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Modern Portfolio Management

ACTIVE
LONG/SHORT
130/30
EQUITY
STRATEGIES

Martin L. Leibowitz Simon Emrich Anthony Bova

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*Active Long/Short 130/30
Equity Strategies*

MARTIN L. LEIBOWITZ
SIMON EMRICH
ANTHONY BOVA



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Foreword

The High and Low of 130/30 Investing

“There are two ways to make money in the stock market. You can buy low and sell high, or you can sell high and buy low.” With this short statement, California Public Employee Retirement System (CalPERS) entered the world of long/short investing.

I made this statement in the middle of a presentation to the CalPERS board of trustees several years ago. At that time, CalPERS was considering an internal active long/short equity product. The CalPERS investment staff prepared a detailed agenda item for the pension fund trustees that explained how:

- Custodians lent out shares to prime brokers on behalf of their customers,
- Securities lending generated fee revenue to the pension fund,
- Hedge fund managers borrowed these shares from the prime brokers to establish their negative alpha bets,
- The short rebate worked, and
- Collateral must be maintained at the prime broker, as well as many other details.

Midway through the presentation, I realized that the amount of detailed information that the staff had prepared was beginning to build into an unwieldy pile for the fund trustees. It was at the point that I decided to distill into two sentences the essence of what the investment staff wanted to accomplish.

Was this statement an oversimplification? Perhaps. Did it convey the exact nature of what the investment staff wanted to do? Definitely. With this anecdote behind us, the real question remains: Why did CalPERS enter the world of long/short investing? To understand this issue, we need to look at a problem common to many investors, not just pension funds.

BETA GRAZERS DRESSED UP LIKE ALPHA HUNTERS

In his great article on alpha hunters and beta grazers, Marty Leibowitz demonstrates that the asset management industry can be broken down into two simple camps: those that generate active returns—demonstrating a level of portfolio manager skill—and those that generate returns that mostly match the market return.¹ Even more bluntly, beta grazers are those asset managers that do little more than capture the systematic risk premium associated with an asset class. Passive/index managers are the classic example of a beta grazer, whereas hedge fund managers are often thought of as the best example of alpha hunters.

However, there are many beta grazers out there that try to disguise themselves as alpha hunters. Consider Exhibit F.1. This is a long-only active equity manager whose stated benchmark is the S&P 500. This manager currently has several billion dollars of assets under management. Consider how neatly this manager tracks the broad stock market. The beta of this active portfolio is 1.000 (yes, I really did carry out the beta calculation to three decimal places) and the R-Square measure is 0.994. More visually, notice that compared to the S&P 500, this active manager produces a nice straight line.

This is one of the first lessons of beta management: Beta grazers are linear in their performance. By this, I mean that when you compare a beta grazer to its benchmark, you should see a straight line of the type presented in Exhibit F.1. The straighter the line, the more the active manager is a beta grazer despite any claims to the contrary.

