

130/30 Version 2.0

JUST OVER TEN YEARS AGO, the first in an influential series of papers was published on the benefits of relaxing the long-only constraint in benchmark-relative active equity portfolios.¹ Those papers lent intellectual support to the first “130/30” active equity products launched around the same time. On the strength of those early academic papers—and subsequent attention from consultants, money managers, and the financial press—assets in fledgling 130/30 products soared after 2005. Total assets in 130/30 reached their peak in 2008 and then fell with the underperformance of broader equity markets; unlike stocks, however, their recovery has been muted. Assets in quantitative 130/30 products in particular, which had captured a majority of the capital invested in those strategies in the run-up, remain far below their 2008 peak. Moreover, a third of all managers that once offered 130/30 products no longer do so. In short, after something of a meteoric rise, 130/30 fell out of favor with investors. Recently, however, our firm has seen stirrings of renewed interest in 130/30 products in the plan-sponsor and consultant community as allocators search for additional sources of return.

This paper argues that a fresh look at 130/30 is warranted, as this investment approach can, when robustly implemented, improve risk-adjusted performance relative to long-only portfolios. The poor historical results of many 130/30 products, we contend, stemmed largely from implementation problems specific to certain managers or investment approaches rather than flaws in the theoretical foundations of 130/30. We also argue that this poor performance may have been exacerbated by common misperceptions about the role of 130/30 products in a broader portfolio. The good news is that investors now have a more mature universe of 130/30 implementations they can assess and better information on the conditions under which 130/30 can add value. In particular, we draw upon more recent academic research and empirical data on portfolios managed by our firm to illustrate our contention that 130/30 portfolios have greater potential to outperform benchmarks than otherwise equivalent long-only portfolios. We also briefly outline research showing that market participants overreact to negative news in periods of market instability and argue that managers of 130/30 products that target stock-specific sources of alpha may be well-positioned to generate excess returns under volatile market conditions.

¹ See Richard C. Grinold and Ronald N. Kahn, The Efficiency Gains of Long–Short Investing, *Financial Analysts Journal*, Vol. 56, No. 6 (November/December 2000): 40–53; Roger Clarke, Harindra de Silva, and Steven Thorley, Portfolio Constraints and the Fundamental Law of Active Management, *Financial Analysts Journal*, Vol. 58, No. 5 (September/October 2002): 48–66; and Roger Clarke, Harindra de Silva, and Steven Thorley, Toward More Information-Efficient Portfolios: Relaxing the Long-Only Constraint, *The Journal of Portfolio Management*, Vol. 31, No. 1 (Fall 2004): 54–63.

I. 130/30 by the Numbers

The hype surrounding 130/30 in its early years reflected classic bandwagon behavior, with scores of “me-too” products and outlandish growth projections. But in the 2008–2009 period, the bandwagon ground to a halt and then went into reverse. Consider the asset and return data presented in Figure 1 and some ancillary data points on the 130/30 universe.²

