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CAMBRIDGE ASSOCIATES LLC

A BRIEF GUIDE TO 130 / 30 FUNDS

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C O N T E N T S

ABSTRACT

1. "130/30" has become the most common shorthand for describing an investment strategy that relaxes the long-only constraint of traditional equity portfolios and incorporates both long and short equity positions, while maintaining a 100% net equity exposure to the market. Actual portfolios may vary from 120/20 (more conservative) up to 175/75 (more aggressive).

2. 130/30 managers belong in investors' domestic or global equity portfolios, as these funds maintain a net equity exposure of 100%, in contrast to alternative assets managers. Our broadest categorization of hedge funds differentiates long/short equity funds from absolute return funds. Investors generally hire the latter in the expectation of low volatility, low correlation with equity markets, and modest returns. In hiring long/short equity hedge funds, on the other hand, investors are generally seeking managers with superior skill who can deliver equity-like returns with some downside protection.

3. The reason to hire a 130/30 manager is to leverage the manager's skill at discriminating between over- and underperforming stocks, while maintaining market exposure. If the manager does indeed possess such skill, and can also manage the risks inherent in shorting, over the long term the 130/30 fund will deliver results superior to those of a 100% long-only fund run by the same manager. On the other hand, if the manager does not have these capabilities, the long-term results will be worse than those of a conventional portfolio. As always, leverage cuts both ways—when it's good, it's very very good, but when it's bad, it's awful.

4. Since the vast majority of 130/30 funds now in existence have been created within the past five years (most within the past two years), the jury is still out on how many will demonstrate the capability to deliver consistent value added. As always, the burden of proof resides with those who believe a given manager can add value (and/or alpha) net of the additional risks and costs of active management. *There is nothing in the construct itself that ensures superior results*.

5. 130/30 funds may be (crudely) regarded as falling into one of two categories: the "first movers" have generally been quant shops, whose methodologies have enabled them to roll out 130/30 products without significant retooling of their investment approach; lagging behind are the more traditional managers focused on fundamental research. While the former may enjoy some intrinsic advantages, given the construction (and rebalancing) challenges of 130/30 portfolios, there is no reason to presume that a higher or lower percentage of either type of manager will add value compared to the universe of traditional long-only managers. Indeed, given the added difficulties of managing a short portfolio's risk successfully and the generally higher fees, one might logically conclude that *fewer* rather than more 130/30 managers are likely to succeed.

6. While quant managers have experienced relatively strong performance in recent years, much of this outperformance can be attributed to their substantial "value tilt." Given value has enjoyed almost a seven-year run of outperformance, this may prove a particularly poor time to hire many of these quant managers. In addition, the success of quant approaches has attracted substantially larger pools of money,

much of which, because of the commonality of value tilts by quant managers, has ended up in the same stock names, both long and short. The quant meltdown in the first two weeks of August 2007 was stunning in the degree to which so many quant portfolios, including 130/30 portfolios, were badly hurt, as many of these funds held similar long and short positions and sought to deleverage at the same time. While the recent turbulence is not likely to prove fatal to quant investing, several leading quant managers have admitted their chagrin that the similarity of models will reduce alpha potential and force quants to develop new factor models that are not so widely used.

7. So many 130/30 products have been (and are being) brought to market in such short order that we cannot hope to complete due diligence on the vast majority in the near term. We will concentrate first on those with the longest record and/or the greatest success in managing more conventional strategies, and will attempt to sort the wheat from the chaff as quickly as possible.

SUMMARY

What Is 130/30?

"130/30" has become the most common shorthand for describing an investment strategy that relaxes the long-only constraint of traditional equity portfolios and adds to both long and short equity exposure, while typically maintaining a 100% net exposure to the market.

For example, a 130/30 portfolio with initial capital of $100 sells $30 of securities short and uses the proceeds from the short sales plus the initial $100 to purchase $130 of securities long (Exhibit 1). The $30 in short positions offsets the additional $30 in leveraged long positions, leaving a net market exposure of $100 (but a gross market exposure of $160).