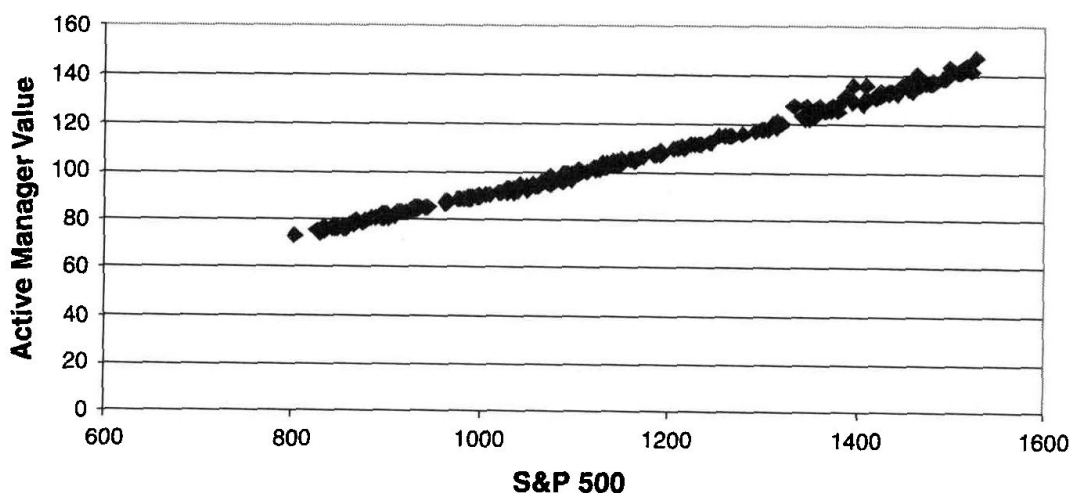


EXHIBIT F.1 Large-Cap Active Equity Manager: Beta = 1.000, R-Square = 0.994

In addition, this alpha hunter maintains well over 200 positions in its portfolio, many held for risk management purposes. This means that many of the stocks in the portfolio are not held for their alpha generating capability, but rather, are held passively to balance the portfolio back to the benchmark. There is no conviction with respect to the bulk of the securities in this portfolio; many of the stocks held are there to capture the systematic risk premium associated with the S&P 500.

Unfortunately, the performance of this product matches its hidden beta grazer status. It has consistently underperformed the S&P 500 for the last five years by about 55 to 60 basis points (bps) per year—approximately equal to its management fee of 55 bps and trading costs of about 10 bps per year.

THE CURRENT BUSINESS MODEL FOR ASSET OWNERS AND ASSET MANAGERS

Unfortunately, the current business model for most asset owners (pension funds, endowment funds, retail investors, and high net worth investors) as well as for asset managers is: beta trumps alpha.

- Most investors first make the strategic allocation to broad asset classes.
- Then asset managers are directed to squeeze alpha out of the asset owner's strategic benchmarks. But the strategic benchmarks are designed to be efficiently constructed to measure risk premiums associated with different asset classes.
- As a result, alpha and beta are packaged together in traditional long-only products.
- The result is frequently much more beta than alpha (see Exhibit F.1).
- And, alpha risk budgets are typically spent in the most efficient markets, like large cap equity.

To break out of this conundrum, a new business model must be established: Alpha is sought independently of beta:

- Alpha should not be captive to beta.
- Alpha risk budgets should be spent in the least efficient markets:
 - High yield, distressed debt, private equity, small cap, emerging markets, absolute return, real estate, corporate governance.
 - These subasset classes have the least efficient benchmarks and, therefore, the highest alpha content.

So what does this really mean? Investors must break away from the traditional asset allocation model of trying to extract alpha from beta drivers.

- Beta grazers are not designed to outperform the market—they provide efficient exposure to broad asset classes, and should capture these risk premiums as cheaply as possible.

Conversely, alpha hunters are designed to outperform the market, often without regard for *benchmark boxes*—style boxes should be used when an investor believes that it has the least amount of talent or insight to add value.

- Investors must reduce their reliance on beta grazers to generate excess returns.
- In seeking active returns, asset owners should commit their investment capital to those sub-asset classes where asset managers have the best opportunity to add value—look for the cracks in between benchmark boxes.

130/30 products are a natural extension away from benchmark boxes. They seek to exploit the cracks that exist between the more efficient long-only market and the less efficient short market. When an active manager conducts research to construct an active portfolio, she inevitably comes across good and bad stock bets. In the traditional benchmark box of the long-only world, the negative information concerning the bad stock bets cannot be fully exploited. 130/30 products allow asset owners and asset managers to break out of this way of thinking to fully exploit an active manager's information set.

THE FUNDAMENTAL LAW OF ACTIVE MANAGEMENT

The added value produced by portfolio managers can best be summarized by the Law of Active Management. This law was first proposed by Richard Grinold and later expanded by Clarke, de Silva, and Thorley²:

$$IR = IC * TC * \sqrt{\text{Breadth}} \quad \text{F.1}$$

where IR is the information ratio of an active manager measured *ex post* by

$$\alpha / \sigma_{\alpha} \quad \text{F.2}$$

where α is the excess return generated by the portfolio manager, and σ_α is the active risk taking or tracking error (TE) of the manager.

