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# Portfolio Strategy

## Relative Sizing of Short vs. Long “130/30” Positions

**A structural analysis was performed on a sample of active extension (AE) funds** that have publicly disclosed their holdings. The top 40 long positions were concentrated in stocks with average benchmark weights of 0.44%, corresponding to the 50 highest stocks by capitalization in the S&P 500. The stocks shorted ranked 250<sup>th</sup> or lower by capitalization, highlighting how AE opens the door to greater underweights in stocks with low benchmark weights.

**One surprising result was the large size of the active positions on both the long and short sides,** given the quantitative nature of most current AE portfolios. This may be an indication that AE funds are willing to take considerably more concentration risk than the typical quantitative long-only portfolio.

**There was discrepancy between the long and short positions, both in terms of size and turnover frequency.** The top 40 long active positions had an average weight of 1.59% while the corresponding 40 short positions were sized at 0.80%, half that of the longs. For the funds where turnover estimates were possible, the longs had an annualized rate of 85% versus a higher rate of 143% for the shorts. Taken together, these results suggest that a given short position is viewed as having a considerably greater risk than a typical long position, even when viewed in terms of relative return.

**AE portfolios increased their active weight more than twice the corresponding increase in tracking error.** The initial long-only portfolios associated with AE were estimated to have an average active weight of 67% and TE of 3.5%. In moving to the AE portfolio, with an average short weight of 24%, the active weight rose to 111%, an increase of 66%. The corresponding TE climbed to 4.6% for the AE, an increase of 31%. To the extent that the increased active weights truly reflect a higher alpha potential, the AE structure can lead to material improvement in a fund's information ratio.

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## Relative Sizing of Short vs. Long “130/30” Positions

### Summary & Conclusions

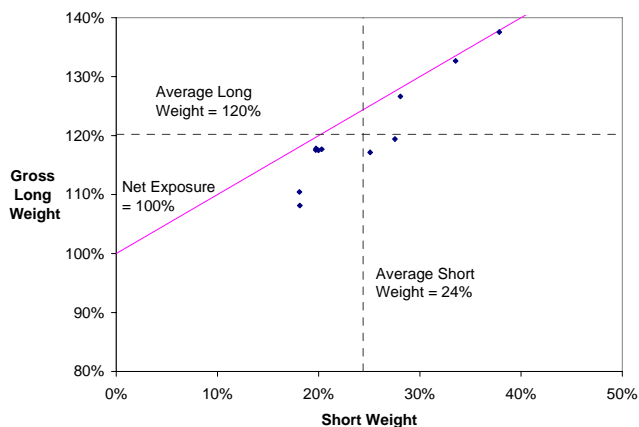
This Note is a follow-up to an earlier 2006 report on the position structure of a broad range of active equity portfolios, from traditional long-only and long/short funds to market neutral funds [1].

Over the past year, active extension (AE) 130/30 strategies have become an increasing focus for both active equity managers and plan sponsors, and there has been tremendous growth in the number of AE funds. This Note updates the earlier position analysis for AE funds that have publicly disclosed their holdings. We acknowledge that this represents a small sample, but believe that some useful insights can be obtained from this analysis.

Exhibit 1 depicts the sample AE funds based on their long and short exposures. The early implementations of AE allowed only 20% of the portfolio to be shorted, with the proceeds 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 AE launches have been in the 130/30-140/40 range as managers and sponsors have gained more comfort with this approach. As Exhibit 1 shows, our sample had an average short weight of 24% and gross long weight of 120%, but with considerable variability around these average levels (the average cash position was 4%, which would bring the total long side to the expected average of 124%).

Exhibit 1

### Long/Short Exposures of AE Funds



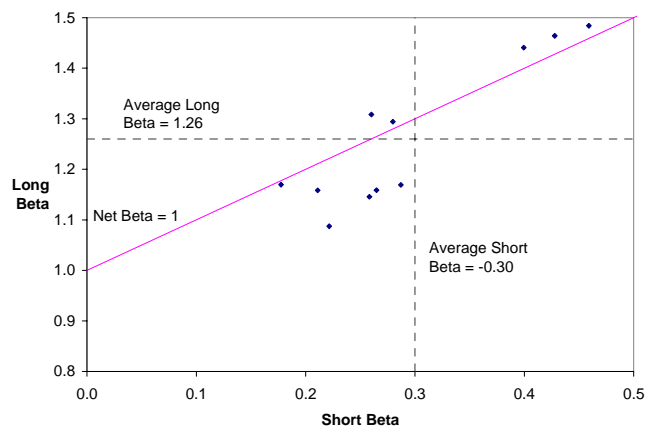
Source: Morgan Stanley Research, Factset

Exhibit 2 is a scatterplot of the long vs. short betas of the AE funds. These betas are based on the latest available reports of portfolio holdings. The beta estimates were derived from the Northfield US Fundamental Equity Risk Model and relate to each fund’s specified benchmark. The long/short betas are aligned along a line depicting a net beta of one.