Actual portfolios may vary from 120/20 (more conservative) up to 175/75 (e.g., Renaissance Technologies Corp.'s RIEF product). Academic studies indicate an optimum strategy around 130% long and 30% short for maximizing the information ratio (alpha per unit of tracking error against a benchmark). Increasing gross leverage beyond 130/30, as Renaissance does, can achieve high potential portfolio efficiency only by greatly increasing the number of holdings in the portfolio (Renaissance holds more than 3,000 stocks in its portfolio).

Why Now? What Is Behind the Recent Surge of New 130/30 Products?

The academic theory behind relaxation of the long-only constraint to create more efficient portfolios has been understood for a long time, but there have been very few practitioners until recently. Adage Capital Management, L.P., founded in 2001, arguably has the longest live track record running a 130/30 strategy. Before leaving to form their own firm, the same team had been running this 130/30 strategy for the Harvard University endowment since the early 1990s. In addition, Analytic Investors, Inc., has a five-year 130/30 track record dating back to 2002, but beyond these two examples most 130/30 products have track records less than three years, and the majority have records of a year or less.

The recent surge in 130/30 offerings is attributable to the convergence of several factors:

- With the major shift of institutional assets into hedge funds over the past few years, institutions have become much more comfortable with both shorting and leverage, the key ingredients of 130/30.
- With more modest intermediate-term return projections for equity markets (i.e., beta), institutions are attempting to maintain overall portfolio returns by seeking sources of additional or higher alpha, which 130/30 funds claim they can deliver.
- Many institutions incorrectly perceive 130/30 products as lower-cost hedge funds, or "hedge funds lite."
- With so much money flowing out of traditional equity portfolios and into hedge funds, traditional long-only managers see 130/30 as a way of competing with hedge funds and perhaps reversing or stemming the tide.

- Traditional equity managers, particularly those with quantitative strategies, see 130/30 as a means of charging higher fees without requiring any significant increase in resources.
- Hedge funds, on the other hand, some of which are beginning to offer 130/30 strategies themselves, see such products as a means of attracting larger, more stable allocations of institutional investment dollars than would be allocated to their existing funds.
- Many enhanced and active quant equity strategies have produced strong positive "alphas" in recent years in both their long-only and long/short market-neutral products, and therefore have attractive track records on which to build and market 130/30 strategies.

How Does 130/30 Add Value Relative to Traditional Long-Only Strategies?

The primary argument for 130/30 is that it allows more symmetrical and risk-controlled active underweight bets in a portfolio than long-only portfolios allow, with the potential for higher alpha at the same or similar levels of benchmark tracking error risk.

Consider that there are only about 15 stocks in the S&P 500, Russell 1000®, or Russell 3000® indices with index weights greater than 1%. Approximately 250 stocks in the S&P 500 have index weights below 0.1%, half the Russell 1000® stocks have index weights less than 0.03%, and half the Russell 3000® stocks have weights below 0.01% (Exhibit 2). An active long-only portfolio will hold stocks expected to outperform at higher-than-benchmark weights, and those expected to underperform at lower-than-benchmark weights. Any security can be overweighted by enough to achieve a significant positive active weight, but without short selling it is not possible to achieve significant negative active weights. A long-only portfolio can only underweight a stock at most by that stock's weight in the benchmark; that is, by not holding that stock at all.

Thus, relaxing the long-only constraint opens up a much broader portion of the benchmark for making active underweight bets, and allows proportionally larger overweight bets without necessarily increasing the overall volatility or tracking error of the portfolio.

How Much Shorting Is Enough?

Why is 130/30, with 30% of the portfolio in shorts and total gross exposure at 160%, the most popular long/short ratio for products eliminating the long-only constraint? Why not 120/20 or 150/50? How much shorting is enough?