IC is the information coefficient of the portfolio manager. It is a measure of manager skill and typically gauged by

$$\text{Correlation (Forecasted returns, Actual returns)}$$

F.3

TC is the transfer coefficient, where $TC \leq 1.0$. This is a measure of how efficiently an active manager can translate her active bets into portfolio positions. Any amount of friction in the financial markets with respect to implementing an active portfolio position (portfolio constraints, trading costs, market impact, opportunity, cost) will reduce the TC below the value of 1.

Breadth is the number of independent bets that the active manager places in the portfolio.

Equation F.1 represents the calculus of active management. Every active portfolio manager is beholden to this rule. For example, a portfolio manager can develop a deep insight into a specific sector or industry, such as biotechnology. For her, the number of independent bets in her portfolio will be limited by her knowledge of this one industry; the breadth will be small. However, her IC should be large as she extracts as much competitive information from a smaller investment opportunity set. Conversely, other portfolio managers will follow several industries to increase the number of active bets (breadth) that they may place into the portfolio. Their trade-off is that their IC is likely to be smaller because they are trying to extract an informational advantage over a larger pool of investment candidates.

Exhibit F.2 summarizes the Fundamental Law of Active Management, and the several moving parts that can have an impact on portfolio

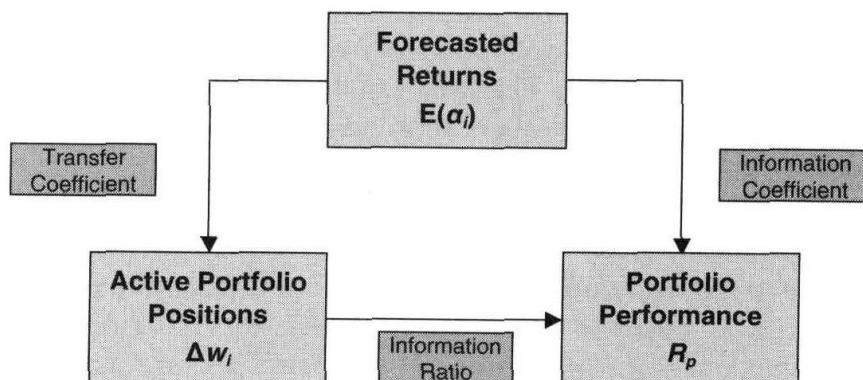


EXHIBIT F.2 The Generation of Information Ratios (IRs)

