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- ◆ **Passive Fund Management - by Paul Klumpes, Department of Accounting and Finance, University of Lancaster**

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APPENDIX F

Passive Fund Management

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Passive Fund Management

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1 Introduction

A passive investment strategy is characterised by a broadly diversified buy and hold portfolio typically aimed at replicating the return on some broad market index at minimum cost. This is referred to as tracking. In contrast, active investment strategies attempt to outperform the market either by selecting assets whose returns, on average, exceed those of the market, or by timing the movement of funds into and out of the market in an attempt to capitalise on swings in asset prices. However this is a costly process. Thus, conditional on an actively managed portfolio achieving superior performance relative to an index, the returns must exceed these additional costs so as to provide investors with 'value for money'.

Passive fund management has become a very popular investment technique in the USA and also attracts sophisticated investors in the UK.¹ Employer-sponsored, defined benefit fund trustees have access to professional expertise and sophisticated passive management approaches to match assets and liabilities, such as portfolio insurance or bond immunisation techniques (Peskin, 1997). The choice of passive fund management techniques is further limited for trustees of defined benefit pension funds by minimum solvency restrictions imposed by the Pensions Act, 1995.² The existing legal principle that pension funds should invest their funds so as to maximise the return on investment was established in *Cowan v. Scargill*, where it was held that pension fund trustees have a duty to manage the funds in the best interests of the beneficiaries.³ Under the Pensions

¹ By the mid-1980s, over a quarter of all institutional tax-exempt funds in the USA were indexed or managed under a similar type of passive investment strategy (Pensions and Investment Age, May 19, 1986, p. 2). There is anecdotal evidence that passively managed funds are also becoming more popular among institutional investors in the UK, although there is no systematic evidence available.

² Section 49. This necessitates the use of other forms of passive fund management, such as portfolio insurance (for example: Bird *et al.*, 1990) or bond immunisation (for example.: Leibowitz, 1986a,b). Ippolito (1989, p. 31) and Allen *et al.*, 1988, p. 223) discuss the implications of using these techniques for the management of defined benefit pension funds.

³ [1985] Ch. 270, [1984] 3 W.L.R. 501, [1984] 2 All ER 750, [1984] ICR. 646, [1984] IRLR. 260.

Act trustees must state their policy about both risk and expected return (section 31), and diversify investments (section 32).⁴

However such techniques are less readily available to individual members of defined contribution funds who must bear the investment risk, yet often have limited discretion over, or understanding of, the choice of investment (Bodie, 1990, p. 31). However, relatively simple and inexpensive 'index' or 'tracker' funds are becoming increasingly popular to both retail and institutional investors. Such funds merely seek to replicate a particular index such as the S&P 500 and are designed to generate a beta of 1.0 (that is, the rate of return on the fund is expected to be equal to that of the index). These funds are based on the Efficient Capital Market Theory, which states that securities markets are efficient in the processing of information (Allen *et al.*, 1988, p. 223). There is little evidence that markets are informationally efficient in a strong-form, that is, no investor can earn excess returns using any information. However, the available evidence suggests that, at best, only publicly available information is fully reflected in a security's market price ('semi-strong efficiency').⁵

A few empirical studies provide contradictory evidence on the performance of actively-managed pension fund portfolios. While USA-based studies (Ippolito and Turner, 1988; Lakonishok *et al.*, 1992) find that the average actively managed fund significantly underperforms benchmark indices, Brown *et al.* (1997) present results which suggest that a few top quartile performing managers provide consistent good performance to UK pension funds. However, all three studies rely on beta to evaluate portfolio managers, the validity of which is questionable, and fail to account for the costs of delegating a portfolio to an active, value-maximising fund manager.

⁴ The devastating consequences of failure of pension funds to diversify their investment portfolios was revealed recently when it was discovered that the Church of England Commissioners lost up to £800 million on property speculation, largely with borrowed money, which resulted in their inability to fund clergy pensions and stipends (House of Commons Social Security Committee, 1995, p. i).

⁵ There is a large empirical literature which has documented evidence of stock market 'anomalies' (for example: Ball, 1992). However, there is little evidence that these have been systematically exploited.

