
Academic Papers

Mutual fund risk-return profiles: A novel use of triangulation

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Abstract This paper triangulates with ethnographic content analysis and time series data to discern risk-return profiles for active equity mutual funds. The paper identifies and establishes associations between a variety of investment objectives and risk factors disclosed or otherwise encoded in the prospectus and annual report, and compares risk factors appearing in these documents with levels of risk observed in the time series data. The findings are largely consistent with the predictions of portfolio management models discussed in the literature; however, the triangulation process also reveals critical gaps between what is disclosed in each of the primary narratives and what is observed in the secondary data, ie between what is said and what is done. Risk exposures measured *ex post* are not always communicated in the documents. For example, the study finds instances of undisclosed pseudo-industry risk in the form of concentrated technology holdings which may reflect a violation of prospectus covenants. The paper also finds elevated levels of residual risk in the secondary data which may be indicative of benchmark gaming.

Keywords: *mutual funds, portfolio management, ethnographic content analysis, risk, investment objective, triangulation*

INTRODUCTION

Standard risk pricing and portfolio frameworks are largely based on the assumption that the principal investor is in control of security selection, asset allocation and rebalancing decisions

associated with the portfolio. This obviously follows for individual investors who manage their own portfolio via direct equity and debt holdings. Similarly, large institutional investors, such as endowments,

foundations and life insurance firms, often manage their own portfolios or have the resources to contract with a professional investment manager who will construct a bespoke portfolio for the client based on the latter's objectives, risk tolerance and constraints.¹

Mutual fund investors, on the other hand, are in a distinct position: they must attempt to assemble an optimal portfolio by selecting from an assortment of over 8,000 ready-made portfolios, each with its own unique risk–return characteristics, and managed by agents who, although regulated by federal agencies (in the USA, for example, the Securities and Exchange Commission (SEC)) and operating under the oversight of a board of directors, have no responsibility for ensuring that the fund meets the specific needs of participating investors. Intrinsic to the mutual fund industry then, is a principal–agent relationship that precludes both shareholder control over decisions on security selection as well as any contractual obligation on the part of the fund manager to optimise the portfolio in line with individual shareholder concerns (investment companies do bear certain obligations with respect to disclosure of investment objectives and risks, as will be discussed later in this paper). This heightens the exigency for investors, financial advisers and risk managers to be able to identify, via disclosure and reporting documents, the investment policies pursued and risks borne by each fund.

Mutual fund prospectuses and annual reports represent official communications issued by investment companies to prospective and existing mutual fund shareholders. They are, as the President of the Investment Company Institute stated in 1995,² the *key* disclosure

documents that must be provided to all investors. These documents are governed by regulations originally legislated by the US Congress in the Investment Company Act 1940 (ICA) and by subsequent amendments to that Act. Among other provisions, the ICA requires investment companies to 'disclose their financial condition and investment policies to investors when stock is initially sold and, subsequently, on a regular basis'.³ Further, the focus of the ICA is on 'disclosure to the investing public of information about the fund and its investment objectives, as well as on investment company structure and operations'.⁴ Specifically, subsection (b) of s. 8 of the ICA requires all investment companies to file a registration statement (prospectus) with the SEC, while subsection (b)(2) of s. 8 of the ICA stipulates that the registration statement contains 'a recital of all investment policies of registrant'. Although investment companies often include information of this kind in newsletters, prospectus 'wrappers', advertising and sales literature, it is the prospectus and annual report which are typically accepted as the most authoritative accounts of a fund's risk–return profile.

There are, however, limitations associated with reliance on the mutual fund prospectus and annual report for the purpose of apprehending the objectives and risk-taking of the investment company. The very fact that they are official documents, governed and enforced by federal legislation, suggests that while mutual fund prospectuses and annual reports may adhere strictly to guidelines set out in law, ie disclosing the required information in the prescribed format, they may reveal little beyond this. While content and format

standardisation may facilitate analysis, they may also circumscribe the information value of the materials. For example, in 1998 the SEC adopted a new registration form for investment companies that permits, but does not require, funds to include disclosure about the types of investors for whom the fund is intended or the types of investment goals that may be consistent with an investment in the fund.⁵ As investment companies may face civil or criminal penalties for making material misrepresentations in official documents like the prospectus, it is not unreasonable to assume that they will be extremely cautious about disclosing information beyond what is required by law. Such an information gap would underscore Garfinkel's characterisation of records being primarily 'contractual' rather than 'actuarial'⁶ and may be reflected, as Patton points out, in documents that are often highly variable in quality, with great detail in some cases and virtually nothing for other 'programmatic components'.⁷ Absent a discriminating analytical framework, it is therefore frequently problematic to detect the investment objectives pursued by fund managers, the precise nature of the risks to which shareholders are exposed and the relationships between objectives and risk-taking.

LITERATURE

Academics like Fabozzi argue that, as an integral part of the investment management process, mutual fund managers will attempt to construct an efficient portfolio within a mean-variance framework.⁸ Jones too, suggests that, consistent with Markowitz⁹ portfolio theory, managers control risk by using optimisation technology to find

the portfolio with the least amount of risk for a given level of expected return.¹⁰ Bodie *et al.* argue that an optimal, actively managed portfolio is one that maximises the reward-to-variability ratio, that is, the expected excess return (relative to the benchmark) divided by the standard deviation of returns.¹¹ Reilly and Brown suggest that active equity portfolio management is an attempt by the manager to outperform, on a risk-adjusted basis, a passive benchmark portfolio where the average characteristics of the benchmark (including such factors as beta, dividend yield, industry weighting and firm size) match the risk-return characteristics of the client.¹² Similarly, Jacobs and Levy propose that the goal of optimisation for active managers is to maximise portfolio return while tying portfolio risk to that of the benchmark; specifically, that the portfolio's systematic risk matches that of the benchmark.¹³

Yet, these academic tenets are rarely presented as matters of concern, much less policy, by most active fund managers. In an interview with Peter Tanous, the manager of the Brandywine Fund with over US\$4bn in assets, Foster Friess, offers this astonishing admission:

'We do not relate to most of those tenets of modern portfolio theory. Asking us about standard deviation would be like asking a plumber how many kilowatts he wanted to plug into a lamp. It just doesn't compute with us.'¹⁴

One possible explanation for the relative inattention paid to modern portfolio theory (MPT) by active managers is the fact that many mutual fund portfolios hold dozens if not hundreds of securities, and idiosyncratic diversification will

occur to some extent even if it is not an explicit objective of the fund. Evans and Archer, for example, find that about 90 per cent of the maximum benefit of diversification is derived from a portfolio of just 12–18 randomly selected stocks.¹⁵ On the other hand, concentrated idiosyncratic risk may, in fact, be an overt objective of the fund when the investment company has been chartered as a ‘non-diversified investment company’ under the ICA and is therefore permitted to allocate more than 5 per cent of fund assets to a single security (this must be disclosed in the fund’s prospectus). The Gabelli Value Fund is an example of such a fund. Holland suggests that fund managers avoid implementing optimisation routines to find the efficient frontier and the optimum risk-return portfolio under MPT because of the uncertainty implicit in forecasting stock risk and return characteristics.¹⁶ This argument fails to account, however, for the fact that fund managers face similar uncertainties when, for example, accounting-based fundamental analysis is employed to select stocks for a portfolio.

Interviews with fund managers and shareholder communications issued by investment companies suggest the *raison d’être* of active fund management centres on the objective of picking stocks that will deliver high absolute returns. For example, when Fidelity Investments asked Jason Yee, manager of the Janus Global Value Fund, what his immediate and long-term objectives were, he replied, ‘Good returns. I guess I think as much about providing good absolute returns in both up and down markets as anything else’.¹⁷

Similarly, in an interview with Peter Tanous, Eric Ryback, manager of the

Lindner Dividend Fund, was asked about his investment objectives. He replied, ‘My personal goal is to do 20 per cent per year, if I can. However, some markets don’t allow me to do that’.¹⁸

The objective of producing high absolute returns is what one would expect if, as suggested by the Boston Consulting Group¹⁹ and Minsky,²⁰ fund managers are assessed on the total return they deliver to shareholders. Further, high absolute returns will contribute positively to the total amount of assets under management via capital appreciation and (to the extent that high absolute returns are consistent with shareholder objectives) new share sales. This, in turn, will enhance fee income and market value for most investment companies.

If an active investment manager is being compared with a performance benchmark, then the difference between the manager’s portfolio return and the benchmark return, ie *active* or *excess return*, is of crucial importance to both manager and client. As described by Grinold and Kahn, the consistency of the active return as measured by dispersion, ie *tracking error*, *active risk* or *residual risk*, will also be relevant to the client.²¹ According to Grinold and Kahn, investment managers and pension plan sponsors are much more averse to the risk of deviation from the benchmark than they are averse to the risk associated with the benchmark itself because a high level of residual risk means that there is a high probability of being among the worst-performing managers with the resulting possibility of termination. Thus, they argue that managers tend to reduce the amount of residual risk in order to avoid the business risk inherent in being placed low in fund comparison tables. Loftus,

however, suggests that, as the traditional focus within the active management community has been oriented more towards the production of excess returns than towards controlling tracking error, it is common to find tracking error in excess of 4 per cent — a substantial level.²²

The academic literature and various empirical studies suggest that investment managers' objectives and attitudes towards risk and return will vary based on the type of fund they run, their contracting and fee arrangements with the investment company and the provisions of the client contract or prospectus. Horan, for example, finds that pension funds are more likely than other types of portfolios to have low tracking error and market betas close to one.²³ He attributes this to the risk of personal legal liability faced by pension fund managers if returns are significantly less than index benchmarks. By way of contrast, Horan suggests that managers of foundations and endowments are likely to be more focused on absolute performance than tracking error as these professionals are typically compensated based on a percentage of assets under management — as the value of assets grows, so does the manager's fee. Brinson *et al.* argue that investment managers for insurance companies are more likely to be concerned with asset class allocation than tracking error because they must focus on the ability to fund future liabilities.²⁴

In a study involving structured interviews with UK equity fund managers, Baker finds that the most important risk across fund types (pension, life assurance, private client etc) is the failure to meet fund obligations, that is, asset-liability

matching, with 70 per cent of the total sample regarding this as important.²⁵

This is followed by commercial risk, which Baker defines as the risk of poor performance relative to competitors, with 40 per cent of the total sample regarding this as important.