In their classic 2002 article,[1] Roger Clarke, Harinda de Silva, and Steven Thorley laid out the theoretical case for relaxing the long-only constraint, showing that relative to long-only portfolios, properly

[1] Roger Clarke, Harindra de Silva, and Steven Thorley, "Portfolio Constraints and the Fundamental Law of Active Management," *Financial Analysts Journal*, Vol. 58, No. 5, pp. 48-66, September/October 2002.

constructed "short extension" portfolios were more efficient, as they produce higher risk-adjusted active returns. They expressed this in the following equation:

$$IR = IC \times TC \times \sqrt{N}$$

where IR is the information ratio, IC is the portfolio's information coefficient, TC is the transfer coefficient, and N is the breadth of the investable universe. The IR is the ratio of the expected alpha to tracking error (against the benchmark) and measures the ability to translate risk into return. The IC measures the correlation between expected and actual return. Because of the volatility of security prices, managers' predictive ability for any given stock as represented by the IC tends to be quite low, often less than 0.05 even for top quartile managers. N represents portfolio breadth, or the number of active positions in the portfolio. It is because of the low IC for individual stocks that most quantitative strategies seek considerable breadth and hold a large number of different names and active bets in their portfolios.

For 130/30 considerations, the key term in the equation is the transfer coefficient. The TC measures the "efficiency" of an investment process—the ability to "transfer" ideas into active positions. In a perfect world, the TC would equal 1.0, but the many constraints applied to portfolios—maximum position size, maximum over- or underweights in industries/sectors, the long-only constraint, and so forth—serve to reduce the TC. Many highly restricted strategies have TCs of 30% or less (only 30% of the investment ideas are fully implemented in the portfolio). Relaxing the long-only constraint and allowing shorting can dramatically increase the efficiency of implementing alpha ideas, with simulations often showing an increase in the TC to 70% or even 80%.

Many quant investment teams have done simulations of their active strategies or simulations with random alphas, using ratios ranging from 110/10 to 150/50, even up to 200/100. These simulations indicate that the efficient frontier of IRs tends to start leveling off at levels of shorting greater than 130/30 (Exhibit 3). Different strategies have different optima for long/short ratios, but for most quant strategies the optimum IR falls in the 130/30 to 150/50 range. Beyond 150/50 the frictional costs of implementation, such as borrowing costs for stocks being shorted and increased trading costs from the broader exposure, start to degrade the IR.

Risk tolerance and the comfort level of investors also play an important role in choosing an appropriate long/short ratio. One firm starting a "short extension" product found that 150/50 was the optimal long/short ratio for their strategy, but that many potential institutional investors were uncomfortable with a product that pushed its leverage to 200% gross exposure. To provide 3% to 5% alpha potential and moderate tracking error of 3% to 5%, while mindful of average institutional discomfort thresholds for leverage, managers are clustering around 130/30 as the most common long/short ratio, producing in turn the moniker for this whole class of products.

But even within specific 130/30 structures there can be a wide range of performance targets. Through an integrated optimization process combining longs and shorts, quant equity teams starting 130/30 as an extension of an enhanced index product tend to have tighter tracking error targets and more constraints on active exposures beyond just stock-specific risk. Traditional bottom-up stock-picking teams may not do portfolio optimization at all, and be more comfortable with higher alpha targets, higher tracking error, and more concentrated bets within their 130/30 portfolio.

Still other 130/30 products may vary the long/short ratio dynamically over time, depending on the market environment, valuation spreads, benchmark volatility, and cross-sectional volatility within sectors. In a low-opportunity environment, a manager may reduce leverage to 120/20, and when there are large spreads between overvalued and undervalued stocks, the manager may increase active risk and raise the leverage to 140/40 or 150/50.

