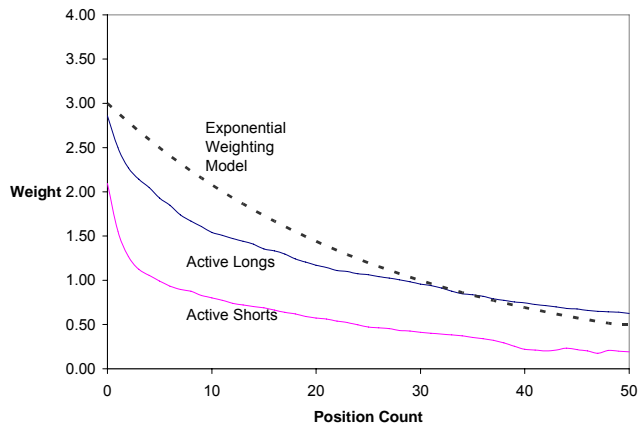


Source: Morgan Stanley Research

As an empirical test for how these exponential models apply to actual portfolios, Exhibit 7 displays the weighting functions for an admittedly small sample of active extension funds that have reported their holdings to the SEC. As with the long-only funds, both the longs and shorts in the active extension funds follow a pattern that can be approximated as an exponential decay.

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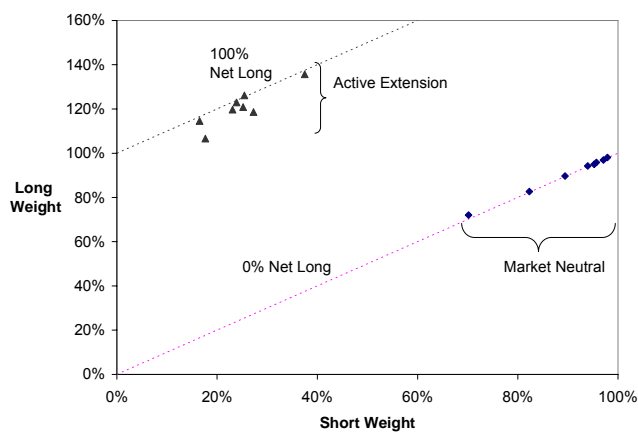
Exhibit 7
Weighting Functions for Active Extension Portfolios



Source: Morgan Stanley Research

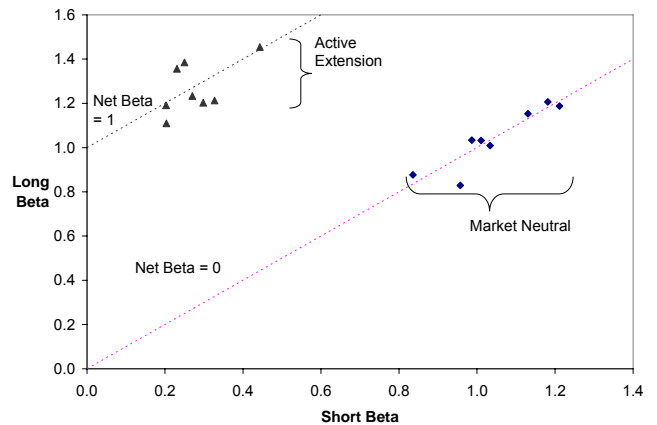
The exposures and beta values for this sample of active extension funds along with a sample of SEC-reporting market neutral funds are shown in Exhibits 8 and 9. It can be seen that the active extension funds are quite closely aligned to the target 100% net exposure and have betas that remain close to 1. Not surprisingly, the market neutral funds all have net long exposures and net betas close to zero.

