



BNY MELLONSM
ASSET MANAGEMENT

How Easing Investment Constraints Unlocks Alpha:

The Foundation for 130/30, Market Neutral and other Innovative Strategies

By

*Charles Jacklin, Ph.D.
President and CEO*



Investment constraints designed to control risk are pervasive in actively managed portfolios. Such constraints vary from limits on the investment universe to prohibitions on short selling and restrictions on currency hedging. The desire to manage total portfolio risk is perfectly reasonable when the pool of investment assets is divided among multiple managers with different investment style and market capitalization objectives. Limitations on the investment universe, for instance, can ensure that an individual manager sticks to a given mandate and deters style drift. Investment constraints, however, are certainly no panacea for controlling risk and can even have unintended negative consequences. Our research shows that despite their ubiquity, investment constraints often reduce alpha, limit diversification benefits and can even increase some of the very risks they are designed to mitigate.

Removing Constraints—Long-Only versus Long-Short Active Management

In examining the impact of investment constraints, it's helpful to review the concept of active portfolio weights as opposed to nominal portfolio weights. Portfolio weights represent the actual proportions of each asset held for a given investment mandate. By definition, portfolio weights must sum to one. Active weights, on the other hand, represent the difference between the benchmark and portfolio weightings for each asset. Active weights reflect the investment decisions of the manager and must sum to zero.

Long-only large-cap equity management, with an explicit prohibition on short selling, is the most widespread form of active management in institutional portfolios. Consider a hypothetical long-only active equity mandate with a very low active risk target of 0.25%. (This is usually referred to as tracking error, defined as the target standard deviation of the alpha over a yearly horizon. Here, the term *active risk* is more appropriate, since the active weights are purposely taken and do not represent unintended deviations from a benchmark.) To understand the active manager's decision-making process, imagine starting with an index fund that holds the precise benchmark weight of each stock. With very low levels of active risk allowed, the manager would sell off a portfolio of unattractive stocks and use the proceeds to buy a portfolio of attractive stocks so that the expected active risk of the portfolio is 0.25%.

We assume in this example that given the low level of active risk, the manager has not sold any more than the index weight in any stock. The manager thus stays within the long-only investment guidelines. Since the portfolio is not limited by the long-only constraint at the low risk level, the portfolio has the highest expected information ratio—alpha per unit of active risk—given the manager's skill set.

Initially published November 2005

As of July 1, 2007, Mellon Financial Corporation and The Bank of New York Company, Inc. merged into a newly created entity, The Bank of New York Mellon Corporation. Accordingly, the information in this publication relates to the respective predecessor company.

BNY Mellon Asset Management

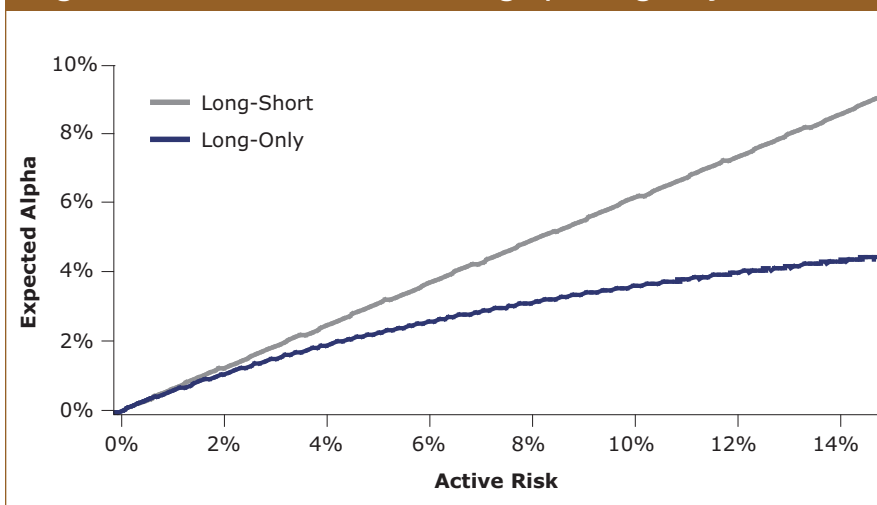
Now let's assume that the targeted active risk is increased twenty-fold to 5% and consider the effect on two actively managed portfolios: long-only and long-short. Ideally, both managers will want to just scale up by 20 times the weights that were chosen when the active risk allowance was 0.25%. After all, both expected alpha and active risk increase linearly as an active portfolio is scaled up. Therefore, the new scaled-up portfolio will continue to have the highest expected alpha for this higher level of active risk, just like the first portfolio.

