

# “Measuring Alpha-Based Performance: Implications for Alpha-Focused Structured Products”

## AUTHORS

Larry R. Gorman  
Robert A. Weigand

## ARTICLE INFO

Larry R. Gorman and Robert A. Weigand (2008). Measuring Alpha-Based Performance: Implications for Alpha-Focused Structured Products. *Investment Management and Financial Innovations*, 5(2)

## RELEASED ON

Thursday, 26 June 2008

## JOURNAL

"Investment Management and Financial Innovations"

## FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

© The author(s) 2026. This publication is an open access article.

Larry R. Gorman (USA), Robert A. Weigand (USA)

## Measuring Alpha-based performance: implications for Alpha-focused structured products

### Abstract

We propose that the muted demand for investment innovations such as Portable Alpha arise, at least in part, from a lack of clarity and transparency regarding the way alpha is defined and measured. We show that the profession has been debating the closely-related issue of alpha/beta separation as far back as the 1970s, and argue that lack of closure regarding this debate is a natural and expected feature of innovation in money management products. We provide an example of how to measure alpha bias in the context of benchmarking an actively-managed equity portfolio, and find a maximum potential bias from 1997-2006 of  $\pm 5\%$  per year.

**Keywords:** alpha, beta, Portable Alpha, performance attribution.

**JEL Classification:** G11.

### Introduction

Magazines and blogs with thousands of readers a day are devoted to it. *The Economist* recently called its ever-changing definition "A looming challenge for the money management industry" (01.03.2008). Successful managers "hunt" it, and are not shy about charging for the right to eat at their table when they catch it. It is in short supply, and everyone generally agrees that over time and across markets it is a zero-sum game, which means that to earn it you usually have to take it away from your competitors. We are, of course, talking about the ultimate bottom line of the active money management industry – the elusive concept known as alpha.

Despite its importance in the investment world, we propose that ad-hoc definitions and disparate interpretations of alpha have contributed to a state of affairs in which even investment professionals and their clients rarely bother specifying *exactly* what alpha is<sup>1</sup>. It is not uncommon for a somewhat loose definition of alpha to be proposed, accepted, and then set aside as operational and legal issues take precedence. However, with many products being marketed around the objective of earning alpha (e.g., Portable Alpha), it is critical to develop a more precise understanding of this key performance metric. We assert that the status quo has contributed to the muted demand for Portable Alpha and other difficult-to-benchmark products, and that moving toward a clearer and more widely-accepted definition of alpha will have a positive effect on the demand for structured investment vehicles with an alpha focus.

Any discussion of alpha also implies a discussion of beta, as an asset's total return is comprised of two

components, its alpha-return plus its beta-return. Therefore, our inquiry into the question "what is the return associated with alpha?" also requires that we ask "what is the return associated with beta?" When viewed from this perspective, it becomes clear that the issues we address are the same as those driving the current debate regarding the "right" way to benchmark virtually every actively-managed vehicle, ranging from 130/30 funds (Lo and Patel, 2007) to hedge fund replication products (Lett and Holt, 2007). We further assert that this is simply the most recent incarnation of a discussion about alpha/beta separation that has been evolving since Fama and French (1993) proposed that value and size were systematic risk factors in the same sense as the global market factor from the original Capital Asset Pricing Model.

In the context of measuring the alpha of an actively-managed equity portfolio, we show that confusion over alpha exists even within a framework as simple as the Capital Asset Pricing Model (CAPM). The confusion begins with empirical estimation of alpha and beta and extends to interpretation of the estimation parameters. We chronicle how the accepted definition of beta has changed since the advent of the CAPM, and demonstrate why a nuanced understanding of the way beta continues to evolve is necessary for accurate measurement and interpretation of alpha. To demonstrate the economic significance of these issues, we also estimate the maximum possible alpha bias from using the "wrong" benchmarking model (the CAPM) if another method, in this case the Fama-French 3-Factor Model, provides a better measure of systematic (beta) returns. We find that, from 1997-2006, a manager with an extreme tilt toward small-cap value who measured alpha using a single-index CAPM would have had an alpha bias as large as +4.9% per year, while a manager emphasizing an extreme tilt toward large-cap growth would have had a maximum alpha bias of -5.2% per year.