130/30 Assets and S&P 500 Total Return, January 2005 – June 2012

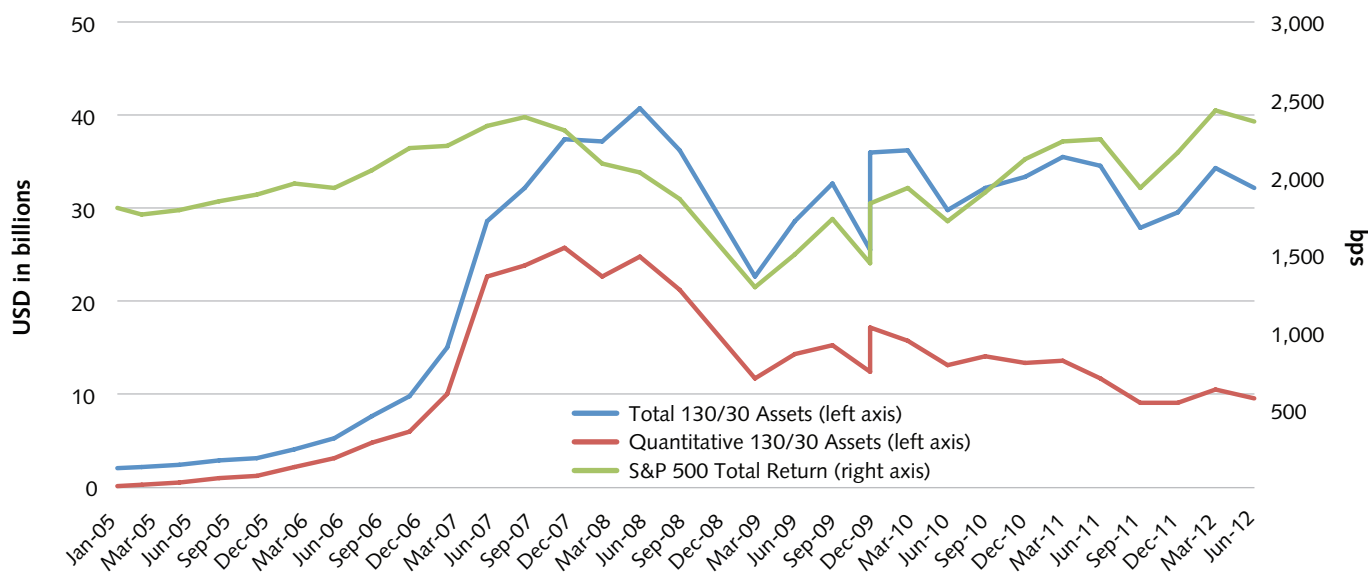


Figure 1

- 130/30 assets declined by nearly 45% from peak to trough.** As Figure 1 shows, total assets in 130/30 strategies rose to just over \$40 billion by the middle of 2008, fell to less than \$23 billion in the first quarter of 2009, and partially rebounded to approximately \$32 billion as of the second quarter of 2012.
- Assets in quantitative 130/30 products remain well below peak.** Managers of quantitative products had an early edge in attracting assets to their 130/30 offerings, but that advantage disappeared after the 2008 financial crisis. At their peak in 2008, 60% of all 130/30 assets were invested in quantitative products; that proportion had fallen to 30% by the end of the second quarter of 2012.
- More than a third of managers have shut down their 130/30 products.** There were 68 130/30 products managed by 42 firms at the end of the second quarter of 2012, down from 113 products offered by 70 firms in the second quarter of 2008.
- Allocator perceptions may have been deeply influenced by the comparison between 130/30 and long-only performance in 2009.** Figure 2 shows annual median gross excess returns for the 130/30 and active long-only products of 130/30 managers over the 2006–2011 period. Although there was inconsistent performance across those product types, in 2009 the median 130/30 product significantly underperformed while long-only eked out a small gain, a trend that was largely reversed in 2011.

² The asset and product data shown in Figure 1 and cited in the text that accompanies that figure are derived from the “Extended Equity” universe of the eVestment Alliance, LLC (“eVestment”) database using quarter-end data. Because managers self-report these asset and product data to eVestment, a number of biases are typically present in any sample of returns or assets over time. However, in reviewing different sources, we believe the direction and magnitude of changes in the market for 130/30 equity products are broadly consistent across estimates. The S&P 500 total return shown in Figure 1 is based on quarter-end data.

