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The Price of Retail Investing in the UK

Kevin R James

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THE PRICE OF RETAIL INVESTING IN THE UK

Kevin R. James

FSA Occasional Paper

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Introduction

While retail investors in aggregate own a significant portion of the financial wealth of the UK, they largely delegate the management of that wealth to investment funds. These funds in turn charge retail investors for the portfolio and risk management services they provide, sparing retail investors the burdensome task of performing these various services themselves. So in order to choose a sensible fund (a fund that meets his or her requirements), a retail investor must be able to ascertain the services provided and the price charged by each of the funds he or she may consider.

To provide assistance to retail investors facing the task of choosing a fund, the Chancellor of the Exchequer announced in the March 1999 Budget that the Financial Services Authority will publish league tables of costs and charges in investment products. To develop these tables, the FSA needs to understand the charging structures of investment funds. This paper presents some preparatory research into this topic. The FSA welcomes comments on this preliminary work, which will feed into its work on comparative information in due course.

Examining the price of investing through broad equity unit trusts and life offices in the UK, I find that, on average:

- One must invest about £1.50 in an actively managed unit trust or through a life office in order to obtain the market rate of return on £1; and that
- Obtaining the market rate of return on £1 requires an investment of about £1.10 to £1.25 in an index tracker.

I refer to this measure of price as *MP1* (the price of a *Managed Portfolio* that yields the market rate of return on £1).^{1,2}

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- 1 I calculate the above MP1s after controlling for general market conditions and fund style (e.g., the recent systematic underperformance of Small-Cap funds does not increase the overall average MP1 because that underperformance simply reflects the fact that small-cap stocks tended to underperform the market).
 - 2 MP1 measures the all-in price of investing from the perspective of a retail investor and does not measure the profits of fund managers. To illustrate the distinction, I note that MP1 includes dealing costs, which are costs incurred by the fund to buy and sell shares. High dealing costs will therefore drive up MP1, but will not (at least not directly) have any bearing on the profits of the fund management company.

Managing a portfolio inevitably entails the expenditure of time and money (even if a retail investor were to undertake the necessary tasks him or herself). Hence, it is not at all surprising to find that, on average, retail investors must invest more than £1 in order to receive the market rate of return on £1. But, the fact that MP1s will on average exceed £1 does not allow one to gauge whether any given MP1 exceeds £1 by a lot or a little.

One might put the overall price of retail investing into context by comparing it with the price of investing through an index tracker. However, since index trackers free-ride (to at least some extent) upon the efficient capital markets that actively managed funds help to create and support, the price of investing through an index tracker fund may not provide a fair benchmark against which to judge the overall price of investing.

To provide a suitable benchmark, I therefore estimate the price of investing through a notional *Minimum Cost Efficient Markets* (MCEM) fund. An MCEM fund's MP1 will be just high enough to enable the fund (i) to provide its investors with the core portfolio management services they require and (ii) to engage in a degree of active management sufficient to bring about an efficient equity market. I calculate below that an MCEM fund's MP1 is in the region of £1.15.

This analysis thus suggests that retail investors choose relatively high MP1 funds (though it is important to note that even relatively high MP1 funds are superior to deposit accounts for the purpose of long-term investing). Of course, the fact that retail investors choose high MP1 funds does not in itself imply the existence of a market failure. Retail investors may choose high MP1 funds because those funds provide them with additional services.

But retail investors can only make an informed choice to purchase high MP1 funds if they know the price of investing through such funds. However, surveys of investor knowledge in both the UK and the US consistently find that retail investors do not understand how disclosed charges affect performance, let alone the pound and pence cost of that performance impact.³ Furthermore, disclosed charges alone

3 For example, Schagen and Lines [1996] find that the general level of financial literacy in the UK is not such that one could expect people to work out the pound and pence cost of investing from a Reduction in Yield (RIY), and research conducted by the US Securities and Exchange Commission and the Office of the Comptroller of the Currency (SEC/OCC [1996]) show that people do not understand the impact of charges upon return. Surveys undertaken by the FSA in connection with its work on Comparative Information demonstrate that Key Features documents (in which RIYs are communicated to investors) do a poor job of conveying the price of investing to retail investors.

provide a misleading picture of the price of investing, as they do not include dealing costs (the costs of trading assets in a fund's portfolio). Comparing the total price of investing with that implied by disclosed charges alone, I find that disclosed charges alone imply that the average MP1 of investing through actively managed unit trusts equals about £1.25 rather than its true value of about £1.45.