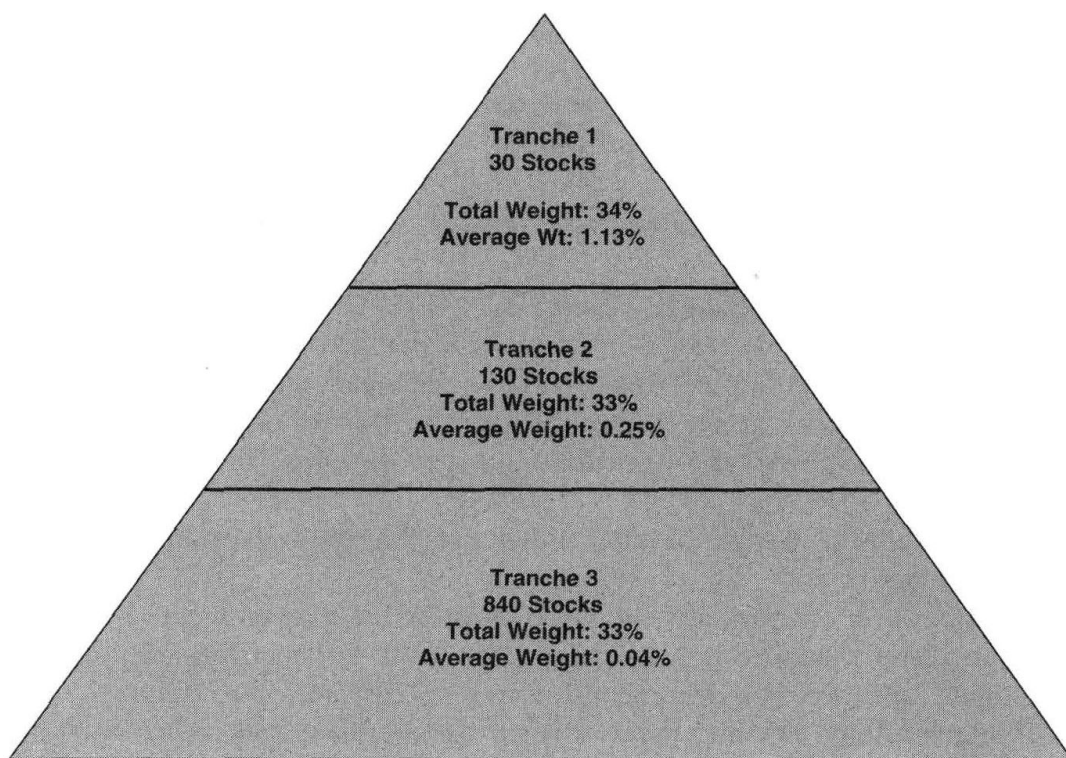


EXHIBIT F.3 The Capitalization of the Russell 1000 Stock Index

performance. The single largest constraint in active portfolio management is the long-only constraint. It is estimated that this constraint alone can reduce the TC by up to 40 percent.³

The limitation of the long-only constraint can best be demonstrated by Exhibit F.3. This exhibit shows a breakdown of the capitalization weighted Russell 1000 stock index, a common equity benchmark. One-third of the capitalization of this index is represented by only 30 stocks, where the average contribution to the capitalization of the index is 1.13 percent. The second tranche is made up of 130 stocks, with an average cap weighting in the index of 0.25 percent. The last tranche of the index consists of 840 stocks, with an average weighting of 0.04 percent. In fact, the median weight for a stock in the Russell 1000 stock index is 0.04 percent.

For active portfolio management, overweights in the portfolio must be funded with underweights. With the long-only constraint in place, the most a portfolio manager can underweight a stock in the portfolio is by its weight in the index. For one-half of the stocks in the Russell 1000, this underweight is only 0.04 percent—not much of an active bet. This forces an active manager to sell down more stocks from the first two terciles to fund the active overweights in the portfolio. Or, even more clearly, consider a portfolio

