



Mellon

Mellon Global Investments

Efficient risk management and portfolio flexibility

Author:

Charles Jacklin

President, Mellon Capital Management



For additional information please contact:

James Gruver
02 9006 9518

Stephen Alcorn
02 9006 9535

Efficient risk management & portfolio flexibility

Investment constraints are pervasive in investment management. Such constraints vary from limiting the universe from which an active manager can select stocks, to no short-selling constraints, to prohibitions on currency cross-hedging. Investment constraints often have unintended negative consequences. The problem goes well beyond a reduction in investment efficiency. Investment restrictions can lead to manager style biases, which can lead to correlation in alphas across manager, which in turn reduces the diversification benefit of hiring multiple managers.

Investment efficiency can be measured by the information ratio (alpha per unit of active risk) of an investment strategy. The connection between investment constraints and investment efficiency is explored by varying constraints within simulations of a variety of investment strategies ranging from active equity management to currency management to global tactical asset allocation (GTAA).

Using historical data for US active managers, it is shown that long-only large capitalisation active managers have a bias towards small capitalisation stocks that is greater than that of long-short market neutral active equity managers. The alphas of long-only large capitalisation managers are also shown to be more highly correlated among managers than are the alphas of market neutral active equity managers.

Introduction

Investment constraints are pervasive in investment management. Such constraints vary from limiting the universe from which an active manager can select stocks, to no short-selling constraints, to prohibitions on currency cross-hedging. The desire to impose such constraints is perfectly natural, particularly when the pool of investment assets is divided among multiple managers, each assigned different objectives. After all, would not allowing large capitalisation (large cap) managers to invest in small capitalisation (small cap) stocks defeat the purpose of allocating particular proportions of the overall plan assets to both small cap and large cap managers?

Investment constraints often have unintended negative consequences. It is not surprising to hear investment managers state that investment restrictions inhibit the ability to add alpha. However, while investment restrictions do indeed inhibit alpha productions, it is believed that the problem goes well beyond a reduction in alpha. Investment restrictions can lead to manager style biases, which can lead to correlation in alphas across managers, which in turn reduces the diversification benefit of hiring multiple managers.



Long-only versus long-short active management

Long-only large cap management is probably the most pervasive form of active investment management. Most plan sponsors have multiple active large cap managers with long-only mandates. The idea of having multiple active large cap managers is that while each takes a fair amount of active risk, diversification across the managers leads to a more stable alpha at the plan or asset class level.

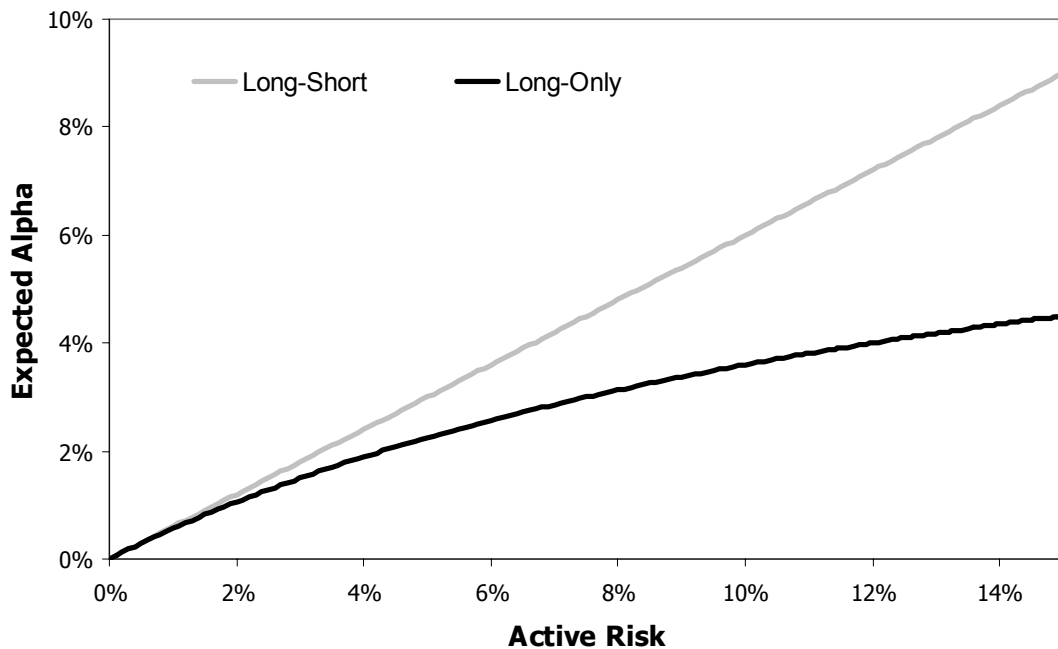
In this context the constraint which is initially examined is the no short-selling constraint. To do so it will be helpful to talk about *active* portfolio weights as opposed to portfolio weights. A manager's portfolio weights are the proportions of the portfolio held in each asset in the portfolio. Portfolio weights sum to one. On the other hand, active portfolio weights are the difference between the portfolio weight and the benchmark weight of each asset in the portfolio. Active portfolio weights sum to zero.