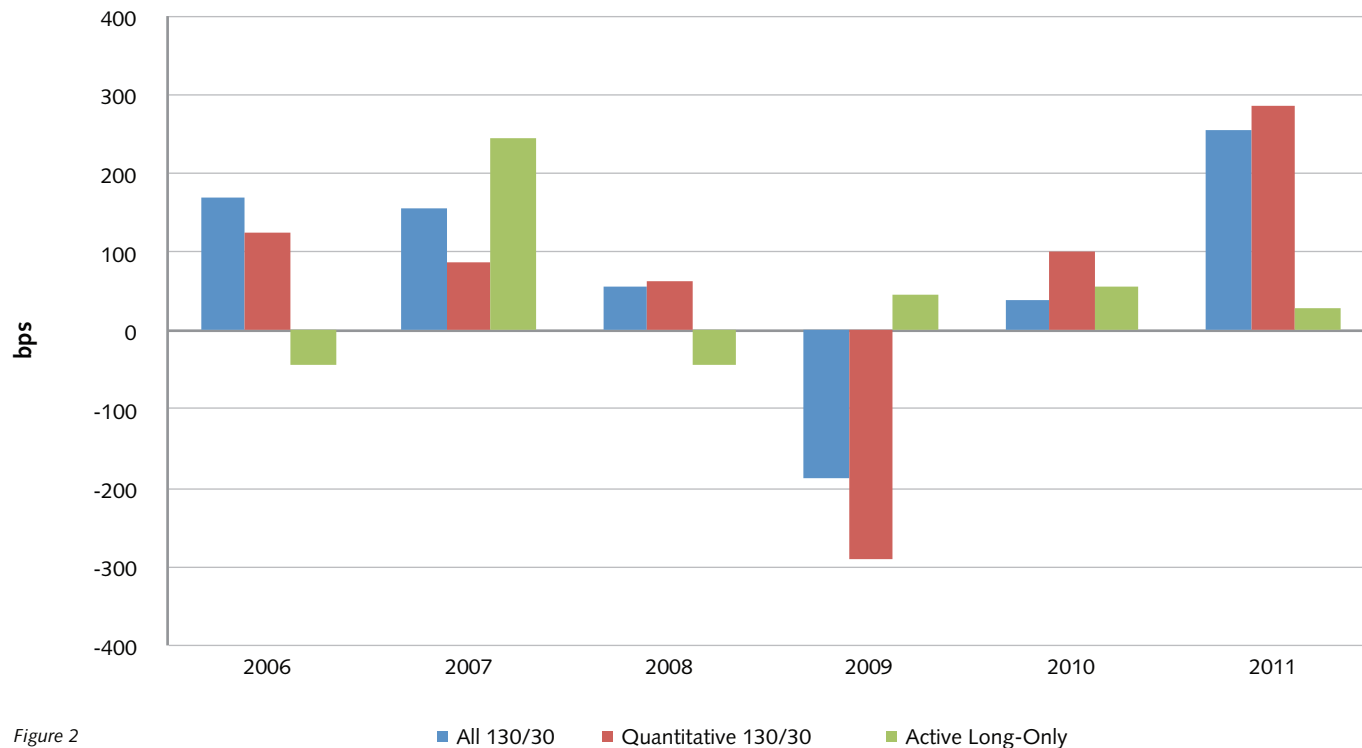
Median 130/30 and Long-Only Product Excess Returns (Gross), 2006 – 2011³

Figure 2

These data points suggest significant disappointment among the first wave of allocators to 130/30, which is consistent with conversations we've had with investors and consultants. Those early adopters often express frustration about their experience relative to expectations while those that refrained from making early investments are relieved about having stayed away. So what went wrong?

II. Implementing the 130/30 Equation

It could be argued that 130/30 was simply the victim of poor timing. Most of those products came to market just a year or two before the quantitative mini-crisis of August 2007, followed a year later by the onset of the global financial crisis. For much of the ensuing period, markets remained volatile and macro-driven, and active equity managers of all types faced considerable challenges in their efforts to generate positive excess returns. 130/30 strategies certainly were not alone in delivering disappointing results for some or all of the past five years. As easy as it would be to attribute the market's disappointment to poor timing, however, we think there's more to the story.

A. Measuring 130/30's Added Value

Given the disparities in the performance of long-only and 130/30 products offered by the same set of managers in 2006–2011, one might be tempted to conclude that the original theoretical work underpinning 130/30 was flawed. After all, a key research finding of that work was that, other things being equal, 130/30 should outperform long-only strategies over time.

³ The median excess return figures presented in Figure 2 are derived from monthly gross performance information contained in the eVestment database for (1) applicable products in the Extended Equity universe, and (2) products in the "Long-Only Active Equity" universe managed by the same firms whose products are included in the Extended Equity universe.