A long-short manager faces no obstacles to achieving this twenty-fold rescaling, whereas the long-only manager will inevitably bump up against the short-selling constraint. In order to reach the same 5% active risk target, the constrained manager must begin substituting less attractive investments. The higher the target for active risk, the greater the impact of the short-selling constraint, and the less attractive the marginal bets in the portfolio. The net result is a diminishing return to active risk for the long-only manager. Figure 1 illustrates the relationship between expected alpha and target active risk for long-short and long-only managers. As in our example, at very low levels of risk, the two portfolios have the same ratio of active risk to expected alpha. As the active risk target increases, however, the long-only manager begins to hit the short-selling constraint, and the ratio of expected alpha to active risk declines. The reduction in the expected information ratio at higher risk levels represents a substantial loss of efficiency for the long-only manager.

Unintended Consequences

In addition to the loss of portfolio efficiency, the no-shorting constraint can lead to other unintended consequences. The most significant of these is the introduction of manager style biases and cross-correlation among managers.

Figure 1: The Problem with “Scaling Up” Long-Only Portfolios



Source: Mellon Capital Management Corporation

On the surface, there is no reason for alphas to be correlated among different managers. But, even assuming that investment processes for different managers are independent, investment constraints are not. Common investment restrictions induce common biases in individual managers' alpha and reduce the diversification benefits from selecting multiple managers.

The well-documented small-capitalization style bias of active large-cap managers is a perfect example. Traditionally, this bias has been attributed to active managers' seeking return without regard for risk. That is, the presumption has been that large-cap active managers favor smaller-capitalization, higher-risk, higher expected return stocks over larger-capitalization, lower-risk, lower expected return stocks. An alternative explanation, however, is that the bias is a direct consequence of the no net-shorting constraint faced by many managers.

Consider our long-only portfolio manager from the previous example who was unable to scale up the weights of the original portfolio to attain the higher risk target. As active risk is increased, the unattractive stocks that are most likely to violate the short-selling prohibition are unattractive smaller-capitalization stocks. Although all stocks can be overweighted equally, only those stocks with large capitalizations can be significantly underweighted. Given this asymmetry, it is natural for managers to develop a bias in favor of small-capitalization stocks.

The small-capitalization style bias certainly shows up in the data. We performed a simple style analysis for S&P 500® benchmarked managers from January 1984 through March 2004 from the Efron database. If the managers had no small-cap bias, their returns should be attributable to exposure to the S&P 500 and to their individual ability to add alpha—the style analysis should not be expected to attribute portfolio returns to exposure to small-capitalization stocks. Our analysis showed, nevertheless, that on average, 16% of long-only managers' total returns was a result of exposure to small-cap stocks.

To examine whether the same size bias exists in long-short managers, we repeated the style analysis for market-neutral managers. During the period from April 1992 to March 2004, we found that on average only 1.7% of long-short managers' total returns came from exposure to the small-cap style. This leads us to believe that the small-cap bias of long-only managers is at least partially caused by the no short-selling constraint. When managers are able to short, their tendency to overweight small-cap stocks substantially diminishes.

Using the data from the preceding analysis, we also found that the average pair-wise correlation among the long-only managers' alphas is 0.24. The same average pair-wise correlation among the long-short managers' alphas is only 0.11. This suggests that there is much less commonality in the long-short managers' source of alpha. Lower correlation among managers' alpha improves the diversification of multi-manager portfolios. If we assume an equal-weighted portfolio of three managers, and each manager has the same active risk target within an asset class, the active risk of the aggregate portfolio would be about 9% lower if the managers' alphas have a correlation of 0.11 versus a correlation of 0.24.