Consider the process of active management. Start in a situation where very little *active risk* relative to the benchmark is allowed, say 0.25 per cent (In index fund management this 0.25% would be called tracking error, however the term *active risk* is more appropriate here given the active weights are purposely taken and do not represent errors). To think about the active manager's decision-making process imagine starting with an index fund that holds precisely the benchmark weight of each stock in the index. With very low level of active risk allowed, the manager would want to 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 per cent.

Given a low level of active risk assume for the moment that the portfolio manager would not have violated the no short-selling constraint to hold this ideal optimal portfolio. That is, assume that the portfolio manager does not want to sell more than the index weight in any stock. If no constraints have been hit, then this active portfolio has the highest ratio of expected alpha per unit of active risk (highest expected information ratio) that the portfolio manager can construct. Now assume that the active risk allowed is increased twenty fold to five per cent and contemplate the differences between long-only active management and long-short active management. Ideally both will just want to scale up by 20 times the active weights that were chosen when the active risk allowance was 0.25 per cent. Both expected alpha and active risk increase linearly as an active portfolio is scaled up. Therefore, if such a rescaling of the portfolio is possible, the new high-risk 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 can do the rescaling as described. A long-only manager cannot. As active risk is increased, the long-only manager is going to hit the no short-selling constraint. That is, the long-only manager is going to want to underweight some stocks more than their benchmark weights. However, to underweight a stock more than its benchmark weight requires short-selling, which is prohibited. As soon as these constraints are hit, the active manager must substitute less attractive bets if the same level of active risk is going to be maintained. The greater is the level of active portfolio risk, the greater is impact of the no short-selling constraint, and the less attractive the marginal bets in the portfolio become.

The net result is a diminishing return to active risk for long-only management. Perhaps this is why enhanced indexing is so popular. Given the same level of skill, an enhanced index manager should always have a higher expected information ratio than a long-only active manager who takes much higher levels of risk. Remember though, long-short managers by definition do not face short-selling constraints and do not have to choose to make less attractive portfolio bets. Consequently long-short managers do not face diminishing returns to active risk. Of course the focus here has been on the efficiency of alpha generation. You may also care about getting market or beta exposure. With long-short market neutral managers this can often be done very effectively in the futures markets



Figure 1: Decreasing returns to long-only portfolio management

Style biases of large capitalisation active managers

The unintended consequences of long-only mandates do not stop with a loss of portfolio efficiency. Unless carefully controlled, long-only mandates can also lead to style biases. To see this, return to the above-described exercise where an active manager was asked to increase active risk from 0.25 per cent to five per cent. In a long-only portfolio, the manager was unable to scale up the active weights twenty fold because no short-selling constraints would have been violated. As active risk is increased, the unattractive stocks that are most likely to violate the short-selling prohibition are unattractive smaller capitalisation stocks precisely because of their low index weighting. In a long-only portfolio, all stocks can be overweighted to the same degree; however, all stocks cannot be underweighted to the same degree. Stocks can only be underweighted to the extent of their benchmark weight. The only stocks that can be significantly underweighted are the stocks with significant benchmark weights. Given this asymmetry, it is quite natural for active managers to develop a bias in favor of small capitalisation stocks in their portfolios. Some quantitative managers control for capitalisation and manage to avoid such bias. Nonetheless, even quantitative managers have to substitute away from their ideal portfolio. When faced with a short-selling constraint, the quantitative managers still must make less efficient bets. They just force themselves to make the inefficient bets by underweighting other small capitalisation stocks.