---

©. Larry R. Gorman, Robert A. Weigand, 2008.

<sup>1</sup> For example, a document available at [www.allaboutalpha.com](http://www.allaboutalpha.com) lists 20 different definitions of what alpha is (gathered from diverse sources). Significant conflicts and variation among the definitions exist.

## 1. Defining and estimating alpha

Generally, the alpha (for asset or portfolio  $i$ ) is estimated empirically via a statistical linear regression such as:

$$R_i - r_f = \alpha + \beta_1(R_{F1} - r_f) + \beta_2(R_{F2} - r_f) + \dots + \beta_k(R_{Fk} - r_f) + \varepsilon \quad (1)$$

where  $R_i$  is a vector (column of data) representing the last  $T$  periods of returns for portfolio  $i$ . (A common choice is to set  $T$  equal to 60 months of data, although daily data are often used when focusing on 6-, 12-, or 18-month periods).  $r_f$  is a vector of returns on the risk free asset (typically the short term T-bill rate or LIBOR) for the last  $T$  periods.  $R_{Fk}$  is a vector of returns on risk factor  $k$  for the last  $T$  periods. Depending upon the model of risk employed (CAPM or otherwise), there may be only one factor, or there may be several factors. Risk factors are thought to be systematic in nature. That is, it is assumed that virtually all assets are exposed to a relatively small number ( $= k$ ) of common risks, referred to as factors. Equation (1) is written in general form to account for these  $k$  factors. The CAPM has only one factor, a maximally-diversified global portfolio of risky assets. Hence, in the CAPM, the factor  $R_{F1}$  is typically written as  $R_{MKT}$ . Most models following the CAPM typically employ multiple risk factors (elaborated on in the following section).  $\beta_k$  is the beta (estimated statistically) associated with the return vector of factor  $k$ . Beta measures how sensitive an asset's returns are to movements (returns) in factor  $k$ . The CAPM models one beta, whereas there are multiple measures of beta in multi-factor models (one for each risk factor)<sup>1</sup>.  $\varepsilon$  is the residual vector, indicating deviations between the linear regression line (or response surface for multi-factor models) and the actual returns of asset  $i$ . There are  $T$   $\varepsilon$ 's estimated in each regression, and they have a mean of exactly zero.

The alpha ( $\alpha$ ) of portfolio  $i$  for a certain time span represents the return of the portfolio above what would be expected, given the portfolio's exposure to the risk factors. Alpha is the "money shot" number in performance attribution. A positive value of  $\alpha$  indicates that the portfolio (and most importantly, the manager(s) of the portfolio) performed abnormally well, over and above a certain level of exposure to various systematic risk factors. Alpha is also referred to as abnormal return, and is interpreted as a direct measure of investment manager skill.

The return resulting from exposure to the various risk factors is known as the beta component of returns, defined as:

$$R_i - \alpha - \varepsilon = r_f + \beta_1(R_{F1} - r_f) + \beta_2(R_{F2} - r_f) + \dots + \beta_k(R_{Fk} - r_f) \quad (2)$$

In this depiction  $\alpha + \varepsilon$  constitute the non-beta return component of portfolio  $i$ . Over any time period the mean of  $\varepsilon$  is always exactly equal to zero, thus the non-beta return equals  $\alpha$ .

Equation (1) is a completely general form for alpha estimation. It allows for any number of factors and their associated betas (up to  $k$  of them). That is, equation (1) provides estimates of  $\alpha$  and  $\beta_1, \beta_2, \dots, \beta_k$ . For the CAPM (a single-factor model), only  $\alpha$  and  $\beta_1$  are estimated. Regardless of the number of specified factors, the estimate of  $\alpha$  can be interpreted as a measure of abnormal risk-adjusted performance of an asset, portfolio, or manager(s).