A good place to begin making sense of why 130/30 broadly has not performed to those expectations is a review of the core theoretical insights that underpinned the 130/30 product boom. That work centered on two related claims:

1. Conventional long-only benchmarks such as the S&P 500 and Russell 1000® Index have long tails of stocks with very small weights.
2. Those long tails limit a manager’s ability to underweight small names by reducing the “transfer coefficient,” or, in simplest terms, the correlation between a manager’s theoretical risk-adjusted alpha and the actual positions established in a portfolio.

With regard to the first point, we believe it’s clear that benchmark composition was not the source of the mismatch between theory and reality. Figure 3 illustrates one example of a market capitalization-weighted index, the S&P 500, to show that the first claim remained true as of the end of the second quarter of 2012. Nearly half of all stocks in that index had a weighting of 10 or fewer basis points.

Market Capitalization Distribution of S&P 500, June 29, 2012



Figure 3

Thus, let’s turn to the second point and see how 130/30’s original proponents attempted to factor in constraints on the transfer coefficient in real-world investment applications and capture 130/30’s added value relative to long-only investing. The modified version of the fundamental law of active management, derived originally by one of the seminal academic papers on 130/30,⁴ is represented by:

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

where *IR* is information ratio, *TC* is transfer coefficient, *IC* is information coefficient, and *N* is breadth.

Let’s assume that a portfolio manager has an *IC* of greater than zero, meaning she has some skill in accurately forecasting stock returns. (In the absence of such an assumption, an allocator should not invest in *any* active strategy run by the manager!) Increasing the manager’s flexibility to implement negative forecasts (by eliminating the zero barrier on active underweight positions), particularly in the context of forecasts on smaller stocks in market capitalization-weighted indexes,

⁴ See Clarke, de Silva, and Thorley, Portfolio Constraints and the Fundamental Law of Active Management, Appendix A.

should enhance a portfolio's transfer coefficient. That increased efficiency should ultimately enhance a portfolio's expected information ratio. In our view, the TC and IC terms in the above equation are clear and well-understood, and in particular, the idea of using a 130/30 approach to capture gains in the transfer coefficient does not, on its face, appear problematic. To the extent we have seen a gap between 130/30 theory and practice, therefore, we should look more closely at the expected results of relaxing the long-only constraint and increasing transfer coefficient in the context of relatively high- and low-breadth portfolios.

Breadth is defined as the square root of the number of *independent* or uncorrelated opportunities to which a forecast applies. Clearly that number will not be the number of stocks in the benchmark because stock returns are far from uncorrelated with each other. In practice, the number of independent opportunities in a portfolio is a function of the portfolio-construction and forecast methodology employed by a manager. We believe that firms that initially managed some of the largest pools of capital in 130/30 products may have experienced poor performance because they were relaxing the long-only constraint in portfolios that had relatively low breadth to begin with. Applying 130/30 portfolio construction techniques to low-breadth portfolios, we believe, generally results in (1) limited improvements in risk-adjusted performance (information ratios) relative to long-only in absolute (and therefore practical) terms and (2) greater latitude to perform well or poorly relative to the benchmark. To the extent that the market for 130/30 products has not sufficiently distinguished between those two outcomes, allocators may not be entirely clear on how 130/30 adds value relative to long-only portfolio constructions. Let's spell that argument out in more detail.

As we have discussed in another paper, many quantitative managers that were early adopters of 130/30 employ a relatively generic style of management that is dominated by valuation and momentum forecasts and heavily constrains idiosyncratic risk.⁵ That approach—what we have called the “generic quant paradigm”—is designed to produce a portfolio with a suite of desired factor “tilts.” For such portfolios, the number of factor tilts, rather than the number of positions, largely determines a portfolio's breadth. We believe relaxing the long-only constraint in these portfolios does not materially increase information ratios in absolute terms, and therefore generic quant approaches are not well-suited to take advantage of the theoretical benefits of the 130/30 concept.