Can this asymmetry be of significance in a large capitalisation portfolio? It certainly can. In large capitalisation indexes, there is a large degree of variation in index weights. For example, as of August 3, 2004 the largest capitalisation stock in the S&P 500 Index was General Electric Co with an index weight of 3.41 per cent while the smallest capitalisation stock was Delta Air Lines Inc with an index weight of 0.006 per cent. Moreover, as of August 3, 2004, 457 out of the 500 names in the S&P 500 Index had index weights of under a half of one per cent. Consequently all active US large capitalisation managers who have underweights of more than 0.50 per cent are choosing those stocks from the same 43 names.

Traditionally the small capitalisation style bias of active large cap managers has been attributed to the active managers seeking return without regard for risk. That is, the presumption has been that large cap active managers favour smaller capitalisation/higher



risk/higher expected return stocks over larger capitalisation/lower risk/lower expected return stocks. Presumably, this problem arises because managers are rewarded for producing return, but inadequately penalised for taking excessive risk. This presumption may or may not be correct. It is not argued that active managers do not have some of this bias. The objective is to point out that short-selling constraints would naturally tend to induce a small capitalisation bias even if risk were properly penalised.

It should be pointed out that, while long-short managers are not induced into having a style bias through the imposition of constraints, they are nonetheless susceptible to the presumed bias of traditional managers. That is, they could choose to go long smaller capitalisation/higher risk/higher expected return stocks and short larger capitalisation/lower risk/lower expected return stocks. Long-short portfolios do have efficiency advantages. However, plan sponsors and consultants still need to monitor managers to make sure they are not taking undue risks.

Some may argue that the capitalisation bias of active managers is an artifact of the tendency for many traditional active managers to hold equally weighted portfolios, e.g. some managers claim to search for the 40 best stocks and hold 2.5 per cent of their portfolio in each of these 40 stocks. This approach to active management no doubt leads to a size bias if the manager is benchmarked against a capitalisation-weighted index, like the S&P 500. Relative to the benchmark, large cap stocks that are not in the portfolio are more underweighted than small cap stocks that do not appear in the portfolio. Moreover, for the stocks that are held in the portfolio, the small cap stocks are much more overweighted than are the large cap stocks. In fact mega-cap stocks with a capitalisation of greater than 2.5 per cent in the benchmark index would still be underweighted relative to the benchmark even if they are held in the portfolio.

It is argued that short-selling constraints impact traditional managers holding equally weighted portfolios. If these managers were asked to go long the best 40 stocks they could find and short the worst 40 stocks, the capitalisation bias may disappear. Some might argue that traditional long-only managers that are focused on the finding the best 40 stocks would not be adept at constructing a portfolio of 40 "dog stocks." This may be true. However, in talking with active managers about the concept of managing a long-short portfolio, they appear to be comfortable with ranking competitors within an industry. It is believed that most would have little or no trouble matching their 40 best stocks with 40 inferior competitors. Even without quantitative analysis, this type of matching is likely to lead to long-short portfolios that are market neutral to a first approximation. No doubt capitalisation bias and active risk in such a portfolio would be greatly reduced. If the active managers had only marginal skill on the short-side, it is likely that the long-short portfolio would have a much higher alpha per unit of active risk.