Exhibit 8
Long and Short Exposures for Active Extension and Market Neutral Funds



Source: Morgan Stanley Research

Exhibit 9
Long and Short Betas for Active Extension and Market Neutral Funds



Source: Morgan Stanley Research

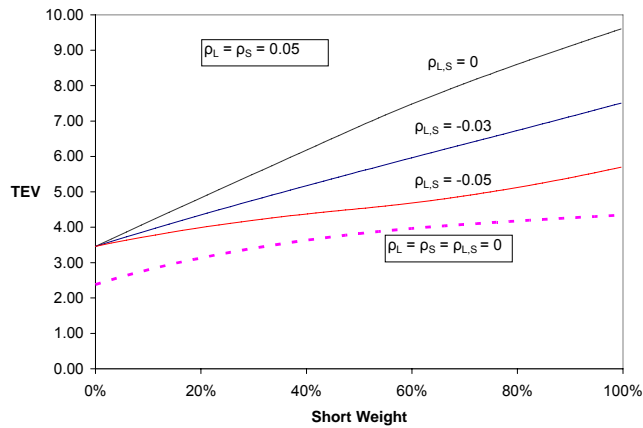
Offsetting Long/Short Correlations

The basic long-only correlation model applies when all positions have a common pairwise correlation. Just as a positive correlation can have a material TEV-increasing effect, so the opportunity for offsetting negative correlations can act as a major TEV-reducing factor. In theory, such offsets could be present within the long portfolio itself. However, for the sake of simplicity, only positive correlations are assumed to exist within the longs and within the shorts, while the offsetting negative correlations are assumed to occur only between the shorts and longs.

Exhibit 10 shows impact of various correlation effects. The top three lines all assume a positive 0.05 correlation within the longs and within the shorts but differ in the short-to-long correlations. The TEV-reducing effect of these offsets is clearly evident as the -0.05 offset curve moves towards the uncorrelated case.

Exhibit 10

Correlation Effects: TEV vs. Short Weight



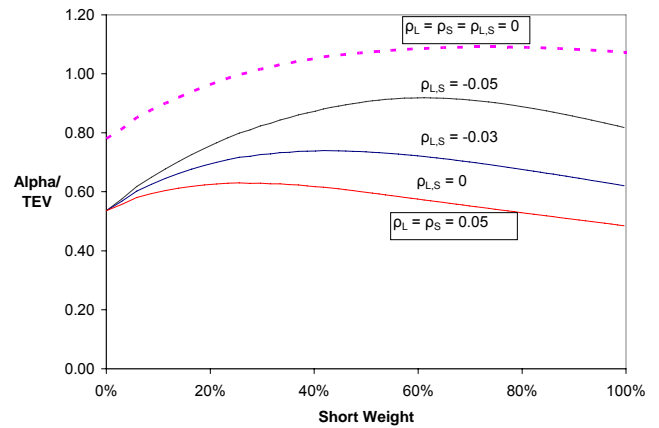
Source: Morgan Stanley Research

The alpha ranking models from Exhibit 5 can be combined with the TEVs in Exhibit 10 to calculate the alpha/TEV ratios at various short weights. With positive correlation of 0.05, the information ratio for the basic 25-position long-only portfolio ratio was 0.54. With varying short extensions added from that point, the long-short correlation can be seen to play a key role. With a zero offset correlation, the short extension provides only a modest increase in the information ratio to 0.63. However, with an offsetting -0.05 correlation, the short extensions can raise the information ratio to 0.92 for short weights in the 40-60% range. With the more moderate offset of -0.03, the ratio reaches a peak value of around 0.74 for short weights of 30-50%. For the uncorrelated situation, the short extension improves the alpha/TEV ratio from 0.78 for the long-only portfolio to a peak value of 1.10 for short weights in the 60-80% range.

Clearly, any active extension strategy is critically dependent on an efficient facility for selecting, implementing, and maintaining the short portfolio. If shorting costs become too high, the resulting alpha degradation would eliminate any benefits from short extension.