Consider the two managers with relatively low and high levels of breadth depicted in Table 1. We'll assume each manager's investment process exhibits the same information coefficient (that is, each manager is equally skilled at stock picking).

Table 1: The Impact of Breadth on Risk-Adjusted Performance

Portfolio	TC	IC	N	IR
Manager A Long-Only	0.50	0.30	3	0.25
Manager A 130/30	0.65	0.30	3	0.33
Manager B Long-Only	0.50	0.30	100	1.5
Manager B 130/30	0.65	0.30	100	2.0

It's a somewhat obvious point but one we think has been lost in the discussion: managers of long-only portfolios that exhibit low breadth stand to gain very little in terms of *absolute risk-adjusted* performance when moving to 130/30. Although information ratios rise by 30% for both managers, the increase for Manager A, given its relatively low value for N , is not terribly meaningful, while clients of Manager B would enjoy materially better absolute performance as compared to long-only.

⁵ See Tony Foley, *Programmed Obsolescence: The Generic Paradigm in Quantitative Equity Investing and Why It's in Trouble*, D. E. Shaw Investment Management, L.L.C., November 12, 2010.

When measuring performance purely on the basis of raw excess returns (rather than risk-adjusted metrics such as information ratio), 130/30 portfolios dominated by factor tilts may very well put up good numbers relative to equivalent long-only portfolios. In 130/30 products, the proceeds of the portfolio's short positions are generally used to make additional long purchases to maintain a beta of 1.0 to the benchmark. The larger gross notional market exposure for 130/30 relative to long-only (typically, 160% versus 100% of total capital) has the economic effect of applying leverage to the portfolio. Therefore, when some of the first 130/30 strategies boosted excess returns relative to their long-only cousins, the increase might simply have been the product of adding capital to *existing concentrated long positions in factor tilts*. If a portfolio manager gets his timing right, a 130/30 portfolio dominated by factor tilts could materially outperform long-only. When a manager's timing is not as propitious, however, applying effective leverage to those same concentrated bets may result in the dismal 130/30 excess returns seen in 2009. Given that the modified fundamental law of active management measures performance in risk-adjusted terms, and breadth is the largest term in that equation, the managers that gathered a majority of assets during 130/30's initial growth period may have been the group to which, on average, the modified fundamental law had *least* applicability.

B. The Practical Challenges of 130/30 Implementation

Having examined each of the terms in the fundamental law, let's now turn to what might be missing from that equation. We'll develop that point by first considering how managers developed and marketed their 130/30 products.

At the risk of overgeneralizing, managers that entered the market for 130/30 products did so from two different backgrounds. The pedigree of many managers that initially brought 130/30 products to the market (and the vast majority of their assets) was in long-only investing. A much smaller group came to 130/30 from the market-neutral or long/short equity investment space. In 130/30's early asset-gathering phase, long-only managers had an inside track because 130/30 was effectively positioned as an upgrade to long-only portfolio construction. Those managers thus had a ready pool of existing long-only investors to whom they could cross-sell 130/30 strategies or advocate mandate conversions (and in the process potentially collect higher fees).⁶

We believe this migration of managers from long-only to 130/30 played a key role in the bursting of the 130/30 bubble and highlights hidden—and misguided—assumptions in the modified version of the fundamental law of active management,⁷ namely:

1. Forecasting power is symmetric when implementing long and short positions.
2. The operational complexities involved in shorting stocks are small and can thus be given little attention.

If both assumptions held, then a long-only manager that began shorting stocks would simply be extending the range over which its forecasts operate rather than entering previously uncharted waters. Let's consider why each assumption may be overly strong, if not heroic.

A simple thought experiment can help clarify why the first assumption is dubious. Imagine that a long-only portfolio manager is asked to choose between two crystal balls that magically appear each month. The first crystal ball reveals the names of five stocks not currently in the manager's portfolio that will outperform the benchmark; the second crystal ball reveals five benchmark laggards that also are not currently in the manager's portfolio.