Removing Investment Constraints

Although we cannot repeat our previous exercise to illustrate the impact of constraints on an individual portfolio, we can use historical simulations to quantify potential costs in terms of alpha-generating efficiency. We performed historical simulations of a quantitative stock-selection strategy for three U.S. equity portfolios: long-only within the S&P 500 universe (simulation 1); long-only with an expanded equity universe (simulation 2); and long-short with an expanded equity universe (simulation 3).

We based the simulations on Mellon Capital Management Corporation's (Mellon Capital) multi-factor quantitative stock-selection process. The strategy uses a multi-factor model that includes a comprehensive

relative-valuation signal, an earnings forecast revision model, and an earnings quality model. We construct a composite alpha score and ranking based on economic sector classification and a sector-specific model factor weighting scheme to accommodate different value drivers in different economic sectors. All simulations are sector neutral, to minimize unsystematic market exposures.

As shown in Table 1, portfolio efficiency—as measured by the information ratio—improves significantly as the constraints are removed. The information ratio of the unconstrained long-short strategy using an expanded universe is nearly double the information ratio of the constrained long-only S&P 500 based strategy. In each case, the underlying investment signals and portfolio construction methodology are essentially identical and differ only in the constraints imposed on the total portfolio. Despite these seemingly safe constraints, the difference in portfolio performance is dramatic.

Table 1: Portfolio Efficiency Comparison

	Feb-93 to Jan-04		
	1. Long-Only Strategy (S&P 500 Universe)	2. Long-Only Strategy (Expanded Universe)	3. Long-Short Strategy (Expanded Universe)
Information Ratio	1.24	1.71	2.35

Source: Mellon Capital Management Corporation

See Disclosure Statements

Put another way, Table 1 demonstrates that reducing the opportunity set for a skilled manager will always reduce total portfolio performance. This is not to say that portfolio constraints should be systematically removed and managers allowed total free rein. Rather, constraints and the guidelines that set them out must balance the need for effective risk control without hindering the ability of active managers to add value. A good way to achieve such a balance is to use the active risk target of a mandate as the main tool for risk control. An active risk target ensures that portfolios are able to make the best trade-off of expected return versus expected risk while clearly setting out the performance expectations of the portfolio.

Global Portfolios

Constraints are not problematic just for security-selection strategies. We have found that position limits in global multi-asset portfolios can also have a significant detrimental effect on overall investment efficiency. Common constraints, including limits on country and asset class exposure, as well as cross-hedging restrictions, may seem innocuous at first glance, but they can have perverse consequences. Not only do they hinder the ability to add value, as in our earlier example, but they can also lead to reduced investment efficiency and biases in portfolio positions.

In Table 2 on the following page, we demonstrate the impact of a short-selling restriction on the investment efficiency for a global multi-asset portfolio. The results are based on Mellon Capital's Global Alpha strategy, which diversifies exposure across four independent sources of alpha derived from developed-country stock, bond and currency markets. Table 2 shows the simulated performance of the strategy with and without the short-selling

constraint. At the overall portfolio level, the unconstrained mandate delivers more than 2.3% additional alpha per year with no increase in the total portfolio risk. Rather than reducing risk as intended, the short-selling constraint leads to a less diversified portfolio and hence lower overall portfolio efficiency.

Taken together, the effects of short-selling constraints and position limits can have a substantial impact on investment results. From reducing diversification and efficiency to increasing total portfolio risk, position limits can have numerous unintended consequences. Effective risk management is extremely important; however, using the wrong risk control tools can lead to sub-optimal portfolio results.

It is incumbent on both managers and clients to recognize how investment guidelines and constraints can affect performance. Without the flexibility to implement the best portfolio, an investment manager cannot maximize added value per each unit of risk. Ideally, constraints act to ensure adequate risk control. Nevertheless, constraints should be viewed on the basis of their ability to control risk as well as their cost in terms of reduced portfolio efficiency.