Finally, as 130/30 products spread across different segments of the global markets, optimal long/short ratios will vary according to benchmarks. Indices such as the S&P 500, with a high concentration of capitalization in a small number of names, combined with large numbers of much lower capitalization stocks, require more shorting and a higher long/short ratio to improve portfolio efficiency. In contrast, in broader indices with a more uniform capitalization distribution, such as the S&P MidCap 400, the "flatter" distribution makes it easier to undertake meaningful underweights with much lower levels of shorting needed to maximize active weight efficiency.

How Do 130/30 Strategies Potentially Fit into Portfolios?

130/30 products should be viewed as potential additions to, or substitutes for, a portion of traditional long equity portfolios. 130/30 strategies are not hedge funds, nor are they a new asset class. They are distinguished by their constant and persistent 100% net exposure to equity markets and their equity market benchmarks. The great majority of new 130/30 products are being created by existing long-only equity teams using essentially the same overall investment strategies offered in their traditional long-only products. Long-biased hedge funds, on the other hand, while their gross exposures may look similar to those of 130/30 strategies, will have variable net equity exposures that rarely rise above 40% to 60%, and will take more of an absolute return approach, seeking to make money on many of their shorts, rather than simply having shorts that underperform an equity benchmark.

The majority of 130/30 products thus far are in the U.S. equity large-cap core space. Increasingly, there will be style-specific offerings, as well as non-U.S. and global offerings, all of which would be appropriate for consideration in long equity portfolios, but not for hedge fund or absolute return programs. Less liquidity, less availability of shares, and higher borrowing costs to short will limit 130/30 strategies in emerging markets and small-cap equities.

Leverage is a key ingredient of 130/30. In incorporating 130/30 strategies into equity portfolios, investors need to be very aware of the degree to which these strategies increase gross exposure to equity markets, and should look at this exposure in the larger context of their gross equity exposures and leverage—including those embedded in their hedge fund programs.

What to Look for in Evaluating 130/30 Products

Is there an established, sustainable alpha source? First and foremost, the manager should have a demonstrable history of delivering consistent, risk-controlled alpha and a core investment strategy the investor is comfortable with. There is no inherent alpha-generating capability in a 130/30 strategy. It will not create alpha where alpha-generating skill did not already exist. Worse, because of leverage, it will compound and amplify negative alpha and underperformance in the absence of investment skill. Thus, the most natural candidate for 130/30 may be an existing long-only manager already in the portfolio in whom the investor has confidence and who is starting a 130/30 strategy while satisfying the criteria below.

Are there short-selling capabilities? The 130/30 manager should have the ability and resources to identify short candidates. Many career long-only analysts have a difficult time adapting philosophically and psychologically to a search for the worst, most overvalued companies to short. It is for the most part a very different skill set. Quantitative approaches that can rank stocks easily from best to worst have an immediate advantage here over traditional bottom-up, long-only analyst teams.

Are there sufficient resources to cover a larger universe of securities? The 130/30 manager should have sufficient analyst resources to cover and have opinions on a large portion of the stocks in the benchmarked index. The need to have short candidates sharply increases the universe of companies that need to be assessed. Traditional long-only strategies often screen out a substantial portion of the less attractive stock universe and then focus on the remainder. The addition of a short portfolio requires knowledge and monitoring of a much broader list of names, especially since short portfolios usually contain many more names and smaller positions to reduce the risk of corporate buyouts or short squeezes. Here again, quantitative approaches have the advantage of being able to easily rank much of their stock universe.

Does the manager have adequate experience in executing short transactions? The 130/30 manager must have experience executing short transactions within well-established long-term prime brokerage relationships. This would usually include experience running equity long/short hedge funds. Absent such experience, there should be at least a three-year 130/30 track record to demonstrate this skill. Shorting stocks requires a relationship with one or more prime brokers, from which stocks to be shorted are borrowed and where stocks shorted are custodied. A short list of major prime brokers most commonly used in shorting programs would include Bear Stearns, Goldman Sachs, and Morgan Stanley. There are many complexities to borrowing and shorting shares, which include knowing which prime broker is the best source. This in turn depends on an assessment of the annualized cost of borrowing shares of a particular stock, the liquidity of shares to be shorted, the risk of a short squeeze, and the risk of a shorted stock being suddenly called in under extreme market conditions. The manager also has to have the breadth of stock selection skills and well-designed portfolio construction techniques to be able to choose appropriate alternatives when the stock to be shorted is not available or is too expensive to borrow. There is no substitute for experience. Larger firms that have a substantial asset base and extensive trading relationships with prime brokers will have the advantage here.