The first crystal ball will always permit the manager to make best use of the forecast information because she will exploit it by overweighting long positions; the long-only constraint places no limits on decision making. The second crystal ball has more limited utility, however, because the laggards may have zero or small weights in the benchmark. In that case, the long-only constraint will greatly reduce the manager's ability to exploit the forecast information because she won't be able

⁶ A similar dynamic had played out some years earlier when passive managers marketed enhanced index products to many of their clients when that approach to active management first gained popularity.

⁷ See Clarke, de Silva, and Thorley, *Portfolio Constraints and the Fundamental Law of Active Management*.

to underweight those names enough to reap material benefit in terms of excess return. Other things being equal, therefore, long-only managers should prefer forecasts that help pick winners rather than stocks that will underperform the benchmark, and they will allocate their resources accordingly. Thus, it seems odd to expect that, after many years of working under those asymmetric incentives—in other words, focusing only on polishing that first crystal ball while largely ignoring the second one—the forecasting abilities of firms that traditionally managed long-only portfolios would suddenly be symmetric.

The second assumption points to key differences in implementation between actively shorting stocks and merely being underweight relative to a benchmark. Shorting requires that a manager carry out some critical tasks, including identifying sources of borrowable stock, paying potentially non-trivial borrow costs that vary over time and across stocks, and factoring those charges as well as liquidity estimates for each position into the portfolio construction. More relevant in recent years, managers must also have sufficient expertise on compliance matters as well as sophisticated trading technologies to adapt to an evolving regulatory environment. Since 2008, a number of national regulators have implemented tighter constraints, reporting requirements, or outright bans on short sales. In our experience, rapidly changing short-sale rules in recent years posed two kinds of challenges. One was regulatory risk itself and, specifically, whether our firm had sufficient clarity from regulators on newly-implemented rules to be confident about the firm's compliance with them. The second challenge centered on the protection of intellectual property in the face of new rules that could result in the public disclosure of short positions. We believe the 2008–2009 period demonstrated that deep knowledge and experience in compliance matters and a robust trading infrastructure were critical to navigating markets in which those risks could arise.

More fundamentally, the 130/30 optimization problem is more complex than portfolio optimizations for either long-only or market-neutral applications. Table 2 demonstrates this by showing the different possible states of a position in each portfolio configuration.

Table 2: Possible States for Individual Positions Across Portfolio Configurations

		Portfolio Configuration		
		Long-Only	Market-Neutral	130/30
Position State ⁸	Overweight	✓	✓	✓
	Underweight but Long	✓		✓
	Underweight and Short		✓	✓

Many of the generic optimization technologies used in the industry that would cope reasonably well with the two-state long-only optimization problem would be stopped dead in their tracks by the more complex, three-state 130/30 problem. The real-world differences between the “underweight but long” and “underweight and short” position states in terms of transaction costs, degree of execution difficulty, and risk management are potentially highly significant. Simply ignoring that additional complexity is imprudent.

C. Unrealistic Views of What 130/30 Is and Can Accomplish

The previous sections demonstrate how underperformance by many 130/30 products may have stemmed not from flaws in the theory itself but rather from unrealistic expectations (often of the managers themselves) that the benefits of relaxing the long-only constraint would apply regardless of investment approach or implementation skill. But a few common misperceptions about the nature of 130/30 and its role in a broader portfolio may also explain the gulf between the early enthusiasm for and later dissatisfaction with 130/30.

⁸ The position states shown for the “Market-Neutral” portfolio configuration assume a default weight of zero.

We find that allocators typically view 130/30 as either:

1. a beta 1.0 strategy that falls into an equity bucket; or
2. a hedge fund-like (or hedge fund “lite”) strategy that fits better in an absolute return bucket.

We believe 130/30 involves elements—but only elements—of each of these broader conceptions. This is because 130/30 features (1) the investment *objective* of a beta 1.0 strategy—to track a benchmark index and deliver an excess return, and (2) the use of some investment *techniques*—short-selling and larger notional positions—associated with alternative strategies. In brief, 130/30 exhibits a portfolio configuration that is meaningfully different from either a long-only strategy or a typical long/short equity hedge fund.