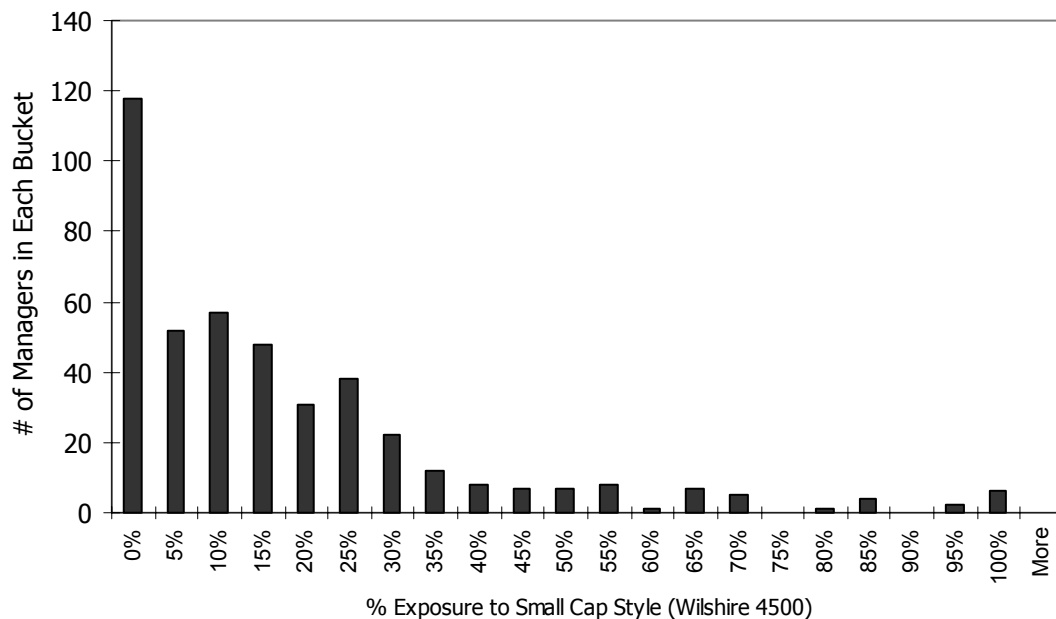


A test for style bias in active large capitalisation managers

Active manager capitalisation style bias certainly shows up in the data. Style attribution analysis can be performed on active managers to measure whether they have a capitalisation bias. From the Effron investment manager database, monthly portfolio returns were collected for US managers who identified themselves as active managers, as opposed to index or enhanced index managers, and who had the S&P 500 as their stated benchmark¹. This sample included a total of 434 managers with histories ranging from January 1984 to March 2004. If these managers had no biases, their returns should be attributable to exposure to the S&P 500 and their individual ability to add alpha. The style analysis should not attribute the portfolio returns to exposure to small cap stocks.

To examine whether, because of the no short-selling constraint, long-only managers' returns are exposed to small cap style return other than S&P 500 return, Sharpe's returns-based style analysis² was performed for each manager's monthly return time series. Included are three style returns to explain each manager's total return— S&P 500, Wilshire 4500, and 30 Day CD—which proxy benchmark exposure, non-benchmark exposure (i.e. small cap bias) and cash exposure. From the return-based style analysis, it was found that, on average, 16 per cent (where median was 9%) of long-only manager's total return is exposed to small cap style³. Figure 1 shows cross-sectional distribution of each manager's small cap style exposure for long-only managers.

Figure 2: Small cap style exposure for long-only managers



¹ Managers whose length of historical returns in the database is less than 36 months are excluded. This is to have stability in the time series estimation.

² William Sharpe. 1992 Winter. Asset allocation: Management style and performance measurement. Journal of Portfolio Management

³ The mean of 16% is statistically significant with t-statistics of 16.1.



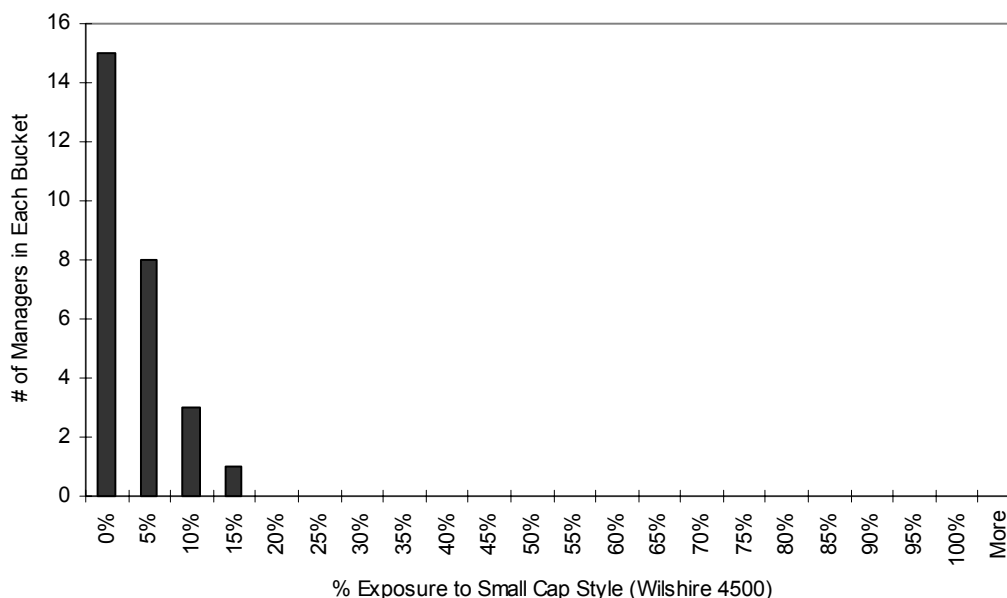
Controlling style bias

In an attempt to control the small capitalisation bias of active managers, plan sponsors have chosen to limit the investment universe of managers. Often managers are restricted to investing in the universe of stocks represented in the manager's benchmark index. Such limitations can help reduce style biases. After all, if a large cap manager can only invest in stocks within the S&P 500, then micro cap stocks are not going to be in the portfolio. This limitation is not without cost. If a manager has skill, then any limitation of the manager's investment universe is going to reduce the manager's ability to add alpha.