Does the manager have demonstrable skills in portfolio construction and risk controls? One of the strongest arguments for 130/30 is the potential for taking more active risk without significantly increasing tracking error risk. However, taking more active risks requires a higher degree of portfolio construction skill and risk control than is typically incorporated into traditional long-only portfolios, especially those that are less benchmark sensitive. Adding shorts and increasing gross exposure adds opportunity, but also the risk of unintended exposure to different market factors. The complexity of matching up factor exposures with both longs and shorts lends itself to portfolio optimization techniques. Either the 130/30 manager needs to demonstrate strong quantitative resources for portfolio optimization, or the manager needs to have a well-developed methodology for controlling and monitoring exposure to different types of risk that are not stock specific. Matching risk between longs and shorts, or finding easy substitutions when a stock chosen for shorting is either unavailable or too expensive to borrow, is materially different than using methods focused on finding individual stock selections. Here again, quantitative approaches that can define factor exposure characteristics of a broad range of stocks have an initial advantage in portfolio construction.

Additional Characteristics

- Because of the larger gross exposure and larger number of holdings, turnover will tend to be 30% to 60% higher, resulting in a less tax-efficient portfolio.

- 130/30 portfolios should not give rise to taxes on UBTI (Unrelated Business Taxable Income). Long positions in excess of capital are not purchased by borrowing on the margin, but with the proceeds from short sales. Borrowing shares to sell short also does not give rise to UBTI because no acquisition indebtedness has occurred.

- One of the advantages of many quantitatively driven 130/30 products over most hedge funds is full transparency on short positions, a rarity among market-neutral or long-biased hedge funds. Ironically, the reverse is true regarding the basic investment process: most bottom-up stock-picking hedge funds provide significant detail on exactly what types of analysis go into stock selection, whereas many quant approaches can be opaque (if not black boxes) regarding the specific factors and algorithms that go into ranking and stock selection.

Trends to Watch

- 130/30 products reflect a natural evolution in the gradual blending of traditional long-only and hedge fund strategies. However, as the convergence continues, there will be increasing pressure on hedge fund fees, especially long-biased hedge funds that most closely resemble 130/30 strategies.

- There is the potential for 130/30 and hedge fund strategies to further converge. Already, there are 130/30 strategies that have the flexibility to vary their net long exposure from 80% to 120%, under rare circumstances.

- On July 6, 2007, the Securities and Exchange Commission rescinded the rule requiring short sale trades to be executed only on an "uptick" in price. As a consequence, it has become easier to implement strategies that include short selling. (Note, however, that in a declining market, 130/30 funds will be steadily *buying* as they seek to rebalance by covering shorts and adding to long positions.)

Conclusion

130/30 investing is not a fad, but is fast becoming another standard choice on the investment menu and continuum that runs from traditional long-only through 130/30 to long-biased long/short to long/short market-neutral. It will require investors to take a more holistic view of their overall equity exposure and leverage, and their beta and alpha return expectations across their traditional long-only and hedge fund manager universe. It will also focus greater attention on fees across the spectrum, and have the positive effect of making investors more sensitive to what they are paying per unit of leverage and per unit of active risk, as well as how much of their fee dollar is going to beta exposure and how much to reward real alpha.