The major conceptual arguments for passive management rely on risk/return trade-offs, the management of cost and liquidity, and stock selection and timing skills. These arguments imply that it will be difficult for active investment managers to consistently outperform passive funds, especially when the effects of fees and transaction costs are accounted for.

2 Literature review

While there is an extensive literature evaluating the performance of the fund management industry, very few studies have focused on pension funds. This is due to the absence of publicly available information about pension fund portfolios. Two USA-based studies examined the effects of active vs. passive fund management on the investment performance of pension fund portfolios. Ippolito and Turner (1987) examined pension portfolio data contained in annual reports filed by 1,526 pension funds with regulators under ERISA, over the period 1977-1983. Lakonishok *et al.* (1992) examined the performance of 769 all-equity defined benefit pension funds run by 341 fund managers over the subsequent period 1983-1989. Both studies find that, on average, pension plans significantly underperformed the S&P 500 Index, underperformed passively managed pension funds, and engaged in distortion of investment behaviour, such as ‘window-dressing’ and ‘lock-in’ strategies. Lakonishok (1992, p. 378) attribute this to the agency problems associated with delegated, active management of defined benefit funds.⁶

Other studies examined if actively managed fund performance can persist over time (for example: Grinblatt and Titman, 1992; Brown and Groetzmann; Brown *et al.*, 1995). If active fund management is ‘successful’, then above average performance over time due to ability should be greater than that sustained by mere chance. Brown *et al.* (1997) examine the consistency of investment performance of 602 UK pension funds that

⁶ Lakonishok *et al.* (1994, p. 342) also note that treasurer’s offices corporate sponsors of defined benefit USA pension funds, who normally make the investment allocation decision, have a bias against passive management because it reduces the demand for services provided by that office and thus reduces the size of its empire.

have retained the services of 17 single 'balanced' fund managers without change during the period 1986-1990, based on data provided by the WM Company. They find that top quartile performing managers in their sample are able to offer a degree of consistent good performance to pension funds, relative to lower quartile managers.

The validity of inferences drawn from the results of these empirical studies is limited by: (i) survivorship bias may induce results which ex post suggest that certain management styles were successful (Brown *et al.*, 1992); (ii) a reliance on risk-adjusted performance procedures that adjust excess returns using the capital asset pricing model's (CAPM) beta, the productive power of which has been called into question by Fama and French (1992, 1995); (iii) the failure to adequately incorporate the transaction costs associated with active fund management, the existence of which questions the efficiency of capital markets (Grossman and Stiglitz, 1992).

Nor do any of these studies calculate the 'intermediary spread' which creates a wedge between the returns realised by the active fund manager and those attributed to pension fund members, in the form of fees (Brennan, 1993).⁷ Klumpes and McCrae (1997) examined the impact of intermediary spreads on the financial performance of a sample of 48 defined contribution Australian pension funds over the period 1990-93. When they calculated the present value of fund returns, net of expenses and the intermediary spread, the net realised returns made available to participating members was less than those available on an individual pension fund indexed to inflation.⁸

All of these empirical studies assume that the investment preferences of the members participating in the pension funds are homogeneous. There is a growing

⁷ Klumpes (1997) investigated the impact of intermediary spreads on the performance of Australian, UK and USA-based international equity funds. He found that the size of intermediary spreads was positively correlated with the propensity of active fund managers to earn abnormal returns. Other evidence suggests that more aggressively active managed funds are more likely to rely on relatively higher intermediary spreads and load fees to dissuade redemptions (Chordia, 1993).

⁸ Klumpes and McCrae (1997) also find that pension fund agency-cost characteristics related to expenses, investment risk and liability risk are important determinants of the demand for active fund manager reputation.

empirical and theoretical literature on the implications of age-related portfolio choice (Samuelson, 1989; Bodie *et al.*, 1992; Kingston, 1995). The findings of this literature suggest asset allocation decisions be made on an individual basis using ‘age phasing’, by progressively reducing their proportionate exposure to risky assets as they age.⁹ However none of the empirical studies reviewed earlier utilised a performance return measure which was adjusted for the effects of both individual leverage and the market opportunity cost of risk simultaneously.