Again, there is a difference between long-only managers and long-short managers when it comes to limiting the manager's investment universe. Allowing a large cap manager to invest in small cap stocks can only increase the small cap style bias. After all, the large cap manager cannot underweight any of the stocks in the expanded universe. This is not true for a long-short manager. A long-short manager can both overweight and underweight stocks in the expanded universe. Consequently, increasing the investment universe of a long-short manager should increase alpha generation without necessarily leading to a style bias.

To examine whether there is a size bias in the long-short managers, the previous return-based style analysis for the universe of equity market neutral managers in the Effron investment manager database was repeated. From April 1992 to March 2004, Effron has 27 equity market neutral managers in the database with longer than 36-month returns. From the returns-based style analysis, it was found that on average 1.7 per cent (where median was 0%) of long-short manager's total return is exposed to small cap style. This supports the argument that the small cap bias in the long-only managers is partially caused by the long-only constraint as this size bias is not observed in the long-short managers who do not have a long-only constraint⁴.

Figure 3: Small cap style exposure for long-short managers



⁴ There also maybe a concern that the size bias can be caused by manager's tendency to equally weight stocks in the portfolio. To examine this possibility and its impact, another style analysis was performed which includes S&P 500 cap weighted return, Wilshire 4500, difference between S&P 500 equal weighted and cap weighted return, and cash. Inclusion of equal weighting component does not qualitatively change the conclusion of the analysis.



Should you care?

The loss of efficiency from two types of constraints is discussed above, namely, the long-only limitation (no short-selling) and the limitation on the investment universe of managers. In order to gauge the potential magnitude of these constraints, it would be useful to examine the performance of an investment strategy that is initially constrained and then to remove the constraints one by one. While such a controlled experiment cannot be done with live portfolios, it can be done with simulations.

Both long-only and long-short simulation is set up based on a multi-factor quantitative stock selection model. The multi-factor model contains comprehensive valuation signal (i.e. 3-stage dividend discount model), earnings forecast revision model, and earnings quality model. A composite alpha score ranking based on economic sector classification and sector-specific model factor weighting scheme to accommodate different value drivers in different economic sectors was constructed. All simulations contain no active sector selection (i.e. they are sector neutral portfolios).

To examine the increase in portfolio efficiency from relaxing constraints, three different sets of simulations were performed:

- (1) Long-only simulation benchmarked to S&P 500 with S&P 500 components as an investable universe.
- (2) Long-only simulation benchmarked to S&P 500 with expanded universe.⁵
- (3) Long-Short simulation with expanded universe.

The portfolio efficiency improvement was measured by comparing the increase in information ratios. By comparing the simulation (1) and (2), you can see the efficiency improvement from relaxing the investable universe constraint. Improvement from (2) to (3) will show the efficiency improvement from relaxing no-short sale constraint.

Table 1: Portfolio efficiency comparison

	1.Long-Only Strategy (SP500 Universe)	2.Long-Only Strategy (Expanded Universe)	3.Long-Short Strategy (Expanded Universe)
Information Ratio	1.24	1.71	2.35

Simulation from Feb 1993 to Jan 2004

As you can see from the above table, the portfolio efficiency monotonically increases by relaxing constraints⁶. Relaxing investable universe constraint improves the information ratio from 1.24 to 1.71, and relaxing the no short-sale constraint improves the information ratio from 1.71 to 2.35.

⁵ To be included in the expanded universe, companies should be ranked in top 1200 market capitalisation with IBES number of analysts following greater than equal to 3.

⁶ Active risk levels in long-only and long-short strategies are different in the simulation. But this will have no impact since active return and active risk in the long-short strategy is scalable. The focus on these simulations should be on the information ratio comparison, since information ratio does not depend on the level of risk in the strategy.