Importantly, 130/30 does not have a hedge fund-like, absolute return investment objective, and failure to recognize this can be dangerous. Many investors assumed wrongly that 130/30’s short positions would provide hedge fund-like downside protection and were disappointed when 130/30 underperformed along with long-only strategies in 2008’s market crash. Given that the overall investment objectives and net market exposures of a 130/30 portfolio and comparable long-only portfolio are identical, the foul-weather aspirations of these allocators were not achievable. 130/30 is not really intended to be a “hedged” strategy.

On the other hand, if investors view 130/30 simply as an extension of long-only investing, they may not bring the full measure of their due diligence resources to bear on manager selection, which could have significant implications given the unique implementation challenges posed by 130/30. As we’ve noted earlier, it is not a trivial exercise to successfully manage portfolios involving short positions and leveraging effects. We thus see the logic in applying some alternative investing analytical resources to evaluation of the 130/30 space, provided the highly different investment objectives are kept in mind.

III. New Perspectives on 130/30

We argue that 130/30, as a form of active management with sound theoretical support and demonstrated success by a number of current practitioners, has the potential to deliver enhanced risk-adjusted performance and is worthy of consideration alongside other active products. Anecdotal evidence indicates that investors continue to have appetite for elements of the 130/30 approach, including conviction in the potential for short-side alpha, as demonstrated by allocations to long/short equity strategies that target a market-neutral return or a beta of less than 1.0 and a recent resurgence in products that employ quantitative portfolio management techniques.

In advancing the argument that 130/30 can add value to investor portfolios, let’s consider a theoretical development made since 130/30 products first appeared and an analysis of recent market trends since those products fell out of favor.

A. More Active Portfolios

Active portfolios can only beat their benchmark by deviating from it. One study has developed the concept of “active share” to measure the degree to which a portfolio deviates from the benchmark in a non-parametric fashion and also demonstrated that there is a statistically significant positive relationship between active share and excess returns relative to the benchmark.⁹ The active share of a portfolio is measured as the sum of the absolute values of a portfolio’s active positions relative to its benchmark and includes in that sum non-benchmark positions and overweight and underweight positions relative to the benchmark. In moving beyond the base case for active share, we argue there is theoretical and empirical support for the idea that 130/30 strategies create the potential for higher active shares relative to otherwise equivalent long-only implementations. Combining the ability to cross the zero limit on underweight positions with larger gross notional exposures means that a manager can establish larger active positions in absolute terms relative to long-only.

⁹ See K. J. Martijn Cremers and Antti Petajisto, How Active Is your Fund Manager? A New Measure that Predicts Performance, *The Review of Financial Studies*, Vol. 22, No. 9 (August 2009), pp. 3329-3365.

Figure 4 shows average level of active share for three equity portfolios managed by our firm relative to the Russell 1000 Index.

As demonstrated in the case of the portfolios depicted in Figure 4, a 130/30 portfolio has the potential to produce materially higher active share relative to an otherwise equivalent long-only portfolio under the same market conditions. This supports the hypothesis that a 130/30 investment approach can increase a manager's degrees of freedom to add value relative to the benchmark. Of course, no metric is perfect, and 130/30 products managed by firms that utilize factor tilts also may appear to increase active share while merely increasing exposure to the same factor tilt.

B. Market Sensitivity to Negative Surprise

Some evidence suggests that when levels of risk aversion and volatility are high, as has been the case for much of the period since the 2008 financial crisis (and may be the case for some time), markets react more strongly to disappointing news on a given stock than in more placid times, even when accounting for market volatility. One study that systematically analyzed earnings news, stock prices, and credit-default swap spreads found that market participants were more sensitive to bad news in the form of earnings surprise and accruals in 2009 and 2010 than they were prior to and during the 2007–2008 credit crisis.¹⁰ In such an environment, the potential for 130/30 strategies to add value through larger underweight positions would seem apparent. If market participants are more likely to overreact to negative surprises under conditions of elevated risk aversion and volatility, 130/30 products will have an advantage over long-only strategies given the former's enhanced ability to capture alpha on the short side. However, because the market's reaction to new information on earnings and accruals will be most dramatic at the level of individual stocks (rather than the market as a whole or sectors thereof), turbulent market conditions will disproportionately favor 130/30 products that utilize stock-specific alpha forecasts as opposed to broad factor tilts.