It can be seen that there is a somewhat greater degree of beta variability than the net exposures shown in Exhibit 1. This greater variability may be due to the different beta estimation procedures being used by the funds as well as to the funds being more rigorous in maintaining the 100% net exposure.

Exhibit 2

### Long/Short Betas of AE Funds



Source: Morgan Stanley Research, Northfield, Factset

Exhibit 3 presents an analysis of the long and short portfolios in terms of both their gross and active positions. An active long position is defined here as a holding that exceeds the benchmark weight. Active shorts are defined as the underweight positions of those stocks in the short portfolio. Thus, stocks with zero weights — the “not-helds” — were excluded from the active statistics. In all cases, the benchmark was taken to be the market index specified in each fund’s disclosure statement.

With the gross positions, there appears to be a significant increase in the concentration of positions on both the long and short side versus our previous report. As reflected in Exhibit 1, the average fund was 120% gross long and 24% short. The number of long positions is 114, with an average size of 1.16%, compared to 156 positions with an average size of

0.92% in our earlier report. The average maximum position on the long side now stands at nearly 5% vs. 3.7% before. The short portfolio has 41 positions, with a maximum weight of 2% and average size of 0.72%, versus 53 positions with an average 0.52% weight in the previous sample.

Exhibit 3

### Gross and Active Holdings of AE Funds

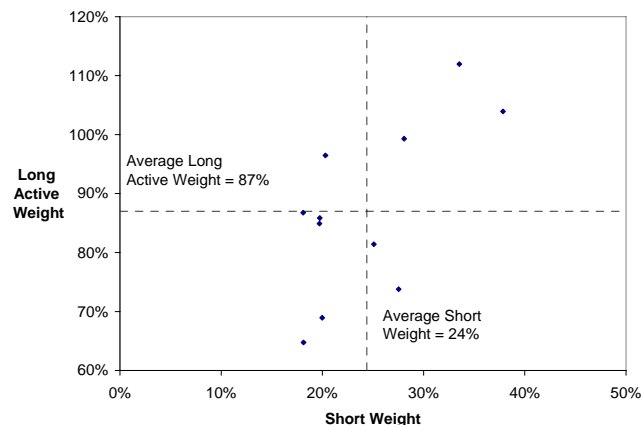
	Gross	Active
<b>Long</b>		
Positions	114	114
Total Weight	120.2%	87.1%
Max	4.92%	3.06%
Average Size	1.16%	0.97%
Top 40 Size	2.03%	1.59%
Turnover	85.1%	—
Beta	1.26	—
<b>Short</b>		
Positions	41	41
Total Weight	-24.4%	-27.0%
Max	-1.97%	-2.12%
Average Size	-0.72%	-0.78%
Top 40 Size	-0.73%	-0.80%
Turnover	142.9%	—
Beta	-0.30	—

Source: Morgan Stanley Research, Northfield, Factset

The funds sampled ranged from 108% to 138% gross long exposure and from 18% to 38% gross short exposure. The total active longs (i.e., beyond the benchmark weights) were 87%, considerably less than the 120% gross level. Since the active shorts were defined as underweights relative to the benchmark, the total active “short” weight of 27% exceeded the 24% gross figure. As shown in Exhibit 4, the higher active weights were generally associated with the funds having the greater short weights.

Exhibit 4

### Long Active Weights for AE Funds



Source: Morgan Stanley Research, Factset

The average active long position was 0.97%, a gap of 0.20% below the average 1.16% gross holding. This suggests that the average benchmark weight of the stocks in the long portfolio was around 0.20%, corresponding to the 125<sup>th</sup> capitalization ranked stock in the S&P 500. The top 40 positions in the long portfolio had gross weight of 2.03% and active weights of 1.59%. This gap suggests that these top 40 positions were concentrated in stocks with average benchmark weights of 0.44%, equating to the 50<sup>th</sup> highest stock by capitalization in the S&P 500.

On the short side, both the gross and active positions were considerably smaller than the corresponding long positions. This is particularly true for the top 40 positions, where the 0.80% average active short is half the size of the average active long position of 1.59%. This may reflect the shorts' special risk characteristics relative to the longs.

The smaller 0.06% gap between the active and gross short position sizes implies that the shorts may be concentrated in benchmark weights of 0.10% or less (or possibly a number of non-benchmark stocks). This low benchmark weight would represent S&P 500 stocks ranked 250<sup>th</sup> or lower by capitalization. This finding highlights the use of AE as a way of opening the door to significant underweights in stocks with low benchmark weights.