## 2. Models of risk and expected return – general results

Risk models relate risk to expected returns (*ex ante*, or before-the-fact *estimates*), which are almost always different than realized returns (*ex post*, or after-the-fact *calculations*). One key feature of these models is that all risk is viewed as belonging to one of two categories: either (i) systematic risk or (ii) non-systematic risk<sup>2</sup>. Within these models, there is a higher expected reward for exposure to systematic risk factors via higher expected returns. These rewards are known as "risk premia", and are thought to expand and contract over time.

There is no expected reward for exposure to non-systematic risk. Expected returns depend upon the magnitude of exposure to systematic risk only. Although non-systematic risk exposure can result in positive or negative returns *ex post*, the important point is that, *ex ante*, this type of risk is *expected* to provide a return of zero. Beyond these commonalities, models differ in what types of risks are considered to be systematic. Some models employ only one systematic risk factor (the CAPM), while other models employ 2, 3, 4 or more.

Once the actual returns to the factors are known (from the historical period of measure, e.g. 60 months), it is possible to compute what the return on a portfolio *should have been*, given the actual factor returns and the portfolio's exposure to these factors, as measured by the factor betas. This can also be thought of as a measure of what the portfolio would

<sup>1</sup>Beta is not simply an asset's return volatility relative to market volatility. Beta is a scaled measure of the correlation of returns between the asset and each factor. In the single-index CAPM the scaling factor is the ratio of volatility of asset  $i$  to the volatility of the market:  $\beta_i = (\sigma_i / \sigma_{MKT}) \times \text{correlation}(i, MKT)$ .

<sup>2</sup>Both systematic and non-systematic risk are commonly referred to using other terminology as well. Systematic risk is also known as beta risk or factor risk. Non-systematic risk is also known as idiosyncratic risk, diversifiable risk, or asset-specific risk.

have earned in the period under study if exposure to non-systematic risk had a payoff of zero.

Therefore, if we have estimates of the  $k$  betas and the actual returns on the  $k$  factors for the last 60 months, the reward for systematic risk can be computed as:

$$\text{Actual beta return} = \bar{r}_f + \beta_1(\overline{R_{F1}} - r_f) + \beta_2(\overline{R_{F2}} - r_f) + \dots + \beta_k(\overline{R_{Fk}} - r_f), \quad (3)$$

where the  $\beta$ 's are estimated via linear regression (equation 1), and are multiplied by the respective means of the actual factor returns above the risk free rate for the period of measurement<sup>1</sup>.

Although the *expected* return for non-systematic risk exposure is zero, the *actual* return is rarely zero. The actual return to non-systematic risk is, by definition, alpha. It is the primary measure of investment skill<sup>2</sup>. It is computed as:

$$\text{Ex-post non-systematic return (alpha)} = (\text{actual total return}) - (\text{actual beta return}),$$

or, equivalently:

$$\alpha = \bar{R}_i - \left[ \bar{r}_f + \beta_1(\overline{R_{F1}} - r_f) + \beta_2(\overline{R_{F2}} - r_f) + \dots + \beta_k(\overline{R_{Fk}} - r_f) \right]. \quad (4)$$

Note that this computation is the same as equation (1). Also, all parameters (including alpha) at this stage are measured in per period terms (e.g., monthly), and can be annualized later.

### 3. Specific models of risk and return

The prior section outlined general issues associated with all models of risk and return. In this section we turn to the evolution of these models and discuss specific models, which we will relate to the general statements made in the prior section.

Based on the pioneering work of Sharpe (1964), Lintner (1965), and Mossin (1966), the Capital Asset Pricing Model (CAPM) changed the way we think about risk and return forever. In any model of risk, CAPM or otherwise, total risk (defined as the variance of returns) is comprised of systematic risk plus non-systematic risk. In the CAPM, systematic risk is related to only one factor – the global market portfolio. Any increase in a portfolio's exposure to this systematic risk (measured by beta) is associated with an increase in expected return, while greater

exposure to non-systematic risk is not associated with an increase in expected return.

The CAPM is stated formally as:

$$E(R_i) = r_f + \beta \left[ E(R_{MKT} - r_f) \right] \quad (5)$$

where  $E(\cdot)$  denotes an expected value. When the CAPM is used as the underlying return-generating model, alpha and beta are estimated via a linear regression (equation 1) as shown<sup>3</sup>:

$$R_i - r_f = \alpha + \beta_1 (R_{MKT} - r_f) + \varepsilon. \quad (6)$$

Once we obtain an estimate of beta (via equation 6), the historical returns for the market and the risk free rate, then the actual reward for systematic risk can be computed (using equation 3) as:

$$\text{Actual beta return} = \bar{r}_f + \beta_1 (\overline{R_{MKT}} - r_f). \quad (7)$$

Equation (7) is essentially the empirical version of the CAPM (5). This is not surprising, since equation (7) measures the actual return associated with market risk only, and the CAPM implies that only market risk should be rewarded.

From the advent of the CAPM in 1964 until the mid-1970s, the model generated relatively little controversy<sup>4</sup>. For the most part, statistical tests of the CAPM were supportive of the model's prediction that non-systematic risk should not be rewarded, which is the same as saying that, on average, alpha is not statistically different from zero. The predominant view at the time was that markets were highly efficient, and it was therefore unlikely for anyone to earn alpha consistently over time. Randomness or luck was the common explanation assigned to an organization or individual who demonstrated a consistent ability to earn alpha<sup>5</sup>.

This view was challenged when Basu (1977) showed that, after controlling for systematic risk, portfolios of low P/E stocks outperformed portfolios of high P/E stocks. This finding ran contrary to the predictions of the CAPM. It now seemed possible that alpha could be earned consistently via skill rather than luck. Another deviation from the CAPM was uncovered in 1981 when two doctoral students,

<sup>3</sup> Equation (6) is commonly known as the market model regression.

<sup>4</sup> Not all of the initial reaction to the CAPM was favorable, however; e.g., see Bierwag and Grove (1965).

<sup>5</sup> Consider the following simple example: If 1024 people flip a coin once a year (and flipping heads is associated with earning positive alpha), then after ten years we would expect at least one person to have flipped heads ten times in a row. If only one person in a thousand beats the market ten years in a row, the result is just as likely due to chance as skill. This one in a thousand ratio is similar to the historical performance of mutual fund managers (such as Peter Lynch, whose Magellan Fund earned positive alpha in 11 out of 13 years).

<sup>1</sup> It is especially important to subtract the risk free return in each period from both  $R_i$  and all factor returns. Failure to do so will result in a statistical bias in alpha equal to  $r_f \times (1 - \sum \beta_k)$ .

<sup>2</sup> Note that if an investor has no skill in individual asset selection, but is able to time the market (when to increase or decrease exposure to various systematic factors), this ability will also manifest itself as positive alpha.

Rolf Banz and Mark Reinganum, working independently at the University of Chicago, discovered that portfolios of small capitalization stocks outperformed portfolios of large capitalization stocks, after controlling for their exposure to the market risk factor<sup>1</sup>. Like Basu's P/E discovery, this finding was an anomaly, at least from the viewpoint of the CAPM.

In the following decade, much research was aimed at better understanding the P/E and size effects. It was a time of transition, but throughout this period, although the CAPM was repeatedly challenged, it was largely left unchanged<sup>2</sup>. That is, from 1964 to the early 1990s, systematic risk was considered to be based on only one factor, the market, while the P/E and market capitalization anomalies were largely viewed as puzzles yet to be solved.