Induced correlation across managers

Long-only active manager returns are highly correlated. This correlation is inevitable because of the market risk in every long portfolio. If you separate market returns or benchmark return from alphas generated by the managers, on the surface there is no reason for alphas to be correlated. If managers have independent investment processes, then should not the alphas generated by active managers be independent or uncorrelated? The answer to this question is no. Even if investment processes are independent, investment constraints are not. To the extent investment restrictions induce biases in individual managers the managers' alpha generation will no longer be independent. Of course, what follows is that if alphas are dependent then diversification across managers is reduced. Within an asset class, the typical plan sponsor allocates assets to a number of active managers in order to diversify risk. This makes perfect sense. To maximise the diversification benefit of choosing multiple managers, the managers' alphas should have as low a correlation with each other as possible. However, recall in discussing short-selling constraints that managers are limited to which stocks they can significantly underweight. These short-selling restrictions also lead to correlation across managers.

The average pair-wise correlations among those 434 long-only managers' alpha above S&P 500 benchmark return were calculated. There are 93,961 pair-wise correlations, and the average was 0.241. This is quite a bit greater than zero which would be the case if there is no common source of outperformance, i.e. no style bias, among managers. The similar average pair-wise correlations among 27 long-short managers' alpha was also calculated. It turns out that the average correlation was 0.112, which suggests that there is much less commonality in the long-short managers' source of alpha. Lower correlation among managers improves the diversification in multi-manager portfolios. If you assumed that there are three managers each with equal weight and with the same level of active risk within an asset class, the active risk of the portfolio of managers would be about nine per cent lower if the managers' alphas have a correlation of .112 versus a correlation of .241.

Not only were the long-short managers less correlated to each other than were the long-only managers, the long-short managers also had a higher average information ratio than the long-only managers - 0.66 for long-short versus 0.14 for long-only. This finding is consistent with the argument made previously that long-only managers face decreasing returns to active risk, which do not impact long-short managers.

Now, consider two alternative approaches. One in which assets are allocated among several long-only active managers and the other where market exposure is obtained using futures contracts and the several long-short managers are hired to produce alpha. As described before, constructing portfolios using several long-short managers will result in a more efficient portfolio. It is due to:

- (1) Increased efficiency through an expanded stock selection universe.
- (2) Increased efficiency through a smaller set of investment constraints, e.g. short-selling restriction eliminated.
- (3) Low correlation among managers' source of alpha.

The tactical asset allocation case

The quest for alpha does not end with security selection. Indeed many plans also invest in global tactical asset allocation (GTAA) strategies. These products aim to add alpha by selecting asset classes to under and over weight rather than individual securities. Although an active GTAA portfolio is radically different from a long-short or long-only equity portfolio, the effects of constraints on portfolio efficiency are similar.

In developing policy related to GTAA accounts, investors are often tempted to apply similar position constraints to those applied to long-only equity managers. Out of concern for currency risk for example, managers may be allowed to hedge foreign exposures back to the domestic currency, but not allowed to “hedge” out of domestic currency positions when the manager believes the domestic currency is overvalued. Net short positions in stocks and bonds may also be prohibited. For example, if a country equity market represents one per cent of the benchmark weight, the manager is allowed to, at most, underweight that country equity market by one per cent i.e. have zero exposure in a fully funded account.

While these types of restrictions appear to be somewhat innocuous at first glance, they can have perverse consequences. Not only do they reduce the manager’s ability to add value, they can also reduce the investment strategy’s efficiency and lead to biases in the portfolio weights. This is not to say that risk control is not important, but rather that using the wrong risk control tools can significantly reduce performance and in some cases actually increase total portfolio risk.

To illustrate the impact of position limits on a GTAA portfolio consider a manager facing a number of hypothetical mandates all indexed against a benchmark made up of 60 per cent global equity, e.g. MSCI world, and 40 per cent US bonds, e.g. Lehman Aggregate, half-hedged to the US dollar. The first example concerns a stock and bond asset allocation mandate with a three per cent active risk target. Active weights are initiated in individual country stock and bond markets with all currency positions hedged back to US dollars. Table 2 shows the relative performance of the same mandate with and without net short position constraints. From an active portfolio perspective the information ratio of the unconstrained portfolio (1.37) is nearly 40 per cent greater than that for the constrained mandate (1.01). From a total portfolio perspective the unconstrained portfolio is able to deliver over one per cent additional alpha while increasing total portfolio risk by only 46 basis points. This outperformance of the unconstrained portfolio is consistent over all time periods.