Fee comparisons will play a critical role in choosing a 130/30 manager. Because quant products, especially enhanced index products, generally charge lower fees than traditional long-only managers taking higher active risk, quant 130/30 fees are competitive with traditional active long-only manager fees, falling in a general range of 50 basis points (bps) to 85 bps per year. Typically, a quant firm that charges 40 bps for its long-only will charge 65 bps for its 130/30, using a fee multiple of 1.6 to reflect the increased gross exposure and active risk. 130/30 products developed by hedge funds or using a partnership structure tend to have higher fee structures, generally a 50 bps to 100 bps base fee, plus a performance fee of 20% over a defined equity benchmark.

It is important to distinguish between the two basic types of 130/30 products flooding the marketplace. By far the majority of new 130/30 products are coming from firms and managers with a more purely quantitative approach. There is logic to quants being the first movers in this new product area since they have three critical advantages over traditional bottom-up, research-intensive stock picking. First, quants are able to cover and generate views easily on a very large portion of the stock universe. Second, they commonly use stock ranking methods from best to worst that make it much easier for them to come up with a list of stocks to short without adding resources or changing their methodology, and many have experience running market-neutral long/short products. Third, quants tend to have more benchmark-sensitive approaches and have in place optimization techniques that adapt well to the complexities of portfolio construction, factor exposure, and risk control in a portfolio that has both long and short positions.

However, being first movers does not necessarily mean these quantitative 130/30 products will be the best long-term investments as competing products using more traditional research and stock selection techniques begin to emerge and overcome their initial disadvantages in "short" stock research and portfolio construction.

In sounding a cautionary note on the first wave of quant 130/30 products, we would make two key observations. First, quant approaches in general have had a period of strong relative performance in recent years, so that back tests showing how much alpha could be added by 130/30 make these products appear especially attractive to investors right now. But a close look at the source of those excess returns indicates that many quant products marketed as "core" U.S. equity portfolios have a substantial "value tilt," which has enjoyed almost a seven-year run of strong performance since the end of the 1990s. Good performance going forward will obviously depend on value continuing to outperform, which is far from a given. Indeed, given the long-run performance cycles of growth and value, this may prove a particularly poor time to hire many of these quant managers. At the very least, investors need to look very carefully on a product-by-product basis to understand what biases and tilts are embedded in a given manager's methodology.

The second cautionary note is related to the first: because many quant approaches have done well in recent years, they have attracted substantially larger pools of money, much of which, because of the commonality of value tilts, has ended up in the same stock names, both long and short, because of similarities in models. The quant meltdown in the first two weeks of August 2007 was stunning in the degree to which so many quant portfolios, including 130/30 portfolios, were badly hurt. As many quant long/short funds sought to deleverage, both long and short positions in many portfolios dramatically underperformed simultaneously. The recent turbulence will not prove fatal to quant investing, but several leading quant managers have admitted their chagrin that too many quant strategies are using value-tilted models and coming up with too similar a list of longs and shorts. Going forward, this will reduce alpha potential and force quants to develop new factor models that are not so widely used.

In the intermediate term, the 130/30 universe should see increasing numbers of entrants using more traditional stock analysis and more varied and flexible stock selection techniques. The existing handful of such products (e.g., Adage Capital) was scarcely affected by the August 2007 debacle. Although prospects for more managers using more traditional approaches to stock selection in 130/30 products are promising, this will take time, as many managers will have to climb a steep learning curve on shorting stocks and improving portfolio construction techniques.

EXHIBITS

Exhibit 1

WHAT IS 130/30?

- Removes shorting constraint from a traditional long-only portfolio
- Adds additional long exposure to match short exposure
- Resulting portfolio has full market exposure
- A bridge between traditional (long-only) and alternative (market-neutral or long-biased hedge funds)