Consequently, retail investors now lack the information and knowledge they need to evaluate the investment funds they must choose between. Choosing funds on the basis of imperfect information and imperfect knowledge potentially imposes significant costs upon retail investors. Since retail investment funds in the UK manage about £900 billion on behalf of investors,⁴ lowering the average MP1 by even 10p would yield retail investors an additional £4 billion per year of investment income.⁵

Previous Literature

The investment funds examined in this paper have a high average MP1 because they tend (from the perspective of an investor) to significantly underperform the market. This finding is consistent with a result first established by Jensen [1968] and regularly confirmed by researchers ever since (see Carhart [1997] for an up to date evaluation of the evidence). Though most of these performance studies focus upon the US, Blake and Timmermann [1998] and Quigley and Sinquefeld [1999] find that the US results hold in the UK market as well. This line of research is nicely summarised in PricewaterhouseCoopers [1998].

4 At the end of 1998, Unit Trusts managed about £180 billion (Source: Micropal), while Life Offices managed £700 billion as of the end of 1997 (Source: Total Long Term Business Assets as reported to Insurance Directorate, obtained from SynThyses Life). To arrive at funds under management now, one should note that there is some overlap in the unit trust and life office funds under management figures due to unit trusts run by life offices, and that funds under management by life offices certainly grew during 1998. Taking these two factors into account, I set total funds under management to £900 billion.

5 If investors paid an average MP1 of £1.40 rather than £1.50, their £900 billion in investment funds would yield the market rate of return on £640 billion (£900 billion/£1.40) rather than (as now) £600 billion. Since the average rate of return on investment funds has been about 10% over the last 10 years, investors would obtain an additional return of £40 billion * 10% = £4 billion.

Most of the fund performance literature has limited itself to studying unit trusts (where one can measure performance in a straightforward way using publicly available data). But far more retail investor wealth in the UK is invested through life offices than through unit trusts. So in order to arrive at an overall picture of the price of retail investing, one needs to examine life offices as well. In one of the few papers on this topic, Murthi, Orszag and Orszag [1999] examine the administrative costs associated with long-term investing through life offices, and their results are generally consistent with those in this paper.

Since retail investors do on average choose high MP1 funds, these funds must look attractive to them. This attraction arises from a combination of how investors select funds and how funds compete for investors. Surveys of investor behaviour find that, while investors generally desire low MP1 funds, they lack the information and knowledge needed to distinguish between high and low MP1 funds.⁶ Studies of how mutual funds compete for fund inflows (Ippolito [1992], Sirri and Tufano [1993], and Chevalier and Ellison [1997]) show that high MP1 funds can behave in a way that makes them look superior to low MP1 funds to such investors.

While investment fund performance and behaviour are the focus of a great deal of formal academic work, the price of retail investing is also a topic that attracts interest beyond academic circles. Financial journalists in both the general press and the trade press regularly scrutinise investment funds. Their investigations into the price of investing and the importance of implicit costs anticipate in an informal way many of the results in this paper.

Outline of the paper

I begin by developing a new method of measuring the price of investing, MP1. In order to put the price of investing through funds into context, I next derive the MP1 of an MCEM fund. I then examine the price of investing through actual unit trusts/mutual funds (Section 3) and life offices (Section 4). I explore why retail investors choose high MP1 funds in section 5, and conclude in section 6.

⁶ Schagen and Lines [1996] examine general financial literacy, and surveys conducted by AUTIF [1998] and the US Securities and Exchange Commission and the Office of the Comptroller of the Currency (SEC/OCC [1996]) examine how investors choose unit trusts/mutual funds.