For questions, please contact:
Charles Jacklin, Ph.D.
President and CEO at (415) 546-6056

- BNY Mellon Asset Management**
- Alcetra Inc./Ltd.
- BNY Asset Management
- The Boston Company Asset Management, LLC
- The Dreyfus Corporation
- EACM Advisors LLC
- Estabrook Capital Management, LLC
- Franklin Portfolio Associates, LLC
- Gannett Welsh & Kotler, LLC
- Ivy Asset Management Corporation
- Mellon Capital Management Corporation
- Mellon Equity Associates, LLP
- Newton Capital Management Limited
- Pareto Investment Management Limited
- Standish Mellon Asset Management Company LLC
- Urdang Capital Management, Inc.
- Urdang Securities Management, Inc.
- Walter Scott & Partners Limited
- WestLB Mellon Asset Management LLC

Table 2: Simulated Global Alpha Mandate with 5% Active Risk Target

Mar-89 to Sep-05

	Unconstrained Global Alpha			Constrained Global Alpha (No net short of stocks or bonds)		
	Strategy	Benchmark*	Value Added	Strategy	Benchmark*	Value Added
Annualized	17.3%	7.6%	9.7%	13.7%	7.6%	6.2%
Standard Deviation	9.3%	8.7%	5.0%	9.5%	8.7%	5.0%
Information Ratio			1.9			1.2

*60% MSCI World Half Hedged, 40% WGBI Half Hedged
Source: Mellon Capital Management Corporation

See Disclosure Statements

DISCLOSURE STATEMENTS

Mellon Capital Management Corporation (Mellon Capital) is a registered investment adviser with the Securities and Exchange Commission. Any collective funds presented are maintained by Mellon Bank N.A. and Mellon Capital provides non-discretionary investment advisory services to those collective funds. The firm is defined as Mellon Capital and includes assets managed as dual officers. Assets under management include assets managed by Mellon Capital officers as dual officers of Mellon Bank, N.A. and The Dreyfus Corporation. Mellon Capital's assets under management include assets managed in overlay strategies (\$30.8 billion), as of December 31, 2006.

Mellon Capital has prepared and presented this report in compliance with the Global Investment Performance Standards (GIPS®). A complete list and description of Mellon Capital's composites is available upon request. Additional information regarding policies for calculating and reporting returns is available upon request.

This presentation does not constitute an offer or solicitation to any person in any jurisdiction in which such offer or solicitation is not authorized or to any person to whom it would be unlawful to make such offer or solicitation.

This material (or any portion thereof) may not be copied or distributed without Mellon Capital's prior written approval. Statements are current as of the date of the material only.

Performance is calculated gross of the client's negotiated investment management fee unless noted otherwise. Performance results reflect income and capital appreciation. Performance results for collective funds have been reduced by fund audit costs and any applicable custody fees. In accordance with Office of the Comptroller of the Currency (OCC) guidance and the Schedule A for each collective fund, please note the following regarding transaction costs: (i) transaction costs, if any, associated with client-specific contributions to and /or withdrawals from certain index collective funds will not be deducted from the collective fund's returns, but rather will reduce those client's returns; and (ii) such treatment of transaction costs differs from the GIPS requirements. Performance is expressed in U.S. dollars unless noted otherwise. Performance results for one year and less are not annualized.

The following provides a simplified example of the cumulative effect of management fees on investment performance: An annual management fee of 0.80% applied over a five-year period to a \$100 million portfolio with an annualized gross return of 10% would reduce the value of the portfolio from \$161,051,000 to \$154,783,041. The actual management fee that applies to a client's portfolio will vary. The standard fee schedules for Mellon Capital's strategies are shown in Part II of Mellon Capital's Form ADV.

Past results are not necessarily indicative of future performance and are no guarantee that losses will not occur in the future. Future returns are not guaranteed and a loss of principal may occur.

If model results are presented, they have certain inherent limitations. Client's actual results may be materially different than the model results presented. Unlike an actual performance record, model results do not represent actual trading and may not reflect the impact that material economic and market factors might have had on Mellon Capital's decision-making if actual client funds were being managed. Model results are achieved through the retroactive application of a model. Model results shown reflect the reinvestment of dividends and other earnings but do not reflect management fees, transaction costs and other expenses that would reduce returns.