Traditional vs 130/30 Market Exposure

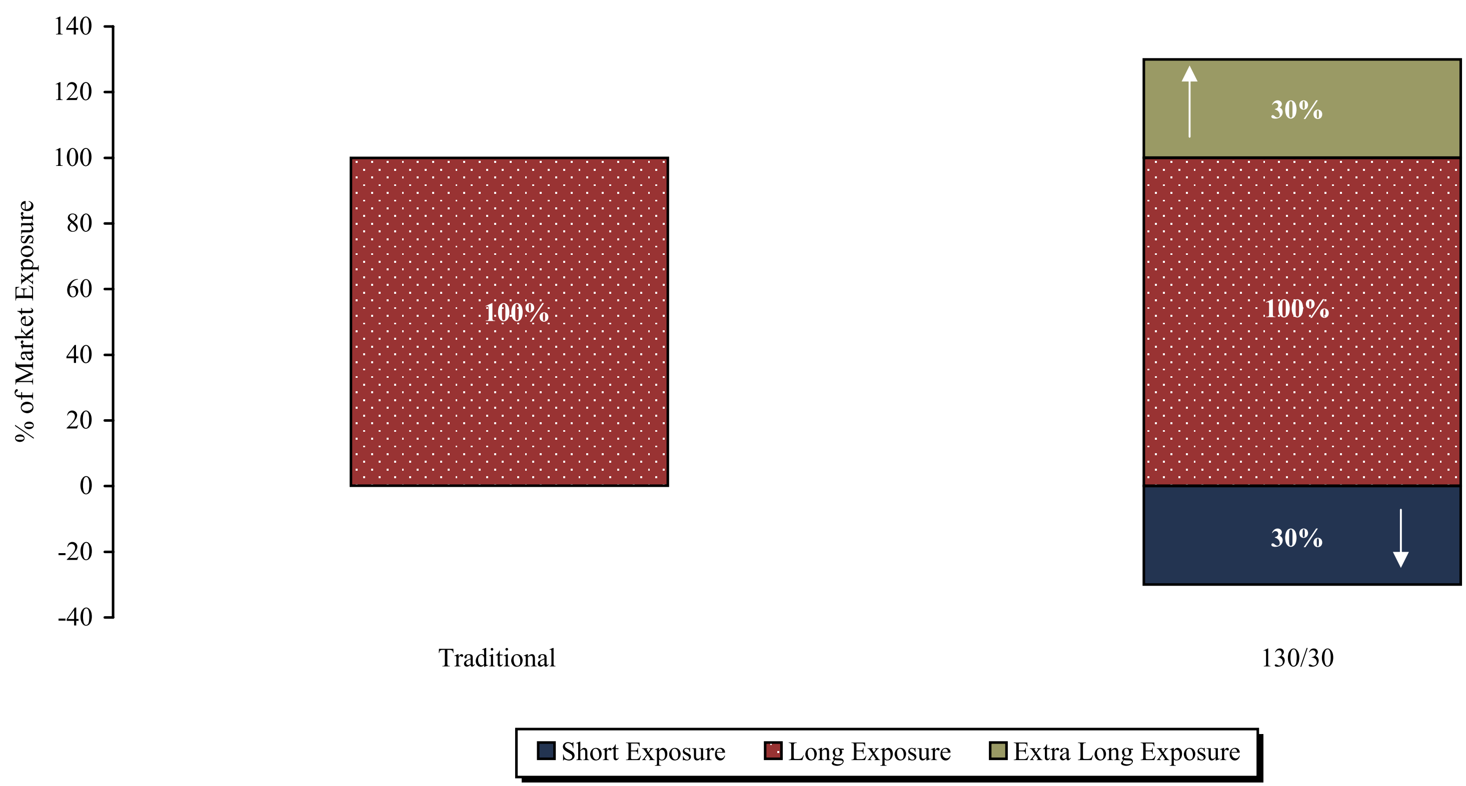
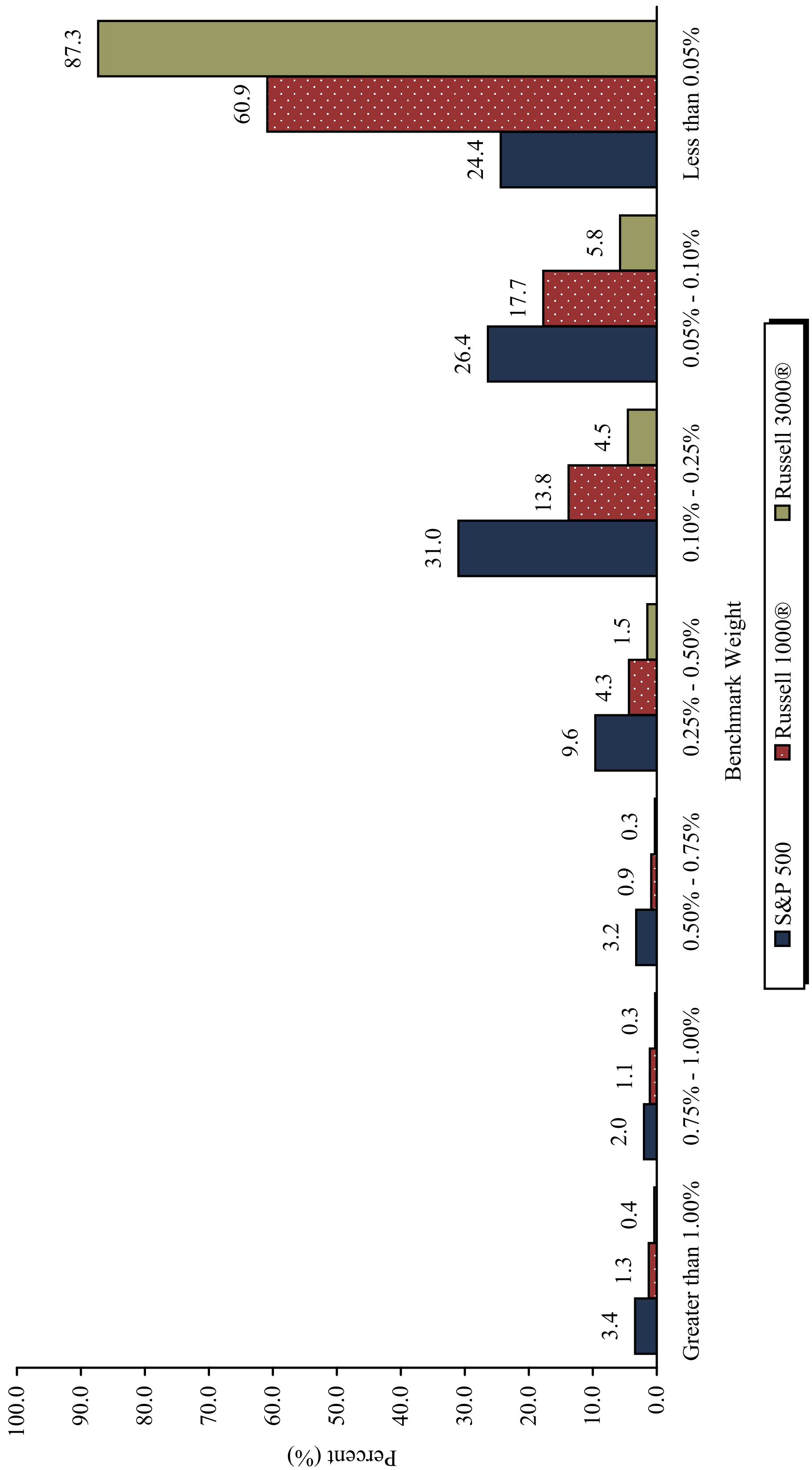


Exhibit 2

PERCENTAGE OF NAMES BY BENCHMARK WEIGHT: SMALLER WEIGHTS DOMINATE

As of August 31, 2007



Sources: Factset Research Systems, Frank Russell Company, and Standard & Poor's.

Exhibit 3

ALPHA AND INFORMATION RATIO IMPROVE AT A DIMINISHING RATE AS SHORTING INCREASES