I note at the outset of this analysis that all rates of return are expressed in real terms,⁷ and all nominal values are expressed in constant December 1998 pounds.

1 MP1: A measure of the price of investing

Investment funds are in the business of selling *managed portfolios* to retail investors, in that an investment can be regarded as the purchase price of a managed portfolio “machine” that transforms that investment into a continuing cash flow. The more that one must invest in a fund in order to generate a given cash flow, the higher the price of the transformation machine that the fund sells. This relationship suggests that one can (at least in principle) measure the price of investing through a given fund by the cost of obtaining a *Managed Portfolio* that yields the market rate of return on £1 from that fund. I denote this measure of the price of investing as *MP1*.

In this section I present the advantages of MP1, develop a method of measuring it, and discuss the possibility of applying a forward looking measure of MP1 to individual funds. But the UK already possesses a widely used measure of the price of investing, namely, the Reduction in Yield (“RIY”) – the measure that serves as the cornerstone of the PIA’s disclosure regime. I therefore begin by discussing why another measure may be useful.

1.1 Why another measure?

Investment funds collect their price for managing an investment through diverse fees and charges. The PIA developed the RIY measure to combine all of these costs and charges into a single number. This number is basically the percentage point amount that explicit fees and charges subtract from the gross return to a fund (the market rate of return). But, while measuring price using an RIY is a definite

⁷ I use the RPI (UK) and CPI (US) as my inflation indices.

advance over requiring a retail investor to examine and combine all of an investment fund's fees and charges for him- or herself, RIY as a measure of price suffers from two major flaws.⁸

Perhaps most important, the studies of investor understanding cited in the introduction suggest that RIYs fail to convey to retail investors an intuitively meaningful idea of the price of investing. Consequently, "prices" of the RIY sort fail to perform the essential role of prices in a market economy, namely to make clear to a consumer what he or she must give up in purchasing power to obtain the good or service in question. Unable to evaluate the trade-offs involved, a consumer cannot then reliably acquire the goods that maximise his or her well-being as he or she determines it.

Furthermore, measuring price using an RIY puts actively managed funds at a (theoretical) disadvantage relative to index trackers. This disadvantage arises because an actively managed fund's RIY will incorporate the extra costs of active management but will exclude any benefit that actively managing a fund creates. Consequently, the RIYs of actively managed funds will generally exceed those of index trackers even if active management increases returns by enough to offset its costs.

1.2 MP1: an everyday price of investing

1.2.1 *An intuitive definition of MP1*

MP1 is a way of putting a price (in the everyday sense) on the cost of investing through an investment fund, while preserving the virtues of RIYs (combining all costs and charges into a single figure, applicable across diverse types of funds). To set such a price, I look at investing from the perspective of an investor. From this perspective, the process of investing essentially consists of buying (handing

⁸ RIYs as currently calculated under PIA regulations suffer from an additional flaw in that they fail to incorporate the impact of implicit costs such as those arising from portfolio turnover. Since, as I shall demonstrate below, implicit costs account for about half of the total cost of portfolio management, RIYs now present a misleading and biased measure of the true price of investing even for those people who understand it. However, since one could in theory correct this flaw by including implicit costs in the RIY calculation, this flaw is not inherent in the RIY approach itself.

over cash in exchange for) machines that produce a standardised cash-flow,⁹ which I set equal to the market rate of return on £1 ($R_{M,£1}$).¹⁰ Label these machines as i-machines.