### Turnover Statistics

The turnover statistics are based on the subset of funds that reported at least three quarters of data over the past year. The short portfolios exhibited annual turnover rates of 143%, 1.7 times higher than the 85% turnover on the long side (these

numbers may underestimate the actual turnover since they are based on quarterly snapshots rather than continuous holdings).

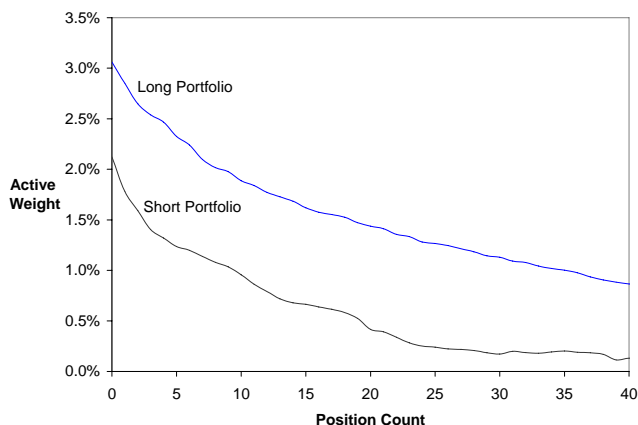
Short positions are vulnerable to a well-known “adverse convexity” effect, where the position size increases as the market price moves higher. For this and other reasons, a given short position may be viewed as riskier than a corresponding long position. This heightened risk may be a partial explanation for short positions being smaller and experiencing greater turnover.

### Weighting Functions

Exhibit 5 graphs the sequence of weights for the first 40 active positions in both the long and short portfolios. The short portfolio starts at a 2% maximum position size, lower than the long’s 3% maximum, and then exhibits a more rapid rate of decline than the long side. In our earlier Notes [2-4] on AE, the active weights were represented by exponential decay functions. The pattern in Exhibit 5 confirms that such functions can serve as reasonable approximations to actual portfolio weightings.

Exhibit 5

### Active Weight Sequence for AE Funds



Source: Morgan Stanley Research, Factset

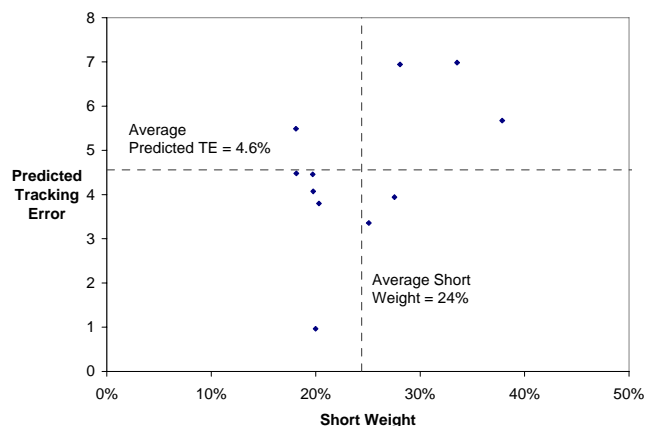
One of the surprising results from Exhibits 3 and 5 is the large size and high concentration of the active weights given the quantitative nature of most current AE portfolios. This may be an indication that these AE funds are willing to take more concentrated active risk than the typical quantitative long-only portfolio.

The TE of these portfolios was estimated using the Northfield model for the latest disclosed holdings. As shown in Exhibit 6,

the TE’s were between 3.5% and 7%, with an average value of 4.5%. In contrast, in our earlier study, long-only quantitative funds, with much lower total active weights of 60-70%, exhibited tracking errors in the 1-4% range. The higher tracking errors for the AE funds in Exhibit 6 are presumably due to both the higher total active weight (24% short plus 87% long) as well as the larger size of the individual positions.

Exhibit 6

### AE Predicted TE



Source: Morgan Stanley Research, Northfield, Factset

### Moving from Long-Only to AE

In order to get a sense of the changes in a fund that moves from a long-only to an active extension, we transformed each AE portfolio back into a (hypothetical) long-only fund. The methodology was based on an assumed proportional reinvestment of the proceeds from the short side. For example, a 4% active long in an AE with a 25% short weight would be scaled down to a 3% active position in the hypothetical long-only portfolio.