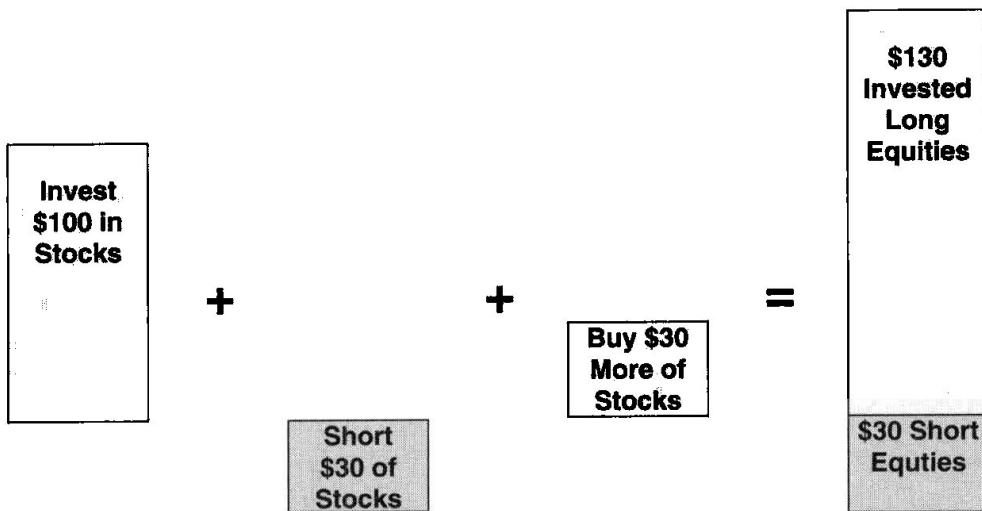


EXHIBIT F.4 Breaking Free of the Long-Only Constraint

manager whose strongest active overweight is with respect to a stock in the first tercile, whereas her most negative bet is with respect to a stock in the third tercile. This means that her ability to fund her strongest overweight is constrained to only 0.04 percent from the most negative underweight.

This problem is by no means limited to the Russell 1000 index. The median weight of a stock in the S&P 500 is only 10 basis points. The smallest 250 companies in the S&P 500 have an index weight of less than 10 basis points.

Exhibit F.4 demonstrates the advantage of relaxing the long-only constraint for 130/30 products. Additional funding is created for active overweights in the portfolio through the use of 30 percent short positions. The 30 percent short positions also increase the leverage of the portfolio. The total exposure to the market is 160 percent—the combination of both 30 percent short active positions with 130 percent long active positions.

Furthermore, the relaxation of the long-only constraint in 130/30 portfolios allows a manager to increase her IR along two dimensions. First, according to Equation F.1, the active manager can increase the number of active bets in the portfolio—expanding the breadth. In addition, the manager can increase the size of her bets—in effect, increasing her IC.

The improvement in the IR of an investment manager follows from the concavity of the return versus risk trade-off common to all actively managed investment products. For both traditional actively managed products and 130/30 products, an increase in TE ($\sigma[\alpha]$) leads to an increase in expected excess returns ($E[\alpha]$). With the long-only constraint in place, the relation

between active risk taking and expected alpha is not proportional. This means that increases in risk lead to smaller and smaller increases in alpha. Relaxing the long-only constraint leads to a better trade-off between return and active risk taking. Exhibit F.4 demonstrates this trade-off.

To demonstrate the power and appeal of 130/30 investing, consider two active managers who have the same skill level as measured by the IC: one, a traditional long-only manager, and the other, a 130/30 manager. With the IC held constant, there are two ways for the 130/30 manager to add value beyond that of the long-only manager. First, as previously discussed, the long-only constraint is the single greatest constraint on active portfolio management and can reduce the TC (and the IR) by more than 40 percent. Although there are more costs associated with shorting stocks, these costs are small relative to relaxing the long-only constraint.⁴

Second, the breadth can be expanded by the 130/30 manager. In fact, the breadth can be expanded in two directions. First, more active long-only bets can be placed into the portfolio because the active manager now has the ability to short stocks to fund long positions that might otherwise not be implemented. Second, negative alpha bets that were previously limited through the long-only constraint may now be executed for the portfolio.

The simple mathematics of Equation F.1 demonstrate that if you can increase the TC or the breadth of the portfolio while holding the IC (manager skill) constant, the IR will increase. It really is not a fair fight between a long-only manager and a 130/30 manager.

CORPORATE GOVERNANCE AND 130/30 INVESTING

Large institutional investors such as CalPERS are keen proponents of good corporate governance of public companies. Yet, the asset management industry, similar to any industry, is subject to good and bad corporate governance and the movement toward alpha/beta separation has improved the governance of this industry. Unfortunately, the existing paradigm for most of the asset management industry is still benchmark driven. Although benchmarks are a useful tool for performance measurement, they are also a significant constraint that reduces the IR of active managers. To achieve consistent alpha, investors must think outside the benchmark in the construction of their portfolios.

Consider a manager that is benchmarked to the S&P 500. This manager is allowed an active risk budget of 5 percent (TE of 5%). This means that the

remaining 95 percent of the risk of the portfolio is geared to nothing more than matching the volatility of the benchmark. Why pay active management fees for the 95 percent that does nothing more than track the S&P 500? Again, this gets back to the governance in the asset management industry.