In 1993, more than ten years after the discoveries of Basu, Banz and Reinganum, Eugene Fama and Ken French published a paper that refuted the one factor structure of the CAPM in favor of a three factor model of systematic risk. The new factors (in addition to the market) were a value factor (similar in spirit to Basu's P/E ratio, but based instead on the ratio of book value of equity to stock price, a.k.a. the book-to-market ratio) and a size factor (capturing the Banz and Reinganum market capitalization effect). The new model came to be known as the Fama-French Three-Factor Model. Inclusion of these two additional factors was initially controversial, as this was the first time that factors previously defined as alpha-components were recast as beta-components. Eventually, however, volumes of research papers, much lively and intelligent debate, and innovations in index products such as exchange-traded funds (which significantly lowered the cost of obtaining exposure to the value and size factors), resulted in academics and (most) practitioners accepting these factors as legitimate beta-risks.

Expressed in expectation form, the Fama-French Three-Factor model is

$$E(R_i) = r_f + \beta_1 [E(R_{MKT}) - r_f] + \beta_2 [E(R_{SMB})] + \beta_3 [E(R_{HML})], \quad (8)$$

where  $R_{SMB}$  is the return to a portfolio of small cap stocks minus the return to a portfolio of large cap stocks (Small Minus Big), and  $R_{HML}$  is the return to a portfolio of high book to market stocks minus the return to a portfolio of low book to market stocks

(High Minus Low)<sup>3</sup>. The Fama-French alpha and its three betas are estimated empirically via a linear regression such as<sup>4</sup>.

$$R_i - r_f = \alpha + \beta_1 (R_{MKT} - r_f) + \beta_2 (R_{SMB}) + \beta_3 (R_{HML}) + \varepsilon. \quad (9)$$

As the one-factor CAPM declined from favor and the Fama-French Three Factor Model gained acceptance, the definition of systematic risk also changed<sup>5</sup>. This spawned an evolution in the way we conceptualize equity expected returns, and the way we measure alpha. The next section elaborates further on this idea. We show that failure to account for these changes results in biased estimates of alpha, which in turn affects performance attribution, fees, managers' compensation, and investor perceptions of the money management industry.

#### 4. Bias in alpha estimations

Next consider the measurement of alpha under both the one-factor CAPM and the Fama-French model. Following equation (4), under the CAPM, alpha is estimated as

$$\alpha^{CAPM} = \bar{R}_i - \left[ \bar{r}_f + \beta_1^{CAPM} \times (\overline{R_{MKT} - r_f}) \right] \quad (10)$$

whereas under the Fama-French Three-Factor model, alpha is estimated via equation (9) as

$$\alpha^{FF3} = \bar{R}_i - \left[ \bar{r}_f + \beta_1^{FF3} (\overline{R_{MKT} - r_f}) + \beta_2^{FF3} (\overline{R_{SMB}}) + \beta_3^{FF3} (\overline{R_{HML}}) \right]. \quad (11)$$

If there are actually three systematic risk factors that drive expected returns, but the measurement of alpha for an actively-managed equity portfolio is conducted according to the one-factor CAPM, a bias will be induced in the estimation of alpha. The bias is equal to:

$$Alpha\ Bias = False\ Alpha - True\ Alpha = \alpha^{CAPM} - \alpha^{FF3}$$

$$Alpha\ Bias = \left[ (\beta_1^{FF3} - \beta_1^{CAPM}) \times (\overline{R_{MKT} - r_f}) \right] + \left[ \beta_2^{FF3} \times (\overline{R_{SMB}}) \right] + \left[ \beta_3^{FF3} \times (\overline{R_{HML}}) \right] \quad (12)$$

<sup>3</sup> There is no risk free rate subtracted from the SMB or HML portfolios because the factor returns are constructed from the difference between two portfolios (each with a risk free rate subtracted) and in the differencing process, the risk free rates cancel out.

<sup>4</sup> Historic returns for all three factors are available at Ken French's web site: <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html>.

<sup>5</sup> Carhart (1997) suggests that a fourth factor (price momentum) should also be considered as a systematic influence. This model, known as the Fama-French/Carhart Four Factor model, remains somewhat controversial. The focus of this paper is limited to the Fama-French Three Factor model. Risk consulting firms such as Barra and Axioma employ numerous risk factors (including, but not limited to, SMB, HML and momentum). The additional risk factors are employed not necessarily for their systematic characteristics, but rather because some industries are exposed to specific risks, and asset managers are interested in measuring these risks.

<sup>1</sup> The finding has since come to be known as the size effect.

<sup>2</sup> During this period, Eugene Fama frequently commented "It takes a model to beat a model".

The bias arises from three sources, and the direction of the bias can be positive or negative. The first source of bias is due to the difference between the Fama-French and CAPM market-factor betas multiplied by the market risk premium. This bias is expected to be relatively small, as a market-factor beta estimated with and without the other factor betas would be expected to return slightly different values.

The remaining two sources of alpha bias are the most interesting in the context of our discussion. These arise from the betas on the size and value factors. For portfolios with a small-cap emphasis, a CAPM-based alpha will have a positive bias. In other words, the CAPM-measured alpha is too large because some of the additional return earned from overweighting small-cap stocks – a systematic beta-risk in the Fama-French model – is bundled into the measurement of alpha. Portfolios emphasizing large-cap stocks suffer from the opposite problem – their CAPM-measured alphas are negatively biased, because less exposure to small-cap risk *reduces* the expected risk premium. If a portfolio with a large-cap emphasis outperforms relative to these lower return expectations, managers should be credited with earning a *higher* alpha.

For portfolios with a value emphasis (high book to market ratio), a CAPM alpha will also be positively biased because it fails to account for the value risk premium (the extra return earned from overweighting risky value stocks). Alternatively, for portfolios emphasizing growth (low book to market ratios) the bias will be negative, as less exposure to the value risk factor decreases the portfolio's expected return. Collectively, these effects imply that small-cap value portfolios will be especially susceptible to positive alpha bias, while large-cap growth portfolios will be susceptible to negative alpha bias.

Intuitively, the alpha bias arises from Fama-French based beta returns being imprecisely included in (or subtracted from) a CAPM-based alpha. Incorrectly measuring the alpha and beta components of returns in this manner is sometimes referred to as “dirty alpha” or “alpha contamination”. The alpha is contaminated because it is an inaccurate measure of performance and manager skill.

Table 1. Estimates of Alpha bias

Portfolio	CAPM alpha	Fama-French alpha	Alpha bias
Large-cap growth	-2.34%	2.85%	-5.20%
Small-cap value	18.99%	14.08%	+4.91%

A brief numerical example will illustrate the potential magnitude of alpha bias. Using monthly data from 1997-2006, we estimated alphas using

both the single-index CAPM and the Three-Factor Fama-French models for two portfolios: one with an extreme tilt toward small-cap value, the other with an extreme tilt towards large-cap growth (all return and factor data were obtained from Ken French's online data library). As expected, the large-cap growth portfolio had an annual alpha that was 5.2% *higher* when estimated using the Fama-French model (which also accounts for the size and value factor risk premia). The extreme large-cap portfolio has low exposure to these risk factors, which justifies a lower expected return. A greater amount of the returns earned by this portfolio therefore register as alpha in the Fama-French depiction of risk and expected return. Also as expected, the small-cap value portfolio had an annual alpha that was 4.9% *lower* when estimated with the Fama-French model. With significant exposure to the size and value risk factors, the small-cap value portfolio is held up to a higher expected return standard – therefore less of the returns earned by this portfolio registers as alpha using the Fama-French model.

## 5. The cost of obtaining beta returns influences alpha

Properly-measured alpha is in low supply and in high demand. It therefore follows that the price associated with obtaining alpha is relatively high. Alternatively, systematic returns associated with each of the three Fama-French factors are plentiful and relatively inexpensive to obtain. Stock index futures, total return swaps (TRSs) and exchange-traded funds (ETFs) are traded on numerous market indices in highly-liquid markets, making access to the market factor easy to obtain at low cost. Exposure to the small minus big (SMB) market cap factor can be synthetically created by taking a long position in the Russell 2000 and a short position in the Russell 1000, as futures, TRSs and ETFs are available on these indices. Exposure to the high minus low (HML) book to market factor (value versus growth) can be obtained by taking a long position in the Russell 1000 Value index and a short position in the Russell 1000 Growth index. These indices also trade in the form of futures, TRSs and ETFs.

With access to systematic (beta) returns being relatively easy to obtain at low cost, there is no reason to pay anything but the most nominal of fees for exposure to these beta components of equity returns. Of course, paying relatively large fees for access to alpha-based returns makes sense, as long as the fee is less than the alpha. With a two-tier pricing structure between alpha and beta returns, a contaminated alpha (with a potentially unknown direction of bias) is likely to be mispriced compared to the beta returns investors can obtain on their own.

This potential mispricing is not in the best interest of the money management industry (at least overall), as it is likely to reduce total investor demand for any product purporting to supply alpha. Demand for alpha-focused structured products, such as Portable Alpha, should rise as the money management industry provides greater transparency regarding the measurement and interpretation of alpha.

## 6. Relevance for benchmarked portfolios

There are many funds and investment products that – for various reasons – are benchmarked against a specific index. For example, a long-only equity manager may be judged on whether they outperform the Russell 3000, an active extension (i.e. 130/30) manager may be compared against the performance of the Russell 1000, and a hedge fund manager, choosing to invest via more exotic strategies, may select (possibly with an intent to “game” his/her performance) a specific benchmark for comparison. If a fund has a mandate (imposed by upper management, investors, or self-imposed by the actual asset managers) to benchmark itself against, say, the Standard and Poor's 500, then what measure of the market should be employed in the estimation of alpha in equation (9)? The S&P 500, or the broad market comprised of all available assets?

From the investor's point of view (contemplating investment in a benchmarking fund) the proper market measure for performance assessment is the universe of all assets available *to the investor*. However, from the viewpoint of assessing the skill of the portfolio manager (constrained to invest only in assets contained in the benchmark) the measure of the market in equation (9) should be assets available *to the manager* – that is, the benchmark<sup>1</sup>. Hence, the choice of the definition of the market return factor used in equation (9) depends upon whose perspective the assessment is being made from: the manager's or the investor's. For *assessment from the investor's view* (assuming they have broad latitude in the types of assets they can invest in), then equation (9) should employ the broadly-defined market return, no matter what the benchmark constraints are on a fund under consideration. For *assessment of manager skill*, equation (9) should employ the benchmark.

Some may argue that for purposes of measuring manager skill, only one factor should be employed – the index (i.e. use equation (6) with the market

defined as the index). However, consider a manager benchmarked to the S&P 500 who tilts the portfolio toward small-cap value stocks. The manager will likely earn positive alpha via (CAPM style) equation (6), and a lower (possibly negative) alpha via Fama-French style equation (9). The alpha of equation (6) is spurious because the manager tilted his/her holdings toward systematic risk, and equation (6) is mis-specified from a systematic risk perspective. This contaminates the alpha measure of equation (6) by including beta returns into the alpha metric. If the Fama-French measure of alpha equals zero, the manager demonstrated no skill in employing this tilt. The implication is that he/she earned the fair market return for additional exposure to systematic risk.

## Summary and conclusions

Recently Portable Alpha, an alpha-focused absolute return product with tremendous potential, has met with somewhat muted demand. There are several reasons for the lack of robust demand including complexity of implementation, transparency, the ability to identify consistent alpha generating sources, and competing products such as active extension or 130/30 funds. Beyond these commonly-mentioned reasons, skepticism, a general lack of understanding and confusion have also contributed to the ambiguous demand for Portable Alpha products. Much of the confusion arises from a lack of clear consensus regarding a strict definition of alpha. We argue that this diminishes demand for all alpha-focused products, with Portable Alpha products possibly affected more than others.

One partial remedy is to move toward greater clarity of exactly what alpha is, why it is best measured against the most relevant benchmarking model (which evolves over time), and why, when properly measured, it is worth paying for. Ongoing debate and transparency regarding these issues are in the best interest of the profession.

Relative return products such as active portfolio extensions (130/30 funds) pose an additional challenge for Portable Alpha, as they serve as substitute goods. Direct comparisons between Portable Alpha and active extension products are difficult to obtain, in large part due to asymmetric performance methodologies – alphas and/or information ratios can only be computed for relative return products such as active portfolio extensions. The inability to directly compare the performance of absolute and relative return products is problematic for the investor. Another difficulty arises because performance metrics are usually computed from the viewpoint of assessing fund manager skill, and not from the viewpoint of assessing portfolio enhancement to the investor. Reconciling these

<sup>1</sup> For a manager who is benchmarked to an index, but has latitude to invest outside the index, then for the purpose of measuring the skill of the manager, the measure of the market return in equation (9) should be expanded beyond that of the index to reflect the set of all assets in which they *could* invest.

performance measurement issues and moving to a common assessment methodology in which both absolute and relative return products are assessed via *investor-focused* metrics would do much to improve investor demand for both types of products.

We further assert that money managers should expect to revisit the debate over "What's alpha and what's beta?" regularly, and that it is natural to view this question as one that will never be fully resolved. The issue of alpha/beta separation began as early as the 1970s with the discovery of the va-

lue and size anomalies, and will require additional consideration with each wave of innovation in investment management. The latest incarnation of this debate, of course, concerns the best way to benchmark 130/30 funds and hedge fund replication products (Lo and Patel (2007) and Lett and Holt (2007)). Managers should embrace these discussions – they are necessary for the profession to continue moving toward the transparency investors want regarding performance attribution and fees.

## References

1. Banz, R., 1981. "The Relationship Between Return and Market Value of Common Stock", *Journal of Financial Economics* 9: 3-18.
2. Basu, S., 1977. "Investment performance of common stocks in relation to their price earnings ratios: A test of market efficiency", *Journal of Finance* 32, June, 663-682.
3. Bierwag, G. and M. Grove, 1965. "On Capital Asset Prices: Comment," *Journal of Finance* 20, 89-93.
4. Carhart, M. 1997, "On Persistence in Mutual Fund Performance," *Journal of Finance* 52, 57-82.
5. The Economist, 2008. "And God Created Alpha," January 3.
6. Fama, E.F. and K.R. French, 1993. "Common Risk Factors in the Returns on Stocks and Bonds", *Journal of Financial Economics* 33 (1), 3-56.
7. French, K., 2007. [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
8. Grinold, R., 1989. "The Fundamental Law of Active Management", *Journal of Portfolio Management* (Spring) 30: 37.
9. Hubrich, S., 2008. "An Alpha Unleashed: Optimal Derivative Portfolios for Portable Alpha Strategies," Working Paper, T. Rowe Price Associates, Baltimore.
10. Lett, C. and C. Holt, 2007. "Two Solitudes", *Canadian Investment Review* (Fall), 22-27.
11. Lintner, J., 1965. "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets", *Review of Economics and Statistics* 47: 1, 13-37.
12. Lo, A. and P. Patel. 2007. "130/30: The New Long-Only", Working Paper, AlphaSimplex Group, LLC and Sloan School of Management, MIT.
13. Mossin, J., 1966. "Equilibrium in a Capital Asset Market". *Econometrica* 34, 768-783.
14. Reinganum, M. R., 1981. "Abnormal Returns in Small Firm Portfolios". *Financial Analysts Journal* 37, 52-57.
15. Sharpe, W.F., 1964. "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk", *Journal of Finance* 19, 425-442.