Each fund sells its own brand of i-machine. Each machine (again from the perspective of an investor) consists of two components, namely, £1 of real assets that generate $R_{M,£1}$, and a portfolio management/other services (henceforth simply “portfolio management”) component that keeps the machine going and provides additional benefits (the extent of the portfolio management services provided may vary from brand to brand). The price of investing through a given fund is then the price of acquiring one of its i-machines. This price equals the amount that one must invest to acquire a Managed Portfolio that yields $R_{M,£1}$ from that fund, or MP1.¹¹

The principal advantage of measuring the price of investing with MP1 is practical: it enables a retail investor to treat an i-machine (that is, investing) as he or she would any other consumer durable. To illustrate, an investor planning to purchase £1000 worth of i-machines from either Fund Y (MP1 of £1.75) or fund Z (MP1 of £1.15) can easily work out how many i-machines he or she can buy from each fund. The investor is then in a position to decide if the services that fund Y bundles with its i-machines at least offset their higher price.

1.2.2 Calculating an MP1

Suppose that the market rate of return equals R_{Market} , and that a given fund provides its investors with an expected (long-term average) return of $R_{Fund,Expected}$.¹² Additionally, assume that the fund levies an upfront charge of U (expressed as a

9 One could add here: with given risk characteristics. However, since actively managed funds on average display significantly more return volatility than do index trackers (PricewaterhouseCoopers [1998], WM [1999]), adjusting for risk would on average increase the average MP1s reported below.

10 I do not distinguish between capital appreciation and dividend income here.

11 Given MP1, one can easily work out the price of each component: the price of the return generating assets is simply £1, implying that the price of the portfolio management component is MP1 minus £1.

12 MP1 is calculated using real (inflation adjusted) returns.

percent of the investment), so that an investor receives a return on $1 - U$ of his or her investment.¹³ In order to obtain the market rate of return on £1 by investing in this fund (on average, over the long-term), an investor would need to invest MP1, with

$$MP1 * (1 - U) * R_{Fund,Expected} = £1 * R_{Market}$$

It follows that

$$MP1 = £1 * \frac{R_{Market}}{(1 - U) * R_{Fund,Expected}}$$

To illustrate, assume that R_{Market} equals 10%, U equals 5%, and $R_{Fund,Expected}$ equals 7%. In this case,

$$MP1 = £1 * \frac{R_{Market}}{(1 - U) * R_{Fund}} = £1 * \frac{10\%}{(1 - 5\%) * 7\%} = £1.50$$

The gap between R_{Market} and $R_{Fund,Expected}$ arises from three factors: explicit charges ($ER_{Explicit}$), implicit costs ($ER_{Implicit}$), and – possibly – the performance enhancing effect of management (AM).¹⁴ Explicit charges are those the fund explicitly levies, and are expressed as an expense ratio, that is, as a percentage of funds under management. I adopt the same convention for expressing implicit costs and AM, as they too will likely vary proportionally with funds under management. The major component of $ER_{Explicit}$ is the annual management charge, which is on average about

13 The upfront charge U is known as a bid/offer spread in the UK and as a load fee in the US. The average posted value of U in the UK is about 5%, though an increasing number of funds choose not to levy an upfront fee, and some funds do offer discounts off their posted U .

14 Of course, the upfront charge U is also (usually) explicit in the sense that it is disclosed. However, to simplify terminology, I reserve the term “explicit charges” to mean explicit continuing (or annual) charges.

1.2%. Other explicit charges such as custody fees add about 0.2 percentage points to ER_{Explicit} . Implicit costs are those that come out of funds under management directly, and are currently not disclosed. The principal component of ER_{Implicit} is the cost associated with trading shares. I discuss the likely magnitude of ER_{Implicit} below.

Since one can (at least in principle) directly observe the extent to which active management increases a fund's explicit charges and implicit costs but cannot directly observe any beneficial effect that active management may have on fund performance,¹⁵ it is convenient to think of the beneficial effects of active management as (possibly more than) off-setting the impact ER_{Explicit} and ER_{Implicit} on gross fund performance. Thus,

$$R_{\text{Fund,Expected}} = R_{\text{Market}} - (ER_{\text{Explicit}} + ER_{\text{Implicit}} - AM) = R_{\text{Market}} - \text{Net} [ER_{\text{Explicit}} + ER_{\text{Implicit}}]$$

It follows that MP1 can be written as

$$MP1 = \pounds 1 * \frac{R