The information provided in this presentation should not be considered a recommendation to purchase or sell a particular security. Any specific securities identified do not represent all of the securities purchased, sold or recommended for advisory clients, and may be only a small percentage of the entire portfolio and may not remain in the portfolio at the time you receive this report. You should not assume that investment decisions we make in the future will be profitable or will equal the investment performance of the past. Please note that this presentation does not comply with all of the disclosure requirements for an ERISA "section 404(c) plan," as described in the Department of Labor regulations under section 404(c). Plan sponsors intending to comply with those regulations will need to provide the plan participants with additional information.

"Standard & Poor's®", "S&P®", "S&P 500®", "Standard & Poor's 500®", and "S&P Mid Cap 400® Index" are trademarks of McGraw-Hill, Inc., and have been licensed for use by Mellon Financial Corporation (together with its affiliates and subsidiaries). The Products mentioned are not sponsored, endorsed, sold, or promoted by Standard & Poor's, and Standard & Poor's makes no representation regarding the advisability of investing in the Products. "Dow Jones", "Wilshire", "Dow Jones Wilshire 5000 Composite Index", and "Dow Jones Wilshire 4500 Completion Index", are service marks of Dow Jones & Company, Inc. and Wilshire Associates Incorporated and have been licensed for use for certain purposes by Mellon Capital Management Corporation and Mellon Bank, N.A. Mellon Bank, N.A.'s EB Daily Valued U.S. Equity Market Fund based on the Dow Jones Wilshire 5000 Composite Index, EB Daily Liquidity Market Completion Fund based on the Dow Jones Wilshire 4500 Completion Index, and EB Daily Valued Market Completion Fund based on the Dow Jones Wilshire 4500 Completion Index are not sponsored, endorsed, sold or promoted by Dow Jones or Wilshire, and neither Dow Jones nor Wilshire makes any representation regarding the advisability of investing in such products.

Frank Russell Company is the owner of the trademarks and copyrights relating to the Russell 3000® Index, the Russell 1000® Index, and the Russell 2000® Index.

Australian prospects and clients, please note the following: Mellon Global Investments Australia Limited (MGIA) holds an Australian Financial Services Licence authorising it to provide financial services in Australia. MGIA also introduces the capabilities of Mellon affiliated United States asset managers or investment advisers, such as Mellon Capital Management Corporation, in Australia. Mellon Capital is exempt from the requirement to hold an Australian Financial Services Licence under the Corporations Act 2001 in respect of financial services provided in Australia. Mellon Capital, and any financial services that may be provided by Mellon Capital, are regulated by the SEC under United States laws, which differ from Australian laws. Japanese prospects and clients, please note the following: Mellon Global Investments Japan Co., Ltd. (MGIJ) provides information about the investment advisory skills and products of Mellon's investment management firms in Japan. Mellon Capital provides subadvisory services to MGIJ. The presentation is not an invitation of subscription and provides information only. MGIJ is not responsible for the accuracy and completeness of the information contained in this presentation. Past performance and simulated performance are not a guarantee of future performance or principle and returns. The information may be amended or revoked at any time without notice.

The statements and opinions expressed in this article are those of the author as of the date of the article, and do not necessarily represent the view of Mellon Capital Management or any of its affiliates. For more information about Mellon Capital Management products or services, contact Barbara Daugherty at 415-267-1207.

BNY Mellon Asset Management is the umbrella organization for The Bank of New York Mellon Corporation's affiliated investment management firms and global distribution companies. Hamon's services are offered in the U.S. by Hamon US Investment Advisors Limited. Mellon holds a 19.9% interest in Hamon Investment Group. WestLB Mellon Asset Management is a joint venture between Mellon Financial Corporation and WestLB AG. Each firm owns 50%. Franklin Portfolio Associates has no affiliation to the Franklin Templeton Group of Funds or Franklin Resources, Inc.