Table 2: Impact of constraints on an asset allocation mandate with 3% target active risk (Mar-89 to Jun-04)

The second example is even more startling. Table 3 illustrates the comparative performance of two currency overlay mandates, active currency management only. As with the previous example both strategies target the same active risk (1%). In this case however, the unconstrained portfolio is able to deliver 30 per cent more alpha at the same level of total portfolio risk. Although this extra alpha appears to be a free lunch it is in fact a direct consequence of removing the inefficient position limits. In the case of the constrained portfolio, the manager is prevented from making the most efficient trade off between currencies with high expected returns and currencies with low expected returns. Since the constrained manager is forced to hedge back to the domestic currency or maintain the benchmark currency exposure, the opportunity set is drastically reduced.

Table 3: Impact of constraints on a currency mandate with 1% target active risk (Mar-89 to Jun-04)

		Unconstrained Currency mandate			Constrained Currency mandate		
		Strategy	Benchmark*	Value-Added	Strategy	Benchmark*	Value-Added
ce March 89	Annualized	8.7%	7.5%	1.2%	8.4%	7.5%	1.0%
	Std. Dev.	9.0%	8.9%	1.0%	9.0%	8.9%	1.0%
				1.24			
					0.96		

*60% MSCI World Half Hedged, & 40% Lehman Aggregate Index
Please see disclosure statements

Table 4: Impact of constraints on country bias in a bond mandate with 0.75% target active risk (Mar-89 to Jun-04)

	Unconstrained Average Active Weights	Constrained Average Active Weights
n-US	-0.81%	-8.39%
	0.81%	8.39%

nstrained strategy cannot go net short bonds

As was seen previously with active equity managers, position limits in GTAA can also lead to unintended portfolio biases. The following table demonstrates an example of potential bias due to position limits on a bond only asset allocation mandate with the same benchmark as the two examples above.

Since the investor has a US only bond benchmark the constrained manager can only short the benchmark US bonds in order to take long positions in non-US bonds. By imposing position limits the constrained manager can no longer trade off, say, Japanese bonds versus Canadian bonds, but is forced to finance every long position in non-US bonds with a corresponding short in US bonds. As a result in order to reach the same risk target as the unconstrained manager, the constrained manager is forced to increase the average size of his short US bond



position (see Table 4). This will inevitably lead to a less diversified active portfolio and hence reduced efficiency for the portfolio as a whole. Table 5 illustrates the dramatic impact on performance of imposing the no short position constraint. Over the whole period the simulated information ratio for the unconstrained portfolio is over three times that of the constrained portfolio.

Table 5: Impact of constraints on a bond mandate with 0.75% target active risk (Mar-89 to Jun-04)

		Unconstrained Bond Mandate			Constrained Bond Mandate		
		Strategy	Benchmark*	Value-Added	Strategy	Benchmark*	Value-Added
Since March 89	Annualized	8.13%	7.46%	0.67%	7.62%	7.46%	0.17%
	Std. Dev.	9.01%	8.90%	0.75%	8.88%	8.90%	0.75%
				0.90			0.22

*60% MSCI World Half Hedged, & 40% Lehman Aggregate Index
Please see disclosure statements

In all of the above cases, position limits end up having the opposite effects from their original goals. Given this loss of portfolio efficiency it follows that a more effective risk control for GTAA mandates is through the target active risk. For a given alpha target, investment managers should be able to operate at a lower average risk level with expected active risk controls rather than with position limits.

Going a step further, allowing a manager to vary risk around a target risk level can lead to additional improvements in efficiency. If the desired active risk level is two per cent, then allowing the manager to vary the risk level with an expected average risk level of two per cent is better than constraining the manager to not exceed the two per cent risk level. A manager that varies risk between one per cent and three per cent with an average active risk level of two per cent should be able to add more alpha than a manager that always maintains a two per cent risk level. Indeed, constraining a manager to sustain a constant two per cent active risk profile assumes that the investment opportunity set is constant. The quality of investment signals, however, is not always the same. Skillful investment management involves taking greater risk when signals are of high quality and backing away from risk when signals are weak. By exploiting opportunities as and when they arise the investment manager is able to deliver a more consistent alpha.