Here is another observation. Ten years ago—even five years ago—an active manager who went 130 percent long and 30 percent short would have called himself a hedge fund manager and typically charged a 2 percent management fee and a 20 percent incentive/profit sharing fee. With the advent of 130/30 products, with most of these products coming from the long-only side of the asset management industry, it is no longer enough for a hedge fund manager to short stocks to demand a 2 and 20 fee structure. Simply, 130/30 products have brought a better form of pricing governance to the asset management industry.

Managers of 130/30 products typically charge a management fee of 0.50 percent to 1.5 percent and a modest profit sharing fee—a far better governance arrangement with the client than a hedge fund would ever establish. Indeed, with the growing number of 130/30, 150/50, and 200/100 products coming to the market, one really has to question whether an equity long/short hedge fund can maintain its 2 and 20 pricing structure.

In summary, 130/30 products have brought transparency into the world of long/short investing, and this is one way to improve the governance in the asset management industry. A clear identification of what is beta and what is alpha goes a long way toward establishing fair and proper pricing. Transparency is a key element of every good governance regime and it can mitigate four risks associated with the *asymmetric relationship* between asset owners and asset managers:

- Asset managers have much better information as to their true level of skill or alpha-producing ability, as measured by their IC, because the IC is not directly observable by asset owners. The implication is that it is incumbent upon asset managers to make their investment process as transparent as possible to the asset owners, which will lead to more efficient pricing of investment products.
- Furthermore, this asymmetry of information between asset managers and asset owners is exacerbated because the investment process or risk taking by the asset manager is not perfectly observable by the asset owners. It is only after the asset manager has produced a return stream and the beta components have been accounted for that alpha can be observed. Therefore, *ex ante*, asset managers have much better information about their alpha-producing skills, whereas *ex post* asset owners need to observe this skill.

- Asset owners only get a snapshot of their portfolio at any point in time. The amount of risk that is embedded in the portfolio, as well as the investment process by which the portfolio was constructed, may not be transparent.
- Asset managers know how much beta they deliver with their alpha. In the traditional governance structure, asset owners receive a combination of alpha and beta from asset managers. In fact, because many asset managers are still driven by benchmark-style investing, there is much more beta than alpha in their investment products. This leads to beta grazers dressed up like alpha hunters.

CONCLUSIONS AND A CAUTIONARY NOTE

130/30 investing has grown in popularity, acceptance, and demand. There are several reasons for the surge in this style of investing.

First, smart investors want more active risk taking. As Exhibit F.1 demonstrates, what is sold as active management can often turn out to be a disguised beta grazer. Active risk taking has declined significantly over the last several years as the dispersion across stocks has decreased. Although most investors would say that they want less rather than more dispersion in their portfolio returns, greater dispersion in stock returns provides larger opportunities for active managers to add value. The long-only constraint locks an active manager into an environment of lower dispersion.

Second, both asset owners and asset managers have come to understand the Fundamental Law of Active Management and its implications for long-only portfolios. The long-only constraint is now widely recognized as the most limiting constraint on the ability for an active manager to generate excess returns.

Finally, less constrained investing has become much more accepted. Hedge funds, absolute return managers, private equity, credit derivatives, commodities, and other forms of alternative assets have expanded the investment opportunity set for asset owners. 130/30 products are the natural extension for both traditional active managers seeking less constrained portfolio management, as well as hedge fund managers moving into more mainstream asset management.

We should note that not all is apple pie with 130/30 strategies; there are additional risks. These strategies appeal both to asset managers and asset owners, but there are many moving parts associated with 130/30 strategies. The most important piece is the ability to borrow stock from a prime broker from which to sell short. Stock can sometimes be hard to borrow, particularly those stocks that are in the lower capitalization range. Also,

borrowed stock can be recalled by its owner, forcing the portfolio manager to cover her short position before maximizing the value of her position. In fact, 130/30 managers can sometimes be subject to short squeezes in which the covering of their short positions in the open market results in quick increases in the price of the underlying stock and a reduction of the short sale profits. And, short positions, in theory, can have unlimited risk associated with them because the stock price can—again, in theory—increase forever. This last criticism is a favorite one of consultants to throw out in their resistance to long/short strategies, but with the increase of intelligent risk management and trading systems, this risk is significantly minimized.