3 Arguments for passive fund management and tracking

The above review of the limited empirical evidence on fund management style suggests that passive fund management is a relatively attractive investment technique for pension fund members. This section briefly outlines major conceptual arguments favouring passive management of pension funds.

3.1 Cost

It is observable fact that passive fund management is a lower-cost alternative to active management. Passive fund management is a systems intensive business, so once systems are in place there is less of a need for vast staffs of highly trained (and compensated) investment analysts. Since active managers are marketing their services on a basis of being ‘smarter’ than their competitors, it is essential for active managers to attract and retain personnel who can convince the marketplace of their superiority. In contrast, passive fund managers need not be managed on this ‘star’ system, nor is there generally a need for as many professionals per unit of assets managed. Ignoring the establishment cost of constructing complex systems, which pose a formidable ‘barrier to entry’ to indexing, significant economies can be passed on in the form of lower fees.

⁹ An important assumption underlying this age-related portfolio literature is that a finitely lived agent holds constant relative risk aversion, yet strives to ensure that the retirement benefit (‘bequest’) exceeds some fixed minimum amount. This implies that an individual will have constant risk aversion to a proportional loss of wealth even though the absolute loss increases as wealth does.

3.2 Return

A tracker investment portfolio has a clear and precisely measurable investment objective - to match the performance of a particular index. By contrast, actively managed fund turnover translates into a leakage each year from an investment portfolio and from the active manager universe. Thus, over time, active managers will trail the indices by an amount roughly equal to the leakage caused by transaction costs and fees. Thus, tracking will consistently deliver above median returns over time.¹⁰

3.3 Risk

Tracking is an attractive investment technique relative to active management from the viewpoint of various risk measures. Since tracker portfolios hold 'the market', the number of securities in a portfolio tend to be higher than in an active portfolio. The more assets in a portfolio, the less volatile returns ought to be since correlation of less than one between securities will tend to decrease total portfolio risk. Thus, tracking is a less volatile technique than active funds management. Further, tracking has little or no market opportunity cost of risk, defined as the risk of a portfolio's return deviating from the benchmark index return (Modigliani and Modigliani, 1997). A well-constructed tracker fund will bear little or no opportunity cost of risk while active managers incur varying amounts of such risk.

3.4 Liquidity

From an age-phasing perspective, liquidity is an important consideration in a pension fund's investment decision. Tracking provides more liquidity than active management, since a given portfolio is spread across a wide distribution of stocks that comprise a replicated stock index. By contrast, an active portfolio will hold a more

¹⁰ This argument of course ignores possible superior performance persistency of actively managed funds.

limited number of stocks, the purchase or sale of which may affect market liquidity. Further, futures contracts are often available on most well-established market indices, greatly increasing liquidity. Many index funds take advantage of stock index futures as a proxy for holding stocks, as a means of exactly hedging large purchases or sales of stocks in an index, or to arbitrage enhanced risk-free returns in excess of an index.

3.5 *Stock Selection*

Tracker fund managers typically either fully replicate or adopt either stratified or optimised sampling techniques in seeking to track an index. Full replication involves purchasing all the stocks that are represented in the appropriate index in exactly the proportions that they are weighted in that index. Stratified sampling involves holding a generally stable and predetermined range of stocks that will match the movement of an index. Many passive fund managers believe that this is the best way to manage a tracker fund because, if you fully replicate an index, you may have to hold many exotic and thinly traded stocks which are difficult to buy and sell. Optimised sampling involves holding a small number (say 20 to 30) of stocks that have been selected for their particular attributes and/or holding synthetic securities to replicate an index. Over time, this approach can perform very closely to the index, but the levels of volatility experienced by the portfolio compared with the index could be higher than those experienced using other indexing techniques (Wilson, 1991).

This scientific approach to funds management contrasts with the ‘art’ of stock selection by active fund managers. The biggest source of transaction costs in a passive fund is reinvestment of dividends which tend to be less than 2% per year, one way that is: purchase only). By contrast, active managers may realise a much larger annual turnover (up to 100% or more), both ways (that is: purchase and sale). A well-constructed passive fund portfolio thus tends to incur fewer trades relative to an active portfolio, thus providing both lower transaction costs than actively traded portfolios, as well as a more balanced, diversified portfolio.