A further issue with GTAA mandates that cover several investment classes, e.g. stocks, bonds and currencies, is how to divide the risk budget between the different classes? Often when an investor has agreed on a given risk target, they are tempted to further sub-divide the active risk between, say, asset allocation and currency investments. Although this is necessary when each component is managed separately, doing so when the portfolio is managed together reduces the overall efficiency. In the same way that constraining the total risk target reduces a manager's ability to exploit changing opportunity sets, limiting risk in the individual components also prevents the manager from taking advantage of the relative opportunity set between investment classes. The integrated GTAA process used in the simulations is based on four independent sources of alpha across stock, bond and currency markets. As a result when managing an integrated GTAA mandate it is possible to increase the overall alpha by shifting the risk budget opportunistically between the different investment classes. Table 6 illustrates the impact on performance between a dynamic risk budget and a fixed risk budget on a notional GTAA account with a five per cent active risk



target. Allowing a dynamic risk budget in this case results in a near 10 per cent increase in the information ratio (1.8 to 1.96).

Taken together the effects of position limits on GTAA portfolios can be substantial. From reducing diversification and efficiency to increasing total portfolio risk, position limits can have numerous unintended consequences. It has been found that when position limits are removed and risk is managed using active risk targets it is possible to deliver on average a 40 per cent increase in portfolio efficiency (increase in information ratio).

Without the flexibility to implement his or her best portfolio, the investment manager is unable to add value. It is incumbent on both the manager and client to understand and appreciate the impact of investment guidelines and constraints. Experience suggests that both managers and clients are often unaware of the impact that constraints have on performance. Ideally, constraints act to ensure adequate risk control. Nevertheless constraints should be viewed both on the basis of their ability to control risk as well as their cost in terms of reducing portfolio efficiency.

Table 6: Impact of dynamic risk budgeting on a GTAA mandate with a 5% target active risk (Mar-89 to Jun-04)

		Dynamic risk budget			Fixed risk budget		
		Strategy	Benchmark*	Value-Added	Strategy	Benchmark*	Value-Added
Since March 89	Annualized	17.2%	7.3%	9.8%	16.5%	7.3%	9.2%
	Std. Dev.	9.8%	9.0%	5.0%	10.0%	9.0%	5%
				1.96			1.80

*60% MSCI World Half Hedged, & 40% Lehman Aggregate Index
Please see disclosure statements

Important information

The information in this document has been prepared by Mellon Capital Management for presentation by Mellon Global Investments Australia Limited.

Mellon Global Investments Australia Limited ABN 56 102 482 815, AFS Licence No. 227865 has authorised and caused the issue of the information provided within. Any strategies listed in this presentation are available through Mellon Global Investments Australia, with the Mellon asset managers providing sub-advisory services to Mellon Global Investments Australia. This presentation does not constitute an offer to sell or solicitation of an offer to purchase in any jurisdiction where the Mellon asset managers are not authorised to provide advisory services.

Mellon Global Investments Australia introduces the capabilities of Mellon affiliated United States asset managers or investment advisers, such as Mellon Capital Management in Australia. Mellon Capital Management is registered as an investment adviser with the United States Securities and Exchange Commission (SEC). Mellon Capital Management 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. Any financial services that may be provided by Mellon Capital Management are regulated by the SEC under United States laws, which differ from Australian laws. Any offer or other documentation provided in the course of providing the financial services will be prepared in accordance with United States regulatory requirements (and not Australian laws).

Neither the performance of the investments discussed nor the payment of any income return or the return of any capital is guaranteed by Mellon Global Investments Australia or any other member of the Mellon Financial Corporation, or any related body corporate.

The value of investments and the income from them can fall as well as rise. Past performance is not a guarantee of future performance and investors may not get back the full amount invested. Changes in the rates of exchange may affect the value of investments.

This information has not been prepared to take into account the investment objectives, financial objectives or particular needs of any particular person. Before making an investment decision you should carefully consider, with or without the assistance of a financial adviser, whether such an investment strategy is appropriate in light of your particular investment needs, objectives and financial circumstances. No person is authorised to give any information or to make any representation relating to Mellon Global Investments Australia that is not contained in this document. Therefore, any such information or representation must not be relied upon as having been authorised by or on behalf of Mellon Global Investments Australia unless authorised in writing by Mellon Global Investments Australia.

Mellon Global Investments Australia Limited, Level 18, 44 Market Street, Sydney, NSW 2000.

www.mellonglobalinvestments.com.au

A Mellon Financial CompanySM



Mellon

Mellon Global Investments