Average Active Share of D. E. Shaw Group Equity Portfolios Benchmarked to the Russell 1000 Index, June 2009 – June 2012

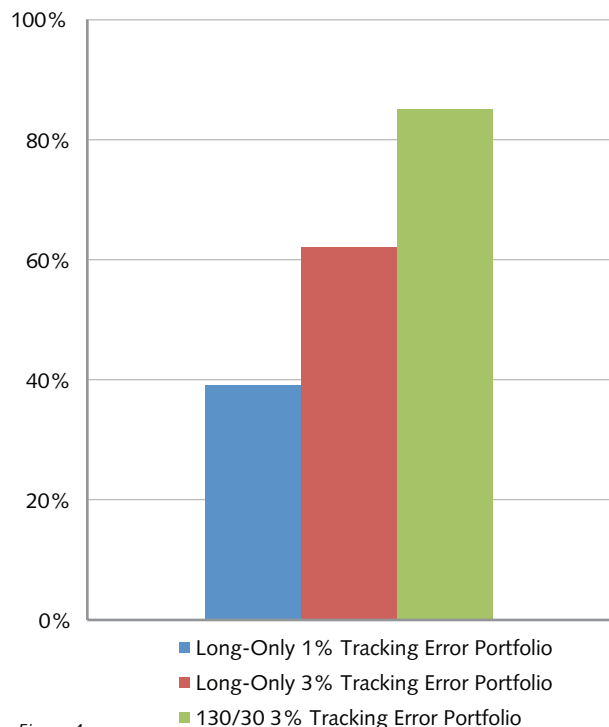


Figure 4

¹⁰ See Nicole Thorne Jenkins, Michael D. Kimbrough, and Juan Wang, *The Extent of Informational Efficiency in the Credit Default Swap Market: Evidence from Post-Earnings Announcement Returns*, Working Paper, July 2011, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1785734.

IV. Conclusion

We have argued that the theory behind the 130/30 equity investment concept remains sound, and that further theoretical advances and recent market trends improve the case. The challenges encountered by products informed by that theory, while substantial, have primarily been about implementation and expectations. For allocators considering active equity strategies, 130/30 should remain a viable implementation option, contingent upon the results of due diligence on a given manager's process. Some key guidelines for that due diligence seem clear:

- A manager's ability to identify and exploit idiosyncratic sources of alpha—that is, market effects that are not heavily style risk-dependent and trafficked by other managers—should rank very high in the evaluation process.
- The evaluation of a manager's ability to develop and implement negative forecasts requires a level of scrutiny that should extend beyond that required for assessing long-only active equity strategies.
- Investors should be wary of conventional optimization techniques that may not be well adapted to the 130/30 investment process.
- Operational capabilities in the areas of sourcing borrowable stock, managing relationships with counterparties lending that stock, and complying with regulations that govern short sales are fundamental to the management of 130/30 products.

130/30 may not be good fit for every investor, but for those undeterred by 130/30's additional complexity, we believe that managers with demonstrated skill in short-side alpha research and sophisticated portfolio optimization techniques can add significant value over the long term relative to long-only. Moreover, we believe potential allocators are better positioned today, as compared to even a few years ago, to evaluate the likely efficacy of the 130/30 products that remain on the market. Investors now have at their disposal the original theoretical work on 130/30, refinements to and further analysis of that theory (including this paper), and a body of empirical data on the performance of various implementations of the approach over a number of years. We believe that these developments leave 130/30 in a much healthier place, and while we do not expect a second wave of growth comparable to 2005–2008, we believe 130/30 is poised for another turn in the spotlight.

Notes

The S&P 500 has been used for comparative purposes. The S&P 500 is not an actively managed fund and does not reflect the deduction of any fees or expenses.

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