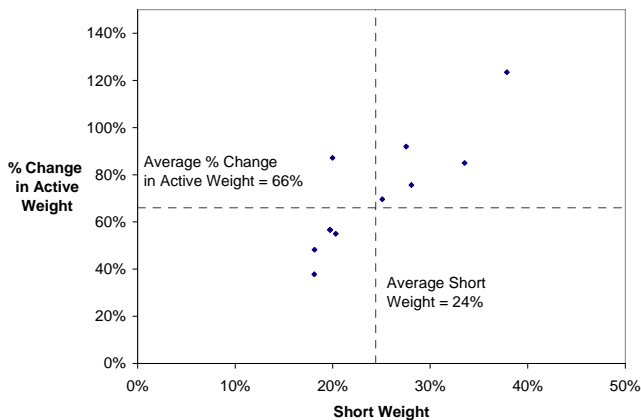
Turning this around, one can also measure how much the active weight is expanded by moving from a long-only portfolio to the AE format. The hypothetical long-only portfolios had 67% active weight, in line with typical long-only funds. As these hypothetical funds are transformed into AE, the average fund picks up active weight of 24% from the shorts and 20% in new reinvested longs (4% was held as cash).

Exhibit 7 displays the percentage increase in active weight for each of the funds. It is perhaps worth emphasizing that the original long-only active weight will always be considerably below 100%. Consequently, the percentage increase in the total active positions will always be well in excess of the percentage increase in the gross footings. Thus, for our

sample, the gross footings increased by 44% from 100% to 144% while the total active weight grew by 66%.

Exhibit 7

## % Change in Active Weight

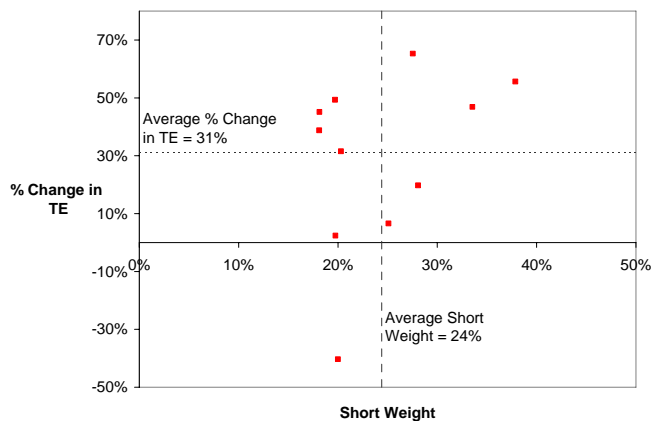


Source: Morgan Stanley Research, Factset

Exhibit 8 shows the percentage change in the predicted TE of the AE relative to hypothetical long-only TE. The TE rose from 3.5% for the initial long-only portfolio to 4.6% for the active extension, an average increase of 31%. With proper risk control, including the use of factor offsets between the long and short portfolios, it should be theoretically possible to keep the increase in TE well below the increase in active weight.

Exhibit 8

## % Change in TE

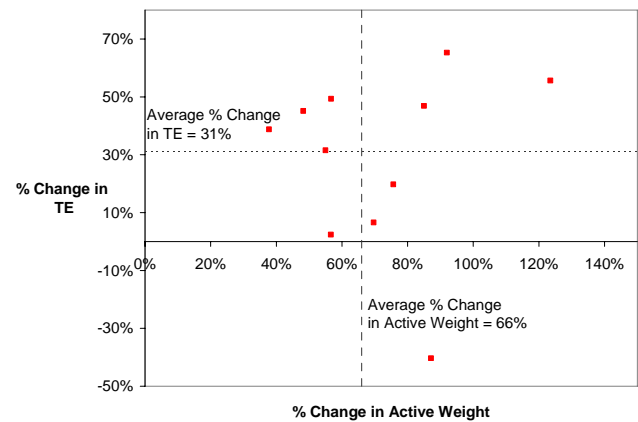


Source: Morgan Stanley Research, Northfield, Factset

Exhibit 9 now combines the data from Exhibits 7 and 8 to plot the percentage change in TE as a function of the percentage change in active weight. The active weight increased by 66%, more than twice the corresponding increase in the average TE. To the extent that the active weight truly reflects the potential for (positive) alpha generation, this difference helps to explain how AE can lead to improved information ratios.

Exhibit 9

## % Change in Active Weight vs. % Change in TE



Source: Morgan Stanley Research, Factset

### References:

- 1) Leibowitz, Martin L. and Anthony Bova. "Position Structure of Active Equity Portfolios" *Portfolio Analysis Note*, October 4, 2006.
- 2) Leibowitz, Martin L. and Anthony Bova. "An Integrated Analysis of 120/20 Short Extension Strategies." *Portfolio Analysis Note*, July 27, 2006
- 3) Leibowitz, Martin L. and Anthony Bova. "Alpha Returns and Active Extensions." *Portfolio Analysis Note*, August 31, 2006
- 4) Leibowitz, Martin L. and Anthony Bova. "Active Extensions: Alpha Hunting at the Fund Level" *Portfolio Analysis Note*, December 13, 2006

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