Exhibit 11

Alpha/TEV vs. Short Weight

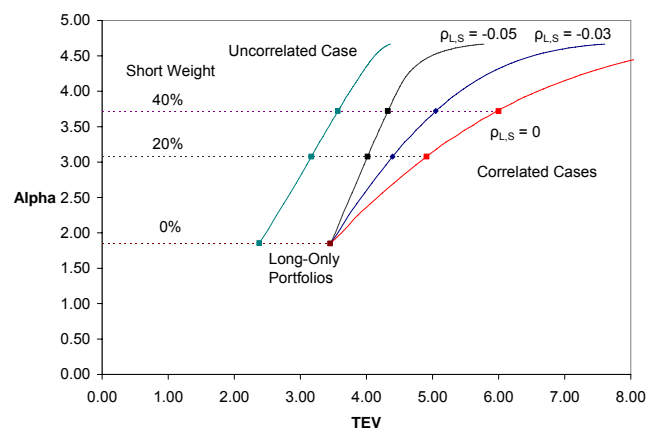


Source: Morgan Stanley Research

The alpha/TEV ratio is an important metric but it may not always serve as a sufficient gauge of portfolio value. It also makes sense to look separately at the two components of this ratio. Exhibit 12 presents the results from active extension in alpha vs. TEV space. If a fund had a maximum TEV it was willing to tolerate, the extension could add a significant alpha increment to the return from the long-only portfolio (even with a zero offset between internally correlated longs and shorts).

Exhibit 12

Alpha vs. TEV for Various Offset Correlations



Source: Morgan Stanley Research

Fund Level Effects

For typical asset allocations, it is well known the TEV from a moderate-sized component portfolio is likely to have only a minimal impact on the overall fund volatility [29]. Therefore,

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many institutional portfolios may care more about the portfolio alpha than the alpha/TEV ratio.

Exhibit 13 provides an example of how active extensions can affect performance characteristics at the overall fund level. The first column represents the passive benchmark portfolio with a 60% equity/40% bond allocation. The second column replaces the 60% passive equity benchmark with 60% active long-only equity.

Exhibit 13

Alpha Enhancement with Minimal Volatility Increase

	Benchmark Portfolio	Active Long Only	Correlated AE Case without Offset	Correlated AE Case with Offset
US Equity Passive Benchmark	60%			
US Equity Active - Long Only		60%	40%	40%
Active Extension - 40% Short Weight			20%	20%
US Bonds	40%	40%	40%	40%
Total	100%	100%	100%	100%
Total Beta	0.65	0.65	0.65	0.65
Expected Return Alpha	5.85	6.96	7.36	7.36
		1.11	1.51	1.51
TEV		2.08	2.62	2.26
Total Volatility	11.17	11.36	11.48	11.40

Source: Morgan Stanley Research

The move of the 60% equity allocation from a passive index into long-only active management increases the total volatility modestly from 11.17% to 11.36%. However, the total portfolio return increases by a significant 1.11%, i.e., 60% of the active alpha of 1.85%. The next two columns show the effect of moving 20% of the active equity into a correlated active extension with a short weight of 40%. (To be conservative we have assumed that the TEVs of the active extension and long-only active equity are fully correlated.) Without any long/short offset, the portfolio return increases by 0.40% to 7.36%, with the portfolio volatility only moving from 11.36% to 11.48%. With offsets, the return remains at 7.36% while the volatility declines to 11.40%.

The reason that there is not a significant increase in the portfolio volatility in Exhibit 10 is because this portfolio (as with most US institutions' portfolios) is beta dominated and any additional tracking error volatility is submerged by this beta effect [30-32]. Moving to an active management posture or to an active extension will generally not have a significant impact on the overall volatility of the fund — one beta-dominated asset is just being replaced with another. The only question then becomes whether these active management

processes can reliably generate positive levels of expected alpha.

Conclusions

Active extension can be viewed as an "extended" form of traditional active equity management that has the potential to materially improve both portfolio alphas and alpha/TEV ratios by:

- 1) creating access to a fresh crop of active underweight opportunities
- 2) reinvesting the short proceeds in productive new longs (even if they are of lower alpha rank)
- 3) providing offsets that reduce unproductive correlations and facilitate return-enhancing pairing opportunities

The preconditions for realizing any of these benefits are a credible basis for producing positive alphas in both long and short portfolios, a high level of risk discipline, an ability to minimize and/or offset unproductive correlations, and an organizational ability to pursue short extensions in a benchmark-centric, cost-efficient fashion

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(as of July 31, 2006)

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Unless otherwise specified, the time frame for price targets included in this report is 12 to 18 months.

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Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

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