Interestingly, only 29 per cent of all fund managers thought total variability of return (as measured by standard deviation) was important and a mere 14 per cent thought the systematic risk of the portfolio (as measured by beta) was important. This is both instructive and surprising as it suggests that, on the whole, UK fund managers have not adopted the traditional risk measures predicted for individual investors by Markowitz²⁶ portfolio theory and the capital asset pricing model (CAPM). Indeed, one pension fund manager interviewed reveals, 'I can certainly say that no share has ever been bought on the basis of its beta or standard deviation. We only do it for interest and for the trustee's entertainment.'²⁷

When Baker segregates the sample based on the performance benchmark, she finds, perhaps expectedly, that the group most subject to relative performance monitoring — pension funds — is the only group in which a majority of the fund managers consider commercial risk to be important.²⁸ Baker further finds that fund managers in this group perceive external performance measurement as significantly affecting their portfolio decisions, with almost half of the sample replying that it has a 'considerable' or 'extreme' influence upon portfolio management. One pension fund manager interviewed reveals:

'If your livelihood depends on the

retention of funds and if those funds are being measured by WM [whole market] every 3 months, and if you know that three or four bad quarterly performances are going to cost you your fund, then you tend to reduce and reduce and reduce your exposure to anything outside the index.²⁹

The process of progressively reducing exposure to assets outside of the index will result, if followed to its logical conclusion, in a portfolio consisting exclusively of benchmark assets, ie, a portfolio with zero active risk. Thus, Baker's results strongly suggest that, for equity pension fund managers whose performance is being compared with some external benchmark, minimising tracking error will be a key objective. This is consistent with the stated preference of the equities manager interviewed by Modigliani³⁰ and the argument that pension plan sponsors³¹ and mutual fund managers³² are risk-averse to deviation from the benchmark. If, however, performance benchmarking is pervasive in the fund management industry, Baker's results would run counter to the suggestion by Loftus³³ that the traditional focus within the active management community has been oriented more toward the production of excess returns than toward controlling tracking error. Moreover, a paramount desire on the part of the fund manager to minimise active risk would constrain portfolio choices and therefore likely be incompatible with the fund objective of maximising absolute or total shareholder return discussed earlier.

According to Jacob, an investment manager's tendency to 'mimic' the benchmark, that is, deviating from it in only minor ways so as to avoid

underperforming it, is a widespread activity in the fund management industry.³⁴ Jacob argues that managers know they will not be fired for simply matching benchmark returns so their self-interest is served by minimising the risk of underperformance rather than maximising the chance of outperformance. This behaviour, however, is suboptimal from the shareholder's point of view as he/she ends up paying the high fees associated with active management but receives only benchmark returns (less fees). Given this theorised conflict of interests between manager and shareholder, one might expect an active fund manager who pursues a strategy of 'closet indexing' to face an increased risk of termination, yet Jacob suggests the opposite is true.³⁵

By way of contrast to the strategy of minimising deviation from the benchmark, Jacob proposes that other managers may attempt to 'game' the benchmark by investing in asset classes that are specifically excluded from the benchmark.³⁶ Peter Lynch, former manager of the Fidelity Magellan mutual fund, is cited by Jacob as an example of an investment manager who dramatically outperformed his benchmark, the Standard & Poor's (S&P's) 500, in the late 1980s by investing roughly 25 per cent of Magellan's capital in foreign stocks. Such a strategy, of course, reflects an increase in the amount of active risk taken by Lynch but, according to Jacob,³⁷ would also have resulted in a substantial rise in the amount of systematic risk borne by fund shareholders.

Gaming the benchmark may also work to reduce systematic risk in the portfolio. Bolster and DiBartolomeo, for example, note that during a period

when he believed the US equity market was grossly overvalued, Lynch's successor, Jeff Vinik, elected to shift a large proportion of assets from large capitalisation, growth equities to bonds and cash equivalents.³⁸ Bolster and diBartolomeo suggest that Vinik undertook this strategy in an effort to better his performance both in absolute terms and relative to his peer group of growth managers.³⁹ The Magellan fund was, however, classified as a large-cap, growth stock fund at the time⁴⁰ so this reallocation of assets would have resulted not only in a reduction of the systematic risk exposure of the fund, but would have significantly altered its formal investment style as well. Such a radical adjustment would clearly be suboptimal for a shareholder who chose to invest in Magellan with the specific objective of gaining exposure to large-cap growth stocks, factor risks identified in the Fama-French Three-Factor model.⁴¹ In an effort to improve his absolute and relative returns therefore, Vinik's gaming strategy may have been in conflict with the objectives of Magellan investors.

Fund management that deviates from the benchmark significantly enough to result in a change of style, and therefore average factor risk, has been documented by DiBartolomeo and Witkowski⁴² who employ a Sharpe⁴³ style analysis of 748 mutual funds and find that a significant proportion of mutual funds follow strategies that are distinct from their stated objective. Using discriminant analysis, Kim *et al.*⁴⁴ report similar results, finding that the stated objectives of over 50 per cent of mutual funds do not match their attributes-based objectives. Further, these latter authors find that more funds are

deviating into lower-risk objectives than higher-risk objectives (as in the previously discussed case of Jeff Vinik at Magellan).

Benchmark gaming clearly has the potential to create severe agency issues between fund management companies and their shareholders. Sirri and Tufano⁴⁵ show that the best performing mutual funds subsequently receive large net inflows of new money, yet funds that demonstrate average or poor performance do not experience a proportionate outflow of investor capital. As most funds receive fees as a fixed percentage of assets under management,⁴⁶ this asymmetry creates a nonlinear payoff function similar to that of a call option where the fund management firm has an incentive to engage in volatile investment strategies so as to maximise returns and fees, regardless of the client's risk preference.^{47,48} This may drive fund managers to reach for risky assets outside of the benchmark as Peter Lynch of Fidelity apparently did in the 1980s, as discussed above.

There are indications that fund managers have become more sensitive to the potential agency problems associated with benchmark gaming. In April 2000, *Pensions and Investments* magazine reported that the J. Sainsbury plc Pension Scheme had become the first UK plan sponsor to implement a penalty arrangement with its investment manager, Barclays Global Investors Ltd (BGI), where BGI agreed to reimburse a portion of its management fee if the portfolio exceeded agreed limits for tracking error.⁴⁹ Subsequently, in January of 2003 *Risk Magazine* reported that BGI had 'radically upgraded' its approach to risk management and analytics with new portfolio

optimisation software designed to focus on the control of active risk.⁵⁰ The Global Portfolios Group of Chase Fleming Asset Management has also called attention to its commitment to controlling active risk by announcing that, as part of its asset allocation strategy, portfolio tracking error would not exceed 1–2 per cent.⁵¹

RESEARCH PURPOSE AND METHODOLOGY

The 1990s witnessed unprecedented growth in the value of US mutual funds. Total assets under management in the mutual fund industry rose more than 700 per cent from just under US\$1trn in 1990 to a peak of nearly US\$7trn by 2000, about half of this growth coming from investment returns.⁵² The same report shows that, during the decade, the number of US households owning mutual funds increased from 23 million to 50 million.⁵³ Indeed, the 1990s represented a landmark decade for investment companies in terms of assets under management, shareholder participation rates and overall capital appreciation, as well as for stock market returns — between January 1995 and December 1999, the S&P 500 Index increased a record 220 per cent while the NASDAQ Composite Index grew by an extraordinary 440 per cent. In view of these historic gains for equities and mutual funds, it was decided to focus the present investigation on the investment activities of equity fund managers during the latter part of this period, ie 1996 to 2000. Specifically, the study aims to discover the investment objectives and risk-taking of actively-managed equity mutual funds and to map the relationships between objectives and risks.

Methodology

The study purpose suggests a multi-methods approach to investigation. While the task of documenting classes and levels of investment risk yields readily to a traditional quantitative method in the sense that the relevant variable is well defined and positivism has been used for purposes of ‘measuring and quantifying phenomena’,⁵⁴ apprehending a mutual fund’s investment objective(s) dictates a more qualitative and interpretive approach, relying critically on insight into the *intentions* of fund managers, for which there may be no easily discernible proxy that lends itself to pure quantitative analysis. Alternatively then, Patton notes qualitative methods are ‘ways of finding out what people do, know, think, and feel’.⁵⁵

For Patton, credibility depends critically on ‘rigorous techniques and methods for gathering high-quality data that are carefully analyzed, with attention to issues of validity, reliability and *triangulation*’ [emphasis added].⁵⁶ Triangulation, a concept originally introduced by Webb *et al.*⁵⁷ and then applied to qualitative investigation by Denzin,⁵⁸ captures the notion of the importance of examining phenomena from a variety of vantage points so as to establish the trustworthiness (validity) of qualitative investigation. Denzin defines four basic types of triangulation: (1) methodological triangulation, (2) data triangulation, (3) investigator triangulation and (4) theory triangulation. The present study will employ types (1) and (2) of Denzin’s triangulation framework. The multi-methods approach to investigation noted above — a mixture of qualitative and quantitative analysis — is the

embodiment of methodological triangulation. According to Denzin, 'between-method triangulation can take many forms, but its basic feature will be the combination of two or more different research strategies in the study of the same empirical units'.⁵⁹ The rationale for this strategy is that 'the flaws of one method are often the strengths of another; and by combining methods, observers can achieve the best of each while overcoming their unique deficiencies'.⁶⁰ Data triangulation refers to the selection of dissimilar comparison groups as a sampling strategy in order to discover what concepts the groups have in common across settings. Within the data triangulation construct, Denzin delineates subtypes of *time*, *space* and *person*, in the sense that 'all sociological observations relate to activities of socially situated persons' and 'a focus on time and space as observational units recognizes their relationship to the observations of persons'.⁶¹

In this study, the 'empirical units' are the mutual fund management companies (*person as collectivity*⁶²) and the data sources will be a combination of (1) mutual fund prospectuses and annual reports (primary data) and (2) historical mutual fund risk-returns data. The *space* or 'social area' in the context of this study is the medium within which official shareholder communications take place, namely, the written documents from investment companies specified in (1) above. The *time* subtype is addressed by examining mutual fund prospectuses for indications of fund management company investment objectives/risk-taking *ex ante*, while examining annual reports and secondary data for evidence of fund management company investment objectives/risk-taking *ex post*.

Silverman notes that ethnography seeks to understand the organisation of social action in particular settings⁶³ and Hammersley and Atkinson argue that, as written accounts are an important feature of many settings, ethnographers need to take account of documents as a reflection of the setting under investigation.⁶⁴ These latter authors cite the extensive use of documents by Gamst⁶⁵ in his study of locomotive engineers and in research emanating from the early Chicago School. Patton observes that a particularly rich source of information about many programmes is programme records and documents and that 'in contemporary society, all programs leave a trail of paper that the evaluator can follow and use to increase knowledge and understanding about the program'.⁶⁶ Similarly, Silverman suggests that public records constitute a 'potential goldmine' for investigation in large part because they reveal how agencies account for and legitimate their activities.⁶⁷

Hammersley and Atkinson offer an enthusiastic endorsement of the use of documents in qualitative research:

'The presence and significance of documentary products provides the ethnographer with a rich vein of analytic topics, as well as a valuable source of information. Such topics include: How are documents written? How are they read? Who writes them? Who reads them? For what purpose? On what occasions? With what outcomes? What is recorded? What is omitted? What is taken for granted? What does the writer seem to take for granted about the reader(s). What do readers need to know in order to make sense of them?'⁶⁸

Altheide suggests that several aspects of an ethnographic research approach can be applied to document analysis to produce ethnographic content analysis (ECA),⁶⁹ defined generally as the reflexive analysis of documents.⁷⁰ Although Altheide⁷¹ acknowledges that ECA has been less widely recognised as a distinctive research method, he notes that various facets of the approach are apparent in document analyses by historians, literary scholars and social scientists. More recently, Altheide⁷² defines ECA as ‘an integrated method, procedure and technique for locating, identifying, retrieving and analyzing documents for their relevance, significance and meaning’, where ‘the emphasis is on discovery and description, including search for contexts, underlying meanings, patterns and processes’. Thematic categories using ECA are established both *a priori* and through a content analysis of text. Once the researcher has derived categories and a coding system from the ethnographic study data, quantitative content analysis design provides a set of procedures to systematically code the categories with reliability checks to analyse, validate and report the results.^{73,74} Within ECA, concept development, sampling, data collection, data coding, data analysis and interpretation are reflexive.^{75,76}

Although creation of a mutual fund prospectus and annual report typically reflect the efforts of various agents — investment banks, lawyers, advertising firms etc — these documents are a product, ultimately, of the investment company offering the mutual fund. As such, prospectuses and annual reports are essentially cultural artefacts⁷⁷ or ‘patterns of cultural construction’⁷⁸ unique to a specific group of industry professionals.

Thus, notwithstanding the fact that the prospectus and annual report are ostensibly written for investors and must meet certain standards by law for readability and intelligibility, one may expect that these documents will contain technical terminology, conceptual themes and language generally, that are idiosyncratic to the investment company and/or to the fund management industry. Meaning and significance (for the outsider) may be obscured, ambiguous or heavily nuanced. Prospectuses and annual reports therefore, are subject to rigorous discovery and interpretive research procedures, supporting an ECA approach to analysis.

Data sources

As indicated earlier, the social area in the context of this study — the locus where investment company and investor ‘meet’ — is the mutual fund prospectus. Although the social mode of the prospectus is a monologue, it nevertheless represents the setting within which the investment company and the investor interact, in the sense that information is exchanged.

The primary data sample has been drawn from US mutual fund prospectuses and annual reports employing a strategy that reflects *purposeful* sampling. The sample is purposeful in that funds have been selected for inclusion based on a number of criteria that are ‘congruent with the study purpose and that will yield data on major study questions’⁷⁹ specifically: (1) age of the fund, (2) type of fund, (3) amount of assets under management and (4) representation in the secondary data sample. Criterion 1 is necessary to include in the data set only those mutual

funds that were operating during the study window. Criterion 2 is necessary to include in the data set only those mutual funds permitted by charter to (i) hold equities generally, (ii) hold equities outside of a narrow class of securities, ie sector funds and (iii) actively manage the portfolio. Criterion 3 is intended to capture large active equity funds in terms of assets under management, ie those that, in the aggregate, controlled a large share of the equity market in the late 1990s. Finally, criterion 4 facilitates a comparative analysis of mutual fund investment objectives/risk-taking as communicated to investors *ex ante* in the prospectus and *ex post* in the annual reports, with *actual* levels of portfolio risk incurred by these same funds over the associated observation period. Thus, criterion 4 contributes to the data triangulation aspect of the study (see the earlier discussion). A total of 40 documents — prospectuses and annual reports — issued by four US mutual funds over the period 1996–2000 were selected for analysis.

The secondary data have been provided by Lipper, a Reuters company, and consist of the following measures for each fund for each calendar year between 1995 and 2000: standard deviation, beta and R^2 against the S&P 500 Index. The modern portfolio theory (MPT) statistics (beta, R^2) are estimated by performing a least-squares regression of the fund's return over US Treasury bills (excess return) and the excess returns of the S&P 500 Index on a monthly basis. Beta and standard deviation figures are annualised. A second data sample consists of sector weightings for each of the mutual funds appearing in the primary data sample. Sector weightings are reported once

annually for each year between 1996 and 2000. These data have been provided by Morningstar, Inc.

Procedures

The mutual fund prospectuses and annual reports were examined using ECA as discussed above. The materials were initially reviewed to enhance familiarity with the basic organisational structure, conceptual framework and terminology across documents. This process was facilitated by previous experience with similar documents in both research and portfolio management. The literature review and preliminary questions for study helped to identify some general conceptual categories and descriptive themes in the materials, which were noted. Categories provide structure for grouping units of analysis into the same conceptual units that have similar meaning,⁸⁰ however, as Altheide points out, 'although [certain] categories and variables initially guide the [ECA] study, others are allowed and expected to emerge throughout the study'.⁸¹ Thus, ECA is a process of constant discovery and constant comparison of meanings and nuances.⁸² To avoid a claim of 'forcing' an outcome, however, it is important to ensure that caution is employed in relation to how categories are defined and in assigning patterns of language use into each category. In the present paper, this type of control was aided by the legal obligation of the investment company to disclose specific information within the prospectus.

Employing a reflexive process, the study group worked across documents in the sample and employed a process of iteration between the data and the emerging classification system. Although

ethnographic analysis allows for data to be allocated to more than one category,^{83,84} it was found that in this study it was possible to construct categories which ultimately met the criteria of 'internal homogeneity' and 'external homogeneity' as set forth by Guba;⁸⁵ the former being demonstrated by the fact that the data within each category dovetailed in a meaningful way and the latter because there is a clear difference between categories, that is, a lack of overlap and duplication. It was, however, possible to establish relationships between categories which enabled questions to be refined and facilitated analysis of the data with quantitative content analysis. As Altheide suggests, once the categories and coding system have been derived using ECA, a *quantitative* content analysis design can provide a set of procedures to code the categories systematically with reliability checks embodied in the framework to analyse, validate and report results.⁸⁶ The final categories and definitions were as follows:

- *Investment objective*: Statements or data that indicate the objective(s) or goal(s) of the fund. Statements were made either by specific, named individuals, eg 'John Smith' the fund manager, or by the investment company as a collective, or both.
- *Risk exposure*: Statements or data that indicate the type of risks an investor in the fund may be (*ex ante*) or were (*ex post*) exposed to. As in the prior category, statements were made either by specific named individuals or by the investment company as a collective, or both.

As indicated earlier, ethnographic content analysis is used to document and

understand the communication of meaning, as well as to verify theoretical relationships.⁸⁷ Informed by this approach, the individual data elements in each category were examined within the context of the various theoretical models of risk and return discussed in the literature review, interpreted and subsequently subsumed into broader, generalised categories for further analysis. The data generated by the coding system were analysed using quantitative frequency counts as well as by qualitative narrative data from the text.⁸⁸ Thus, narrative and numeric data are presented concurrently⁸⁹ to support a descriptive interpretation. Validation is supported by the use of examples from the text itself to demonstrate claims⁹⁰ and through data triangulation⁹¹ where the coded data appearing in a mutual fund prospectus (*ex ante*) are compared with the coded data appearing in the complementary annual report (*ex post*) for the same year.⁹²

Reliability and validity of results drawn from ethnographic content analysis are enhanced via intercoder reliability.⁹³ This procedure is derived from quantitative content analysis such that categories are tested for reproducibility when coders, unaware of the objectives of the study, analyse the same text and identify comparable data categories and elements.⁹⁴ For this study, a recent MBA graduate was trained in the coding schema described above and asked to code text from a random sample of documents that had previously been coded. Interrater reliability was assessed using a Scott's phi⁹⁵ to correct for chance agreement. Krippendorff⁹⁶ suggests that a phi reliability score above 0.80 indicates trustworthy coding for supporting category definitions and

drawing inferences. The secondary coder's percentage of agreement with this researcher was 0.82. When high reliability is achieved, the coding rules can be applied to the entire text.⁹⁷

As US mutual funds frequently fail to disclose their target or 'best-fit' benchmark index in official communications, changes in active/residual risk,⁹⁸ that is, the risk associated with active management of a portfolio such that holdings diverge from a passive benchmark portfolio, were assessed by including in the test sample only those funds with R^2 measures relative to the S&P 500 Index of greater than 0.50 in the base year (1995) and in every year of the study window (1996–2000). This ensures a good fit with the S&P 500 and contributes to the meaningfulness of the tracking error values. The significance of R^2 values is discussed by Field.⁹⁹

RESULTS AND ANALYSIS

Figure 1 illustrates the data elements

found in the investment objective and risk-taking categories. Working definitions for the data elements have been drawn from the financial models discussed in the literature review; thus, for example, text referring to the risk associated with investing in a specific security was classified as exposure to 'idiosyncratic risk'.¹⁰⁰

Frequency counts and descriptive statistics for the data elements by document type and year for each fund are presented in Tables 1–4, respectively.

Observed levels of volatility (as measured by standard deviation), market risk (as measured by beta), residual risk (as measured by tracking error) and pseudo-industry risk (as proxied by the proportion of portfolio assets invested in technology firms) for each fund by year are provided in Table 5. The presentation of data in this format particularly facilitates the *time* subtype of the triangulation aspect of the analysis as counts in prospectuses (*ex ante*, narrative) can be readily compared with counts in

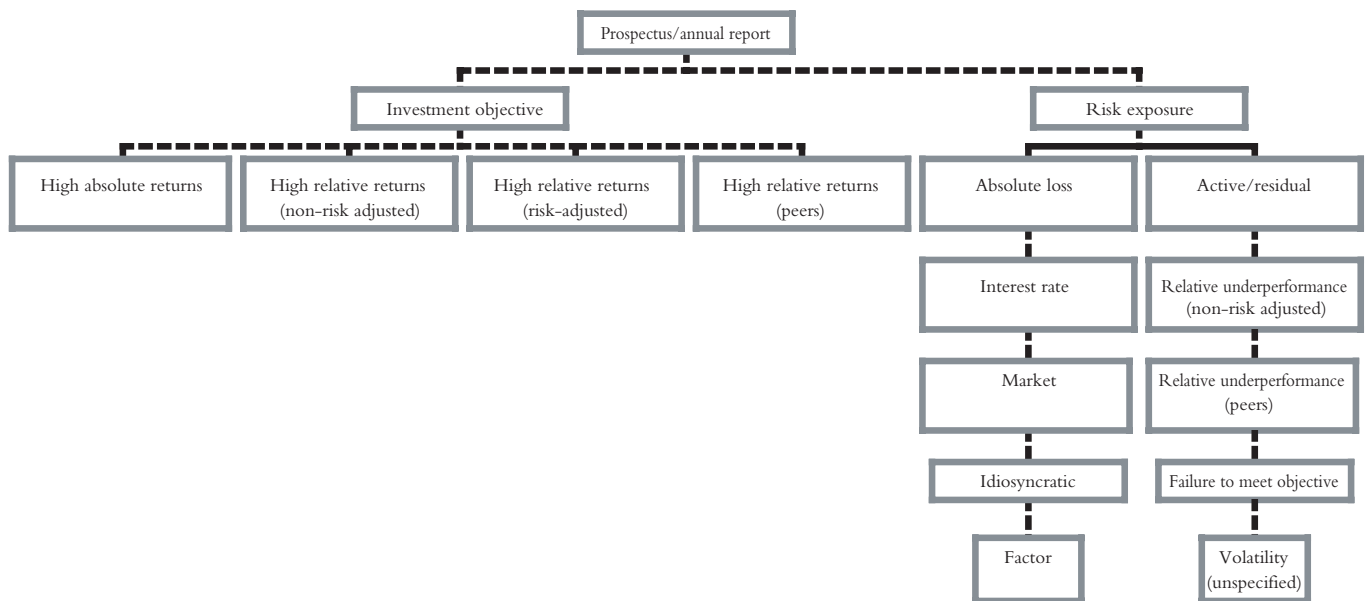


Figure 1: ECA data categories and data elements

Table 1: Vanguard Tax Managed Capital Appreciation Fund frequency counts and descriptive statistics

	Investment objective			
	High absolute returns	High relative returns (non-risk-adjusted)	High relative returns (risk-adjusted)	High relative returns (peers)
Prospectus: 04/19/1996	4	1	5	1
Annual report: 12/31/1996	3	2	2	4
Prospectus: 04/18/1997	3	1	4	1
Annual report: 12/31/1997	2	2	2	7
Prospectus: 04/27/1998	3	1	4	1
Annual report: 12/31/1998	6	1	7	8
Prospectus: 02/22/1999	2	0	3	0
Annual report: 12/31/1999	9	1	12	15
Prospectus: 03/28/2000	3	0	4	0
Annual report: 12/31/2000	2	1	6	7
Mean: All documents	3.70	1.00	4.90	4.40
SD: All documents	2.10	0.63	2.81	4.61
Prospectus: 04/19/1996	4	1	5	1
Prospectus: 04/18/1997	3	1	4	1
Prospectus: 04/27/1998	3	1	4	1
Prospectus: 02/22/1999	2	0	3	0
Prospectus: 03/28/2000	3	0	4	0
Mean: Prospectuses	3.00	0.60	4.00	0.60
SD: Prospectuses	0.71	0.55	0.71	0.55
Annual report: 12/31/1996	3	2	2	4
Annual report: 12/31/1997	2	2	2	7
Annual report: 12/31/1998	6	1	7	8
Annual report: 12/31/1999	9	1	12	15
Annual report: 12/31/2000	2	1	6	7
Mean: Annual reports	4.40	1.40	5.80	8.20
SD: Annual reports	3.05	0.55	4.15	4.09

	Risk exposure									
	Absolute loss	Interest rate	Market	Idiosyncratic	Factor	Active/residual	Relative under performance (non-risk-adjusted)	Relative under performance (peers)	Failure to meet objective	Volatility (undefined)
Prospectus: 04/19/1996	4	1	3	0	2	5	1	0	1	1
Annual report: 12/31/1996	0	0	1	0	0	6	0	0	0	0
Prospectus: 04/18/1997	4	0	4	0	2	6	1	0	1	1
Annual report: 12/31/1997	0	0	2	0	0	5	0	0	0	0
Prospectus: 04/27/1998	3	0	4	0	0	7	1	0	1	1
Annual report: 12/31/1998	1	0	3	0	0	2	1	0	0	1
Prospectus: 02/22/1999	4	0	2	0	3	2	0	0	0	1
Annual report: 12/31/1999	1	0	1	0	1	1	0	0	0	1
Prospectus: 03/28/2000	4	0	3	0	3	1	0	0	0	1
Annual report: 12/31/2000	2	0	1	0	2	2	0	3	0	1
Mean: All documents	2.30	0.10	2.40	0.00	1.30	3.70	0.40	0.30	0.30	0.80
SD: All documents	1.62	0.30	1.11	0.00	1.19	2.19	0.49	0.90	0.46	0.40
Prospectus: 04/19/1996	4	1	3	0	2	5	1	0	1	1
Prospectus: 04/18/1997	4	0	4	0	2	6	1	0	1	1
Prospectus: 04/27/1998	3	0	4	0	0	7	1	0	1	1
Prospectus: 02/22/1999	4	0	3	0	3	2	0	0	0	1
Prospectus: 03/28/2000	4	0	4	0	3	1	0	0	0	1
Mean: Prospectuses	3.80	0.20	3.60	0.00	2.00	4.20	0.60	0.00	0.60	1.00
SD: Prospectuses	0.45	0.45	0.55	0.00	1.22	2.59	0.55	0.00	0.55	0.00
Annual report: 12/31/1996	0	0	1	0	0	6	0	0	0	0
Annual report: 12/31/1997	0	0	2	0	0	5	0	0	0	0
Annual report: 12/31/1998	1	0	4	0	0	2	1	0	0	1
Annual report: 12/31/1999	1	0	1	0	1	1	0	0	0	1
Annual report: 12/31/2000	2	0	1	0	2	2	0	3	0	1
Mean: Annual reports	0.80	0.00	1.80	0.00	0.60	3.20	0.20	0.60	0.00	0.60
SD: Annual reports	0.84	0.00	1.30	0.00	0.89	2.17	0.45	1.34	0.00	0.55

Table 2: Legg Mason Value Trust frequency counts and descriptive statistics

	Investment objective			
	High absolute returns	High relative returns (non-risk-adjusted)	High relative returns (risk-adjusted)	High relative returns (peers)
Prospectus: 07/14/1995	16	5	1	0
Annual report: 03/31/1996	16	24	0	4
Prospectus: 07/31/1996	16	20	1	3
Annual report: 03/31/1997	36	9	0	1
Prospectus: 07/31/1997	16	6	2	3
Annual report: 03/31/1998	26	7	0	1
Prospectus: 05/29/1998	16	6	2	3
Annual rReport: 03/31/1999	27	7	1	5
Prospectus: 07/30/1999	9	5	3	3
Annual report: 03/31/2000	25	8	0	3
Mean: All documents	20.30	9.70	1.00	2.60
SD: All documents	7.52	6.33	1.00	1.43
Prospectus: 07/14/1995	16	5	1	0
Prospectus: 07/31/1996	16	20	1	3
Prospectus: 07/31/1997	16	6	2	3
Prospectus: 05/29/1998	16	6	2	3
Prospectus: 07/30/1999	9	5	3	3
Mean: Prospectuses	14.60	8.40	1.80	2.40
SD: Prospectuses	3.13	6.50	0.84	1.34
Annual report: 03/31/1996	16	24	0	4
Annual report: 03/31/1997	36	9	0	1
Annual report: 03/31/1998	26	7	0	1
Annual report: 03/31/1999	27	7	1	5
Annual rReport: 03/31/2000	25	8	0	3
Mean: Annual reports	26.00	11.00	0.20	2.80
SD: Annual reports	7.11	7.31	0.45	1.79

	Risk exposure									
	Absolute loss	Interest rate	Market	Idio-synchratic	Factor	Active/residual	Relative under performance (non-risk-adjusted)	Relative under performance (peers)	Failure to meet objective	Volatility (undefined)
Prospectus: 07/14/1995	12	1	0	3	2	5	0	0	1	1
Annual report: 03/31/1996	1	0	0	10	0	0	6	0	0	1
Prospectus: 07/31/1996	16	4	0	3	4	6	2	0	1	3
Annual report: 03/31/1997	1	0	0	20	0	1	1	0	0	1
Prospectus: 07/31/1997	17	6	0	4	4	7	0	0	1	2
Annual report: 03/31/1998	0	0	0	10	0	1	0	0	0	1
Prospectus: 05/29/1998	17	6	0	4	4	7	0	0	1	2
Annual report: 03/31/1999	1	0	0	13	0	1	1	0	0	1
Prospectus: 07/30/1999	17	7	3	9	10	8	0	0	2	1
Annual report: 03/31/2000	0	0	0	12	0	0	9	9	0	0
Mean: All documents	8.20	2.40	0.30	8.80	2.40	3.60	1.90	0.90	0.60	1.30
SD: All documents	7.73	2.84	0.90	5.19	3.07	3.10	2.95	2.70	0.66	0.78
Prospectus: 07/14/1995	12	1	0	3	2	5	0	0	1	1
Prospectus: 07/31/1996	16	4	0	3	4	6	2	0	1	3
Prospectus: 07/31/1997	17	6	0	4	4	7	0	0	1	2
Prospectus: 05/29/1998	17	6	0	4	4	7	0	0	1	2
Prospectus: 07/30/1999	17	7	0	9	10	8	0	0	2	1
Mean: Prospectuses	15.80	4.80	0.00	4.60	4.80	6.60	0.40	0.00	1.20	1.80
SD: Prospectuses	2.17	2.39	0.00	2.51	3.03	1.14	0.89	0.00	0.45	0.84
Annual report: 03/31/1996	1	0	0	10	0	0	6	0	0	1
Annual report: 03/31/1997	1	0	0	20	0	1	1	0	0	1
Annual report: 03/31/1998	0	0	0	10	0	1	0	0	0	1
Annual report: 03/31/1999	1	0	0	13	0	1	1	0	0	1
Annual report: 03/31/2000	0	0	0	12	0	0	9	9	0	0
Mean: Annual reports	0.60	0.00	0.00	13.00	0.00	0.60	3.40	1.80	0.00	0.80
SD: Annual reports	0.55	0.00	0.00	4.12	0.00	0.55	3.91	4.02	0.00	0.45

Table 3: Vanguard Asset Allocation Fund frequency counts and descriptive statistics

	Investment objective				Risk exposure									
	High absolute returns	High relative returns (non-risk-adjusted)	High relative returns (risk-adjusted)	High relative returns (peers)	Absolute loss	Interest rate	Market	Idio-syncretic	Factor	Active/residual	Relative under performance (non-risk-adjusted)	Relative under performance (peers)	Failure to meet objective	Volatility (undefined)
Prospectus: 01/05/1996	6	4	3	0	7	0	5	0	0	5	1	0	2	0
Annual report: 09/30/1996	3	12	3	8	0	0	3	0	0	0	6	0	0	0
Prospectus: 01/10/1997	7	3	3	0	7	0	4	0	0	5	4	0	2	0
Annual report: 09/30/1997	6	5	2	7	0	0	2	0	0	6	4	1	0	0
Prospectus: 01/05/1998	7	1	6	0	7	0	6	0	0	4	4	0	3	0
Annual report: 09/30/1998	4	8	8	11	0	0	4	0	0	4	5	0	0	1
Prospectus: 01/15/1999	5	2	8	0	7	0	5	0	0	8	3	2	1	2
Annual report: 09/30/1999	7	3	13	11	1	0	2	0	0	1	8	3	0	1
Prospectus: 01/03/2000	5	2	9	0	7	0	6	0	0	7	3	2	2	3
Annual report: 09/30/2000	12	2	15	8	0	0	1	0	0	9	6	3	0	1
Mean: All documents	6.20	4.20	7.00	4.50	3.60	0.00	3.80	0.00	0.00	4.90	4.40	1.10	1.00	0.80
SD: All documents	2.32	3.22	4.24	4.65	3.41	0.00	1.66	0.00	0.00	2.70	1.85	1.22	1.10	0.98
Prospectus: 01/05/1996	6	4	3	0	7	0	5	0	0	5	1	0	2	0
Prospectus: 01/10/1997	7	3	3	0	7	0	4	0	0	5	4	0	2	0
Prospectus: 01/05/1998	7	1	6	0	7	0	6	0	0	4	4	0	3	0
Prospectus: 01/15/1999	5	2	8	0	7	0	5	0	0	8	3	2	1	2
Prospectus: 01/03/2000	5	2	9	0	7	0	6	0	0	7	3	2	2	3
Mean: Prospectuses	6.00	2.40	5.80	0.00	7.00	0.00	5.20	0.00	0.00	5.80	3.00	0.80	2.00	1.00
SD: Prospectuses	1.00	1.14	2.77	0.00	0.00	0.00	0.84	0.00	0.00	1.64	1.22	1.10	0.71	1.41
Annual report: 09/30/1996					0	0	3	0	0	0	6	0	0	0
Annual report: 09/30/1997					0	0	2	0	0	6	4	1	0	0
Annual report: 09/30/1998					0	0	4	0	0	4	5	0	0	1
Annual report: 09/30/1999					1	0	2	0	0	1	8	3	0	1
Annual report: 09/30/2000					0	0	1	0	0	9	6	3	0	1
Mean: Annual reports					0.20	0.00	2.40	0.00	0.00	4.00	5.80	1.40	0.00	0.60
SD: Annual reports					0.45	0.00	1.14	0.00	0.00	3.67	1.48	1.52	0.00	0.55

Table 4: Brandywine Fund frequency counts and descriptive statistics

	Investment objective			
	High absolute returns	High relative returns (non-risk-adjusted)	High relative returns (risk-adjusted)	High relative returns (peers)
Prospectus: 01/31/1996	14	3	0	2
Annual report: 09/30/1996	56	17	0	9
Prospectus: 01/15/1997	15	2	0	1
Annual report: 09/30/1997	65	10	0	11
Prospectus: 01/30/1998	16	2	0	2
Annual report: 09/30/1998	37	5	0	0
Prospectus: 11/30/1998	14	5	1	0
Annual report: 09/30/1999	33	22	0	2
Prospectus: 11/30/1999	11	3	0	0
Annual report: 09/30/2000	37	15	1	3
Mean: All documents	29.80	8.40	0.20	3.00
SD: All documents	18.17	6.84	0.40	3.66
Prospectus: 01/31/1996	14	3	0	2
Prospectus: 01/15/1997	15	2	0	1
Prospectus: 01/30/1998	16	2	0	2
Prospectus: 11/30/1998	14	5	1	0
Prospectus: 11/30/1999	11	3	0	0
Mean: Prospectuses	14.00	3.00	0.20	1.00
SD: Prospectuses	1.87	1.22	0.45	1.00
Annual report: 09/30/1996	56	17	0	9
Annual report: 09/30/1997	65	10	0	11
Annual report: 09/30/1998	37	5	0	0
Annual report: 09/30/1999	33	22	0	2
Annual report: 09/30/2000	37	15	1	3
Mean: Annual reports	45.60	13.80	0.20	5.00
SD: Annual reports	14.06	6.53	0.45	4.74

	Risk exposure									
	Absolute loss	Interest rate	Market	Idio-synchratic	Factor	Active/residual	Relative under performance (non-risk-adjusted)	Relative under performance (peers)	Failure to meet objective	Volatility (undefined)
Prospectus: 01/31/1996	2	0	1	0	0	1	0	0	1	1
Annual report: 09/30/1996	2	0	0	10	0	0	0	0	0	0
Prospectus: 01/15/1997	2	0	1	0	0	1	1	1	1	1
Annual report: 09/30/1997	0	0	0	4	0	0	0	0	0	0
Prospectus: 01/30/1998	2	0	1	0	0	1	1	0	1	2
Annual report: 09/30/1998	11	0	5	13	0	1	0	0	0	0
Prospectus: 11/30/1998	5	0	4	0	0	2	8	2	1	1
Annual report: 09/30/1999	3	0	1	5	2	0	3	0	0	0
Prospectus: 11/30/1999	7	0	1	0	1	6	1	0	0	3
Annual report: 09/30/2000	7	0	0	5	0	0	6	0	0	0
Mean: All documents	4.10	0.00	1.40	3.70	0.30	1.20	2.00	0.30	0.40	0.80
SD: All documents	3.18	0.00	1.62	4.45	0.64	1.72	2.68	0.64	0.49	0.98
Prospectus: 01/31/1996	2	0	1	0	0	1	0	0	1	1
Prospectus: 01/15/1997	2	0	1	0	0	1	1	1	1	1
Prospectus: 01/30/1998	2	0	1	0	0	1	1	0	1	2
Prospectus: 11/30/1998	5	0	4	0	0	2	8	2	1	1
Prospectus: 11/30/1999	7	0	1	0	1	6	1	0	0	3
Mean: Prospectuses	3.60	0.00	1.60	0.00	0.20	2.20	2.20	0.60	0.80	1.60
SD: Prospectuses	2.30	0.00	1.34	0.00	0.45	2.17	3.27	0.89	0.45	0.89
Annual report: 09/30/1996	2	0	0	10	0	0	0	0	0	0
Annual report: 09/30/1997	0	0	0	4	0	0	0	0	0	0
Annual report: 09/30/1998	11	0	5	13	0	1	0	0	0	0
Annual report: 09/30/1999	3	0	1	5	2	0	3	0	0	0
Annual report: 09/30/2000	7	0	0	5	0	0	6	0	0	0
Mean: Annual reports	4.60	0.00	1.20	7.40	0.40	0.20	1.80	0.00	0.00	0.00
SD: Annual reports	4.39	0.00	2.17	3.91	0.89	0.45	2.68	0.00	0.00	0.00

Table 5: Observed levels of risk

Fund name	Std Dev	Beta	Tech %*	Trk Err	Std Dev	Beta	Tech %*	Trk Err	Std Dev	Beta	Tech %*	Trk Err
	12/31/1994	12/31/1994	31/12/1994	12/31/1994	12/31/1994	12/31/1995	12/31/1995	12/31/1995	12/31/1995	12/31/1996	12/31/1996	12/31/1996
Vanguard TM Cp App: Inv	6.90	1.12	N/A	1.25	12.08	1.09	22.50	1.35	16.34	1.01	18.70	1.51
Legg Mason Value Tr: Prm	7.72	1.21	N/A	1.5	11.69	1.02	15.00	1.31	18.89	1.11	26.80	2.39
Vanguard Asset Alloc: Inv	4.34	0.71	N/A	0.86	8.42	0.77	11.30	1.06	11.03	0.70	14.10	1.63
Brandywine Fund	15.34	1.29	N/A	4.23	15.64	1.25	40.40	2.80	19.24	0.86	35.40	4.22
Legg Mason Value Tr: Prm	7.72	1.21	N/A	1.50	11.69	1.02	15.00	1.31	18.89	1.11	26.80	2.39
Vanguard 500 Index: Inv	4.98	1.00		0.01	10.40	1.00		0.01	15.27	1.00		0.01

Fund name	Std Dev	Beta	Tech %*	Trk Err	Std Dev	Beta	Tech %*	Trk Err	Std Dev	Beta	Tech %*	Trk Err
	12/31/1997	12/31/1997	12/31/1998	12/31/1998	12/31/1997	12/31/1998	12/31/1998	12/31/1998	12/31/1998	12/31/1999	12/31/1999	12/31/1999
Vanguard TM Cp App: Inv	24.82	1.21	23.20	1.50	15.30	1.16	30.60	1.47	19.83	1.12	23.70	2.48
Legg Mason Value Tr: Prm	27.62	1.29	21.20	3.11	19.64	1.28	34.40	3.54	19.31	1.13	13.30	1.93
Vanguard Asset Alloc: Inv	13.18	0.62	15.60	2.33	7.46	0.56	23.80	1.89	9.04	0.53	28.40	2.43
Brandywine Fund	27.41	1.27	48.20	3.70	19.38	1.22	60.70	3.64	24.06	0.88	30.90	5.88
Legg Mason Value Tr: Prm	27.62	1.29	21.20	3.11	19.64	1.28	34.40	3.54	19.31	1.13	13.30	1.93
Vanguard 500 Index: Inv	20.61	1.00		0.02	12.60	1.00		0.03	16.40	1.00		0.03

*As per Morningstar Principia database. Figures do not always correspond with those appearing in annual reports.

annual reports (*ex post*, narrative) and measured risk exposures (*ex post*, observed).

A Spearman correlation coefficient matrix for the data elements across all documents, years and funds appears in Table 6.

At a confidence interval of 95 per cent, the association between the investment objective of ‘high absolute returns’ and ‘idiosyncratic’ risk is positive and significant; the associations between ‘high absolute returns’ and ‘market’ risk and ‘active’ risk, respectively, are each negative and significant. Similarly, the association between the investment objective of ‘high relative returns (non-risk-adjusted)’ and ‘idiosyncratic’ risk is positive and significant, while the association between the same objective and ‘market’ and ‘active’ risk, respectively, is again negative and significant. Conversely, the investment objective of ‘high relative returns (risk-adjusted)’ is negatively associated with ‘idiosyncratic’ risk and positively associated with both ‘market’ risk and ‘active’ risk, respectively. Finally, the association between the investment

objective of ‘high relative returns (peers)’ and the risks of ‘absolute loss’ and ‘failure to meet investment objective’ are each negative and significant.

The empirical results suggest that where disclosure and reporting documents reflect a focus on the investment objectives of delivering high absolute returns or high relative returns on a non-risk-adjusted basis, mutual fund narratives orient around specific risk associated with individual securities; conversely, there is a dearth of discussion on portfolio risk relative to either the market or an appropriate benchmark. One manifestation of this tendency, *ex post*, is that historical returns for these funds are typically presented in narrative text and tables that omit performance comparisons with relevant market indices. These findings are consistent with predictions in the literature where, in the pursuit of high absolute returns, active equity managers may be expected to concentrate on ‘stock picking’ rather than portfolio optimisation within a systematic or mean-variance framework. This frequently results in a portfolio which contains a substantial amount of

Table 6: Spearman correlation coefficients

Risk exposure	Absolute returns	Investment Relative returns (non-risk-adjusted)	Objective Relative returns (risk-adjusted)	Relative returns (peers)
Absolute loss	-0.033386708	0.057773846	-0.145599367	-0.420637349
Interest rate	-0.035179222	0.111940175	-0.100295795	-0.075097683
Market	-0.479938474	-0.442475398	0.374520252	-0.283995172
Idiosyncratic	0.646312095	0.481583042	-0.451428532	-0.081205730
Factor	-0.148998854	0.019416100	-0.054517629	-0.139625453
Active/residual	-0.497642902	-0.369582384	0.341463824	-0.223573262
Relative underperformance (non-risk-adjusted)	-0.075545522	0.271206415	0.253875415	0.127700234
Relative underperformance (peers)	-0.034938954	-0.093313938	0.221780373	0.073968375
Failure to meet objective	-0.293840046	-0.263611605	0.056746469	-0.500775465
Volatility (undefined)	-0.252929602	-0.110206568	0.153198095	-0.219585890

unique risk and where performance is detached from an appropriate benchmark.¹⁰¹

Conversely, the data suggest that, where a fund adopts the primary objective of producing high relative returns (*risk-adjusted*), the investment company draws attention to market and active risk in shareholder communications while devoting a minimum amount of space to disclosure or discussion of idiosyncratic risk; the former can be seen in investment performance that is typically compared with an appropriate best-fit index. These results too are consistent with the literature, which suggests that managers who focus on risk-adjusted returns will be inclined to construct well-diversified portfolios closely linked to an appropriate benchmark and where excess returns will be governed largely by adjustments to levels of systematic and residual risk.^{102,103}

Where the funds in the present study pursue the objective of outperforming their peers (competing funds), they are particularly averse to a discussion of the risk of (1) absolute loss, ie loss of investor capital and (2) failing to meet their investment objective. The disinclination to warn investors on the first possibility may simply be due to relative indifference to absolute loss, a risk factor which is not directly related to a failure to deliver superior *comparative* performance. Reticence to advise investors that the fund may fail to meet its objective, however, clearly reflects a failure to disclose a relevant risk to mutual fund shareholders.

The following two sections provide a detailed exposition of the ECA results for two of the four funds in the sample.¹⁰⁴

Vanguard Tax Managed Capital Appreciation Fund

The Vanguard Tax Managed Capital Appreciation Portfolio (VMCAX) was launched in 1994 and is one of over 200 funds in the Vanguard family. VMCAX currently manages over US\$4bn in assets and is currently categorised as a 'large blend' fund by Morningstar. According to the most recent prospectus (20th July, 2007), 'the fund seeks to provide a tax-efficient investment return consisting of long-term capital appreciation' by purchasing 'stocks that pay lower dividends and are included in the Russell 1000 Index'.

Across all documents and years for VMCAX, the investment objective occurring with the highest mean frequency is 'high relative return (risk-adjusted)' (see Figure 2). On average, this objective had the highest number of occurrences across prospectuses, although it came second to 'high relative returns (peers)' across annual reports. Typically, VMCAX identifies its benchmark index in the prospectus and subsequently compares fund performance for the year with this benchmark in the annual report. An exemplary reference from the 1996 prospectus reads:

'The Capital Appreciation Portfolio seeks to provide growth of capital with nominal current income from investments in equity securities; the Russell 1000 Index is the Portfolio's benchmark index.'

Across all documents and years for VMCAX, the risk exposure occurring with the highest mean frequency is 'active/residual risk'. This exposure also occurs most frequently, on average, across prospectuses and annual reports,

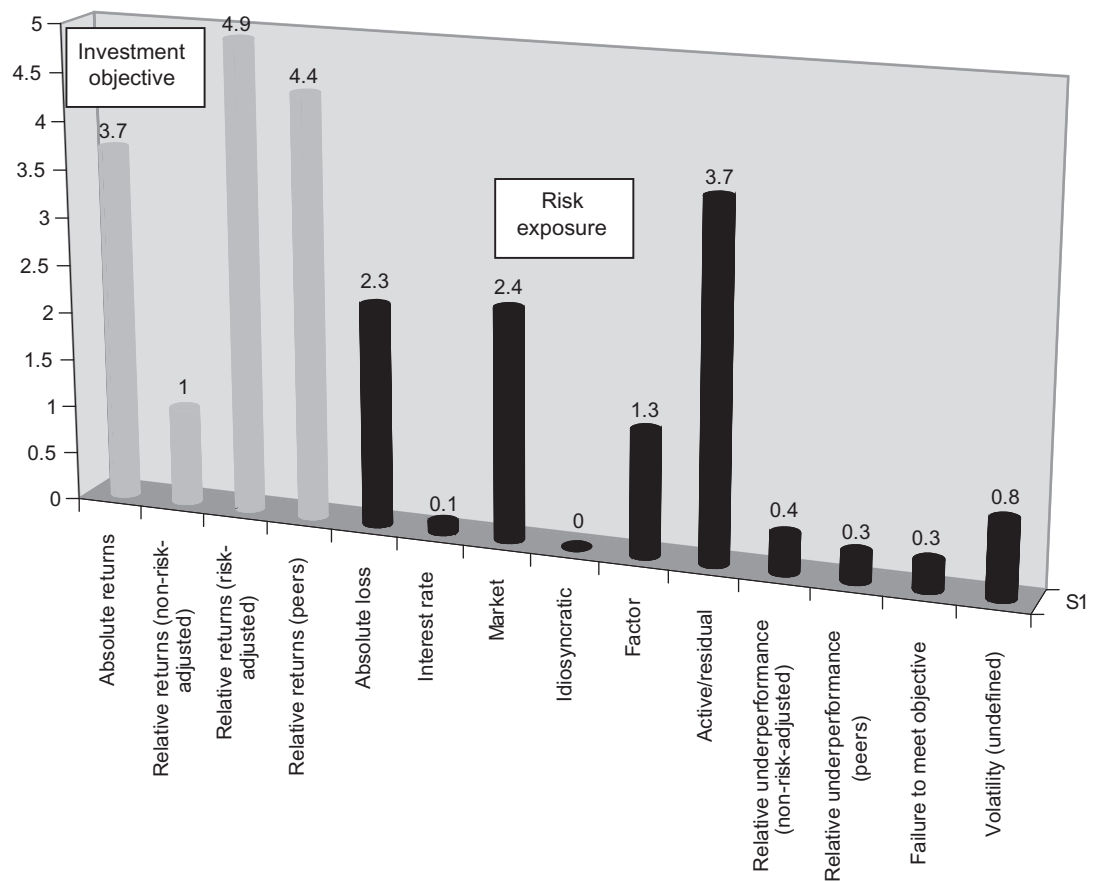


Figure 2: Vanguard Tax Managed Capital Appreciation Fund mean counts across all years and documents

respectively; although in 1999, it was surpassed by the number of references to 'absolute loss' and 'factor risk' in the combination of prospectus and annual report and in 2000 by references to 'absolute loss', 'factor risk' and 'market risk' in the combination of prospectus and annual report. In the 1997 prospectus, a reference to active/residual risk reads, 'The Portfolio emphasizes low yielding stocks; therefore, its return will vary from the return of the Russell 1000 Index'.

Note that, while VMCA is tied via benchmarking to the Russell 1000 Index, investors are effectively advised that they will be exposed to active/residual risk associated with the active

selection of securities.

In Table 5, one can see measured levels of risk for VMCA for the base year 1995 and for subsequent years, corresponding roughly to the periods for each prospectus and annual report combination. R^2 measured against the S&P 500 Index is relatively high, fluctuating between a minimum of 0.65 in the base year and a maximum of 0.99 in 1998; so although the Russell 1000 is the benchmark index reported in company documents, the S&P 500 is a reasonably good fit index for VMCA and market betas and tracking errors estimated against the S&P 500 are deemed meaningful risk indicators for VMCA.

As discussed above, 'active/residual risk' is the most frequently occurring reference, on average, across all documents in the risk exposure category. However, references to active/residual risk decline steeply beginning with the annual report in 1998 and remain infrequent in both the prospectuses and annual reports for 1999 and 2000. In a divergence from the narrative data, measured tracking error figures for VMCAx rise in a near-linear fashion from a low of 1.25 in the base year to a high of 2.48 in 2000 (see Table 5). By contrast, the secondary data generally support the primary data for 'market risk', which occur second in frequency to 'active/residual risk' across all prospectuses and annual reports. With the exception of 1997, for example, estimated systematic betas for VMCAx measure well above 1.00 throughout the study window. Thus, between 1996 and 2000, fund managers for VMCAx appear to have taken on high levels of market risk and generally increasing levels of active/residual risk. In the case of the former, this pattern was being substantially communicated to shareholders in official documents; in the latter, disclosure was strong from 1996 to 1998 but then dropped off sharply.

Another notable failure to communicate exposure is in the category of 'factor risk'. Whereas the proportion of technology stocks in the VMCAx portfolio was already relatively large in the base year (20.2 per cent) and grew to over 30 per cent of the portfolio in 1999, there was an average of only 1.3 references to 'factor risk' across all prospectuses and annual reports, although this figure did rise to a total of five references in the 2000 documents. This omission is particularly critical

from the perspective of compliance as each of the VMCAx prospectuses indicate that the portfolio will not concentrate its investments in a particular industry. Indeed, the 1997–2000 prospectuses specifically state that the fund will not 'invest more than 25 per cent of its assets in any one industry' — a covenant that appears to have been violated during at least one period, in 1999. While it may be argued that VMCAx had over 25 per cent of its assets in the technology *sector* (as opposed to *industry*), the individual holdings in this group are likely to have been similarly sensitive to many of the same macroeconomic and/or fundamental factors and thus have highly correlated returns.^{105–107} An implicit acknowledgment of this association appears in the 1999 annual report where the chairman and chief executive officer of Vanguard, John J. Brennan, reports:

'Technology stocks rocketed higher during 1999 and carried most market indexes along with them. The Vanguard Tax-Managed Funds benefited from this advance, each posting double-digit returns during the 12 months ended December 31, 1999.'

By formally classifying technology as a sector rather than an industry, Vanguard Funds may have escaped legal liability for concentrating its assets in possible contravention of its prospectus; nevertheless, the data suggest VMCAx shareholders were subject to substantial — and relatively undisclosed — factor risk during the study window.

As discussed above, an analysis of frequency counts suggests that VMCAx focused on achieving high risk-adjusted

relative returns as compared with either non-risk-adjusted relative returns or absolute returns. In the documents, performance comparisons are often drawn against the benchmark index, the Russell 1000, and Vanguard informs shareholders that returns will typically vary from the benchmark as a result of the fund manager's preference for low-yielding, ie 'growth' stocks. Interestingly, Vanguard fails to point out that, as growth stocks have a much lower risk premium historically than 'value' stocks,¹⁰⁸ expected returns for VMCAx will be lower than those of the more diversified Russell 1000 and, thus, realised returns are relatively *better* than reported when adjusted for risk. In fact, Vanguard actually misinforms shareholders by stating:

'over time we expect the returns of the Capital Appreciation Portfolio and the Russell 1000 Index to be similar because the short-term differences in returns between the growth and value segments of the market have tended to even out over longer periods.'

The abovementioned French and Fama findings on risk premiums are based on data between 1927 and 2001 — a very long period to wait for the growth segment to draw even with the value segment.

Two other points to emerge from the primary data deserve note. First, the VMCAx documents contain no reference to idiosyncratic risk. This is what one might expect given a quasi-indexing management approach resulting in a well-diversified portfolio of several hundred securities. The lack of attention to idiosyncratic risk contrasts markedly, however, with that seen in

the documents of Legg Mason Value Trust to be discussed later in this paper.

Secondly, the investment objective of 'high relative returns (peers)' occurs only three times in five prospectuses but is the most frequent investment objective across the annual reports, averaging 8.2 references. This is perhaps due, in part, to the nature of the annual report as a medium for communicating investment results; many of the occurrences appear in performance tables which typically do not comprise a part of the prospectus format. Beyond this consideration, however, it is noteworthy that VMCAx exceeded the performance of its peer group of funds in every year of the study window, with the exception of 2000. In the annual report for this final year, references to 'high relative returns (peers)' decline by over 50 per cent from the 1999 annual report. It appears that by attenuating, on an *ex ante* basis, the investment objective of superior relative performance with respect to peers, Vanguard is able to trumpet, *ex post*, excellent comparative results when these occur, while obviating potential criticism should such results fail to materialise.

Legg Mason Value Trust Primary Class

The Legg Mason Value Trust Primary Class fund (LMVTX) commenced in 1982 and is one of about 40 funds in the Legg Mason family. LMVTX currently manages over US\$21bn in assets and is currently categorised by Morningstar as a 'large growth' fund. The most recent prospectus (1st August, 2007) states:

'The fund invests primarily in equity securities that, in the adviser's opinion, offer the potential for capital growth. The

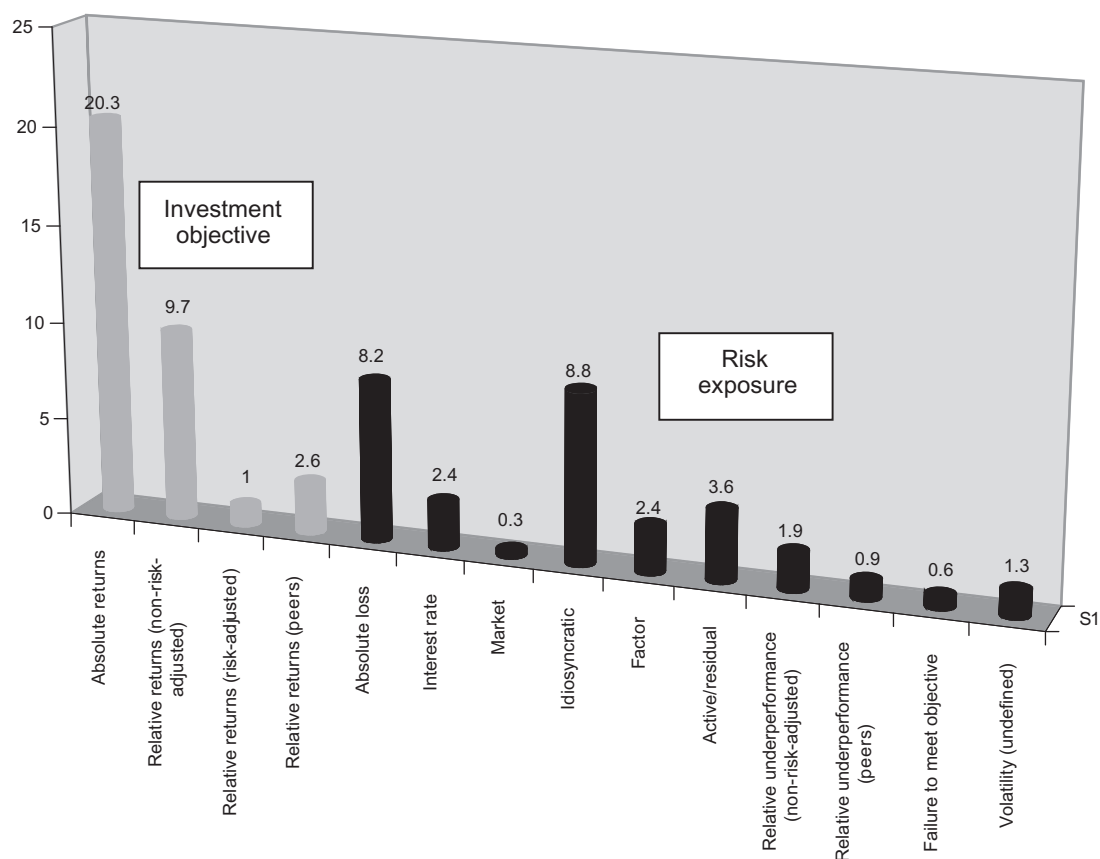


Figure 3: Legg Mason Value Trust mean counts across all years and documents

adviser follows a value discipline in selecting securities, and therefore seeks to purchase securities at large discounts to the adviser's assessment of their intrinsic value.'

Across all documents and years for LMVTX, the investment objective with the highest mean frequency is 'high absolute returns', occurring about twice as frequently as the second-ranking objective: 'high relative returns (non-risk-adjusted)' (see Figure 3). On average, 'high absolute returns' also had the highest number of references across both prospectuses and annual reports, respectively. Fund managers for LMVTX appear to focus heavily on producing long-term growth of capital by way of high absolute returns. This

focus includes a great deal of attention paid (particularly in the annual reports) to individual securities and sectors delivering high, non-risk-adjusted returns. The 1998 annual report, for example, reads:

'The Fund purchased large positions in a variety of technology companies such as Dell Computer, Storage Technology, and Digital Equipment over the last two years when such shares were under severe pressure due to concerns about earnings prospects. When those concerns did not materialize, the shares of those companies rose sharply, adding materially to the Fund's returns. We also benefited from our long-standing position in banks and financial services companies, which

performed strongly in the past twelve months.’

Note here the emphasis on the fund manager having selected ‘winning’ stocks (*ex post*) with no explicit comment on the factor risk (*ex ante*) associated with large investments in technology companies which had been suffering from the probability of distressed earnings, risk factors identified in numerous studies.¹⁰⁹

Similarly, frequent references to the investment objective ‘high relative returns (non-risk-adjusted)’ suggest a focus on delivering high relative returns while omitting, in context, a discussion of the risk factors associated with these investments. In the 1997 prospectus, for example, the fund managers write:

‘The Adviser believes that the securities of sound, well-managed companies that may be temporarily out of favour due to earnings declines or other adverse developments are likely to provide a greater total return than securities with prices that appear to reflect anticipated favourable developments . . . purchasing securities depressed by temporary factors will provide investment returns superior to those obtained when premium prices are paid for issues currently in favour.’

Moreover, LMVTX fails to identify a specific benchmark index when presenting relative results. For example, the annual reports contain tables comparing the fund’s performance versus indices representing disparate segments of the equity market, including the S&P 500, the Dow Jones Composite, the Value Line Index and the Russell 2000, some of which appear in certain years and not in others. There is no

unambiguous reference in any of the documents to a single, best-fit benchmark index for the fund. Rather, as in the 1998 annual report, LMVTX simply comments ‘The Fund had an excellent year, significantly outperforming all relevant indices’.

Similarly, the 2000 annual report reads ‘As you can see, during our fiscal year ended March 31, our results lagged those of the popular indices’.

The infrequent references to ‘high relative returns (risk-adjusted)’ occurring in LMVTX documents appear almost exclusively in discussions of the use of options and futures in an effort to achieve returns similar to those available on the same securities in the cash market, albeit with less risk.

Across all documents and years for LMVTX, the risk exposure occurring with the highest mean frequency is ‘idiosyncratic risk’. This exposure occurs most frequently, on average, across annual reports; although it is surpassed by the number of references to ‘absolute loss’ (ranked first), ‘active/residual risk’ (ranked second) and ‘factor risk’ (ranked third) across prospectuses. Given an intense focus on the investment objective of high absolute returns, it is not surprising to encounter frequent references to ‘idiosyncratic risk’ and ‘absolute loss’ as these embody the potential failure to achieve high absolute returns in a portfolio that is heavily dependent on the performance of individual securities. In every annual report during the study window, for example, LMVTX lists securities classified as ‘weak performers’, highlighting their losses for the reporting period. The prospectuses are laden with risk disclosures on the possibility of fund losses, overall. An

excerpt from the 1996 prospectus is typical in this regard:

‘Mutual Fund shares are not deposits or obligations of, or guaranteed or endorsed by, any bank or other depository institution. Shares are not insured by the FDIC, the Federal Reserve Board, or any other agency, and are subject to investment risk, including the possible loss of the principal amount invested.’

Table 5 presents measured levels of risk for LMVTX for the base year 1995 and for subsequent years, corresponding roughly to the periods for each prospectus and annual report combination. Although lower, on average, than that of the Vanguard Tax Managed Capital Appreciation Fund, R² estimates for LMVTX against the S&P 500 Index are still reasonably high, fluctuating between a minimum of 0.60 in the base year and a maximum of 0.92 in 1998; as such, the S&P 500 is a reasonably good fit index for LMVTX during the study window and market betas and tracking errors estimated against the S&P 500 are deemed meaningful risk indicators.

References to ‘active/residual risk’ occur fairly frequently in the LMVTX prospectuses, coming second, on average, to ‘absolute loss’. Generally supporting this pattern of disclosure is average measured tracking error, which is substantially greater than the mean tracking error of large-cap equity mutual funds during the five years of the study window.¹¹⁰ With the exception of the prospectus in 1999, however, LMVTX primary documents contain no references to ‘market risk’ in the risk exposure category, whereas the secondary data reveal systematic betas

that measure above 1.00 in each of the five years of the study window, peaking at 1.29 in 1998. Thus, with respect to levels of active/residual risk, *ex post* observed results for LMVTX generally coincide with disclosures in the *ex ante* narratives. By contrast, in the case of market risk exposure, there is a striking gap between the *ex ante* and *ex post* perspectives.

As in the case of the Vanguard Tax Managed Capital Appreciation Fund, there are also interesting issues related to factor risk exposure for LMVTX. The prospectuses, for example, state that LMVTX will not invest 25 per cent or more of total assets in any one industry. An examination of the LMVTX semi-annual report dated 30th September, 1997, reveals that the fund had 24.6 per cent of its assets invested in ‘computer services and systems’, 4.5 per cent invested in ‘telecommunications’ and 4.0 per cent invested in ‘media’. Telecommunications holdings, however, included over US\$65m (1.7 per cent of total assets) of Nokia, the manufacturer of mobile phones and media holdings consisted exclusively of over US\$149m (4.0 per cent of total assets) of America Online, the internet service provider. Adding just these two securities to the investment value of the computer services and systems category would have brought total technology holdings to over 30 per cent of fund assets in 1997. The picture is similar in 1998 and even more dramatic in subsequent years; total technology holdings represented over 40 per cent of LMVTX assets in 1999 and remained over 35 per cent of assets in 2000. Indeed, the 1999 annual report reveals holdings in America Online, alone, totalled 18.9 per cent of fund assets.¹¹¹

The industry classification data are of course open to interpretation; however, notwithstanding the fact that America Online is formally assigned to the 'media' sector in the statement of net assets appearing in the annual report, the company is frequently referred to as a 'technology' holding in the narrative portion of the primary documents. Consider, for example, this excerpt from the 1999 annual report:

'Our six best performing stocks in the fiscal year ending March 31, 1999 were all technology based. America Online led the way, rising over 750% in the 12-month period. Also more than doubling in the year were cellular phone leader Nokia, biotechnology giant Amgen, Dell Computer, and MCI Worldwide.'

This commentary is particularly interesting in view of the fact that, as with America Online, Legg Mason officially classifies Nokia, Amgen and MCI Worldwide as members of sectors *other* than 'technology' in the statement of net assets (Dell is formally classified under 'technology').

The LMVTX prospectuses do refer to 'factor risk', averaging 4.8 references each year and peaking with 10 references in 1999. In view of the discussion above on industry concentration and the precipitous decline in the value of most technology stocks in 2000, this final prospectus contains a noteworthy and perhaps prescient caveat:

'Value funds often concentrate much of their investments in certain industries, and thus will be more susceptible to factors adversely affecting issuers within that industry than would a more diversified portfolio of securities.'

Notwithstanding the mischaracterisation of itself as a 'value fund', LMVTX has clearly signalled to its investors the potential factor risk associated with a portfolio heavily weighted in a single industry.

CONCLUSIONS

This study employed primary and secondary data, arrayed longitudinally and cross-sectionally, reported both *ex ante* and *ex post*, and examined using a combination of qualitative and positivistic methods. Specifically, primary mutual fund documents were treated with ECA¹¹²⁻¹¹⁶ to discover and codify the investment objectives and risk-taking of active equity fund managers and to establish associations between objectives and risks. Secondary risk data were examined to validate findings based on the primary documents.

The study has identified and catalogued a variety of mutual fund investment objectives and risk factors disclosed or otherwise encoded in the prospectus and annual report. Positive associations have been found for idiosyncratic risk with two investment objectives: (1) high absolute returns and (2) high relative returns (*non-risk-adjusted*), while the same risk exposure is negatively associated with the investment objective of high relative returns (*risk-adjusted*). Market risk and active risk are each positively associated with the investment objective of high relative returns (*risk-adjusted*) and negatively associated with the objectives of high absolute returns and high relative returns (*non-risk-adjusted*), respectively. These findings are largely consistent with the predictions of portfolio management models discussed

in the literature. The investment objective of high relative returns (*peers*) is negatively associated with the risk of absolute loss and the risk of the fund failing to meet its objective; this latter association reflects an absence of appropriate risk disclosure.

The triangulation process reveals imbrications but also critical gaps between what is disclosed in each of the primary narratives and what is observed in the secondary data, ie 'between what is said and what is done'.¹¹⁷ Risk exposures measured *ex post* are not always communicated in the documents; the study found, for example, instances of undisclosed pseudo-industry risk in the form of concentrated technology holdings which may reflect a violation of prospectus covenants.

The study also found elevated levels of residual risk in the secondary data. This may be indicative of benchmark 'gaming' as described by Jacob¹¹⁸ and lead to mutual fund style drift documented by DiBartolomeo and Witkowski,¹¹⁹ which frequently results in portfolios that do not match stated objectives. Style drift is strongly indicated in the study of Legg Mason Value Trust which describes itself as a 'value' fund in primary documents but where, in 1999, technology holdings accounted for over 34 per cent of total assets and the average price-to-book ratio for the portfolio was 12.4.

The findings suggest that the disclosure process can be erratic, with performance comparisons and the focus of fund manager commentaries varying from prospectus to annual report and from one period to the next. This lack of consistency may be incidental or may reflect a systematic effort on the part of investment companies to position their

funds in the most favourable light relative to competitors and benchmarks, as results and market conditions change. Annual reports, in particular, frequently omit or obscure critical data and offer *ex post* rationalisations of investment policy rather than a rigorous accounting of risk-adjusted performance. The malleability of investment terms appearing in primary documents can also be problematic; for example, the fuzzy distinction between 'industry' and 'sector' may enable fund managers to disguise the amount of pseudo-industry risk to which shareholders are being exposed. These issues highlight the need for regulators to continue in their efforts to improve and extend the disclosure process.

To date, ethnographic content analysis has been employed successfully in media and sociological-based empirical studies. The efficacy with which ECA facilitates the identification of mutual fund investment objectives and risk factors — as well as the power of the triangulation process to validate while also revealing omissions and inconsistencies traversing primary and secondary data — suggests this discriminating analytical framework has an emerging role to play in the financial risk management arena for both researchers and practitioners.

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- 106 Farrell, J. (1974) 'Analyzing covariation of returns to determine homogenous stock groupings', *Journal of Business*, Vol. 47, No. 2, pp. 186–207.
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- 108 French, K. R. and Fama, E. (1992) 'The cross-section of expected stock returns', *Journal of Finance*, Vol. 47, No. 2, pp. 427–466.
- 109 Basu, S. (1983) 'The relationship between earnings' yield, market value and return for NYSE common stocks: Further evidence', *Journal of Financial Economics*, Vol. 12, No. 1, pp. 129–146.
- 110 Webb *et al.*, ref. 57 above.
- 111 This large holding in one security may have been a violation of another covenant in the LMVTX 1999 prospectus which states that the Fund may not: 'With respect to 75% of total assets, invest more than 5% of its total assets (taken at market value) in securities of any one issuer...'.
112 Altheide, ref. 69 above.
113 Plummer, ref. 70 above.
114 Altheide, ref. 72 above.
115 Smith *et al.*, ref. 74 above.
116 Altheide, ref. 89 above.
117 Hodder, ref. 77 above.
118 Jacob, ref. 34 above.
119 DiBartolomeo and Witkowski, ref. 42 above.

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