These cautionary notes are not meant to diminish the appeal of 130/30 strategies. They are simply meant to indicate that although 130/30 strategies have the potential to add significant value, there are also some additional risks associated with their implementation. However, these risks are far outweighed by the opportunity to improve the IR of the asset manager. Their potential is real and valuable. Furthermore, 130/30 products have brought better pricing governance to at least one part of the alternative investment universe—long/short hedge fund investing. So, understand the risks, but enjoy the benefits.

Mark Anson
President and Executive Director
of Investment Services
Nuveen Investments, Inc.

NOTES

1. See M. Leibowitz, 2005, “Alpha Hunters and Beta Grazers,” *Financial Analysts Journal*, September/October.
2. See R. Grinold, 1989, “The Fundamental Law of Active Management,” *The Journal of Portfolio Management*, Spring, pp. 30–37; and R. Clarke, H. de Silva, and S. Thorley, 2002, “Portfolio Constraints and the Fundamental Law of Active Management,” *Financial Analysts Journal*, September/October, pp. 48–66.
3. See Clarke, de Silva, and Thorley, 2002.
4. See M. Leibowitz, 2005, “Alpha Hunters and Beta Grazers,” *Financial Analysts Journal*, September/October.

Structure of the Book

This book is divided into four parts.

Part One includes Chapter 1, “Active 130/30 Extensions and Diversified Asset Allocations,” by Martin Leibowitz and Anthony Bova. It describes the key features of active extension (AE) strategies and highlights their ability to improve an equity portfolio’s alpha at the cost of increased tracking error (TE).

Part Two, written by Simon Emrich, consists of two chapters: Chapter 2, “Active Extension—Portfolio Construction,” and Chapter 3, titled “Managing Active Extension Portfolios.” A framework is developed that separates a portfolio into a part that is responsible for benchmark returns and one responsible for the excess, alpha-driven returns. In a long-only portfolio, the active component is asymmetric, consisting of a relatively concentrated long position in the overweights and a relatively diversified short position in the underweights. As the long-only constraint is relaxed, both the risk and return in the portfolio increase. First, the weight in the alpha component can be simply scaled up. This will increase the risk and return of the portfolio proportionately, so the risk-adjusted return will not change. Second, the structure of the alpha component can be changed to take the alpha views better into account. Emrich also presents empirical evidence of the non-normality of stock returns over time. These fat tails have important implications for the risk management of AE portfolios.

Part Three is a compilation of various articles written by Martin Leibowitz and Anthony Bova that were published as Morgan Stanley Portfolio Notes over the 2005 to 2008 period. These articles address various aspects of the AE approach to equity management. Each Note is intended to be self-contained, so that the reader can focus his or her attention on specific areas of immediate interest. As a consequence, there is some degree of overlap across these papers.

Chapter 4, “Active Extension Portfolios: An Exploration of the 120/20 Concept,” was the first article written by Leibowitz and Bova on AE. The increased flexibility for active equity management that AE provides allows a wider range of alpha-seeking opportunities for both traditional and quantitative management. Active extensions open the door to a fresh set of actively

chosen underweight positions that are limited in long-only portfolios. With proper risk control, an AE should entail TE that is only moderately greater than that of a comparable long-only fund.

Chapter 5, “Alpha Ranking Models and Active Extension Strategies,” shows how alpha ranking models can be useful for analyzing the structure of AEs (as well as providing useful insights for traditional long-only strategies). With a moderately declining alpha ranking, AE provides increasing alpha/TE ratio (information ratio [IR]) benefits that begin to peak with short percentages somewhere in the 40 to 60 percent region. For a more concentrated ranking model, the optimal shorting percentage is in the 10 to 20 percent range.