3.6 Market Timing

Some active managers argue that, in addition to stock-selection skills, they also have special skills in market timing, which depends on the difference between the rates of return from stock and from cash, for which there are considerable potential gains, not otherwise made available to indexed fund managers (Sy, 1990). However, this argument relies on the assumption that professional managers possess insider information (potentially illegally obtained) not available to ordinary investors. Whether market timing adds value is an unresolved empirical question (Sharpe, 1975; Samuelson, 1989; Wagner *et al.*, 1992; Brocato and Chandy, 1994; Larsen and Wozniak, 1995; Benning, 1997). In contrast, the timing skills demanded of indexed fund managers are much less demanding. This is usually limited to issues such as when to rebalance the portfolio in line with changes that have taken place in an index, and/or accounting for the effects of new listings and/or defunct companies.

4 Conclusions and their implications

There is a growing body of evidence in both Australia and the USA which suggests that pension funds incur non-trivial costs associated with delegated active management of their invested assets. This cost creates an intermediary spread which significantly reduces the net returns realised by the pension fund relative to that available from less costly, passively managed funds.

Tracker funds, possibly with some form of 'age-phasing' provided by low-cost, mass-market financial service firms acting as responsible entities, would capture these advantages.¹¹

¹¹ Interestingly, Lakonishok *et al.* (1992, p. 378) also reach this conclusion in discussing the policy implications of their findings.

The existence of information asymmetry problems associated with the marketing financial services to consumers is well documented (for example, OECD, 1992). This suggests that the unique, limiting characteristics of passive fund management may require regulatory intervention regarding the establishment, operation and accountability of tracker funds to provide some reassurance to consumers.¹² These should include the qualifications, expertise and solvency of entities held responsible for its operation.¹³ Funds should only be established where they track reliable and valid benchmark indices (for example: S&P 500), and only replicate markets that are known to be information efficient.¹⁴ Rules need to be established over various aspects affecting the operation of tracker funds. This may include restricting the use of sampling techniques to those least susceptible to significant tracking errors, restricting the use of futures contracts and derivative instruments. Mandated disclosures are needed to educate potential investors about the fund, and existing members over its performance, in a way that is simple to understand.

Rules may also be needed on the disclosure of information on the comparative investment performance of different tracker funds. In particular, it may be necessary to highlight the investment risk to which the investor might be exposed, for alternative levels of gearing. Such a standard measure of risk-adjusted performance of passively managed funds is consistent with the objective of minimising consumer detriment, in a way that is relatively easy to interpret by average investors (see Appendix C).

One possible approach to standardising disclosure of risk is the ‘risk adjusted performance’ (RAP) proposed by Modigliani and Modigliani (1997) as a framework for

¹² This is additional to the usual monitoring activities by competition authorities over the profitability and market power of responsible entities who manage individual pension funds (Graham and Steele, 1997).

¹³ The concept of a ‘responsible entity’ was originally developed in Australia as a result of confusion as to who is legally responsible for the management of delegated collective investments. This issue is important where the role of investment manager and trustee of the funds is separated, as it is for unit trusts.

¹⁴ Some markets in metals and related commodities are known to be particularly susceptible to the activities of speculative traders (for example, London Metals Exchange).

analysing risk and return.¹⁵ RAP uses the market opportunity cost of risk (in terms of return) and the financial operation of leverage (borrowing and lending) to alter the risk of portfolio returns easily and precisely. This is achieved by adjusting every portfolio to the level of risk in its unmanaged benchmark, and then measures the performance of this risk-equivalent portfolio. This might provide a way for consumers to identify the portfolio which has the highest return for any given level of risk.¹⁶

¹⁵ Modigliani and Modigliani (1997) motivate the development of RAP on the grounds that there is no consensus on a measure of either risk or risk-adjusted performance which is suitable for mutual fund risk disclosure to average investors.

¹⁶ The portfolio to hold is the one with the highest RAP, as it yields the highest return for any level of risk. Risk can then be tailored to individual preferences through leverage. As argued in Appendix C and in Chapter 6, this renders leverage a key tool for risk management in the pursuit of optimal investment performance.

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