Chapter 6, “The Tracking Error Gap,” explores the difference between theoretical projections of the TE and actual TEs seen in practice. This TE gap is usually due to some form of correlation or factor effect across the active positions. If the TEs from active equity management are truly uncorrelated, they are likely to be beta dominated and, therefore, play a very minor role in the standard volatility of the overall fund. However, there is a danger that such correlation/factor effects could accumulate across managers and represent a more significant source of fund-level risk.

Chapter 7, “Correlation Effects in Active Extension 120/20 Strategies,” explores how factor correlations can affect the potential rewards from AEs. These correlations, even at a minimal level, can have a significant effect on the TE and can, therefore, have a meaningful impact on portfolio performance. In AE portfolios, these correlations may lie within the long positions, within the short positions, and/or between the long and short positions. One of the benefits of AE is the opportunity to use the short positions to offset factor effects within the long portfolio. Such offsets can sharpen the intended exposures by removing extraneous risk factors, thereby leading to materially improved IRs.

Chapter 8, “Alpha Returns and Active Extensions,” presents empirical evidence that a wide range of active portfolios can be approximated by exponentially declining alpha rankings and position weightings. The actual sequential weights seen in practice provide confirmation that portfolios are at least roughly structured along these lines. These alpha/weighting models can be used to explore how AEs (and active portfolios in general) can generate alpha returns subject to prescribed risk limits.

Chapter 9, “An Integrated Analysis of Active Extension Strategies,” looks at the impact of various weighting patterns for long and/or short active positions. With the assumption of a constant residual volatility for each active position, the theoretically optimal weighting for each position should be proportional to its alpha ranking. However, one key finding is

that for a moderately declining alpha ranking, the alpha/TE ratio is little changed by different, but still reasonable, weighting patterns.

Chapter 10, “Portfolio Concentration,” further explores how various active weighting patterns relate to different alpha rankings. It turns out that higher alphas and still near-optimal IRs can be derived from weights that are significantly more concentrated than the theoretically optimal. Because most funds have significant unused capacity for active risk, more concentrated active structures can enhance the alpha prospects while sustaining near-optimal IRs. Optimal solutions are usually defined in terms of a maximum IR of alpha to TE, but there may be situations in which a sponsor may seek a greater alpha at the expense of a higher TE and a lower IR.

Chapter 11, “Generic Shorts in Active 130/30 Extensions,” discusses the use of customized generic shorts in AE portfolios. Active portfolios often embed factor exposures that are less than fully productive in alpha terms. An appropriate basket of generics can limit unwanted factor effects, lower TEs, and improve IRs. These generics can be thought of as style/sector-specific instruments, such as exchange-traded funds (ETFs) or tailored baskets that are tied to an existing factor in the long-only portfolio. Even though these generic shorts may have zero alphas, they can still provide benefits in terms of providing reinvestable funds and correlation offsets.

Chapter 12, “Beta-Based Asset Allocation,” demonstrates that U.S. equity is the primary risk factor in most U.S. institutional portfolios. The explicit equity percentage is exposure as an inadequate risk gauge of beta risk. The correlations of each asset class with U.S. equities can provide an implicit beta measure that can be used to determine a fund’s total beta. This total beta approach suggests that most U.S. institutional funds share three surprising characteristics:

1. Total volatilities in the 10 to 11.50 percent range,
2. 90 percent or greater correlation between fund performance and U.S. equities, and
3. Total implicit beta values between 0.55 and 0.65.

Chapter 13, “Beta Targeting: Tapping into the Appeal of 130/30 Active Extensions,” shows how having a well-defined beta, even if different from the beta-1 standard, can provide 130/30 extension-like characteristics. The essential feature is having a targeted beta that can act as an expected value, together with a sufficiently low beta volatility. This expectational form of beta targeting allows a broader range of active equity strategies to fall in the AE category. Beta-targeted strategies also help to more clearly identify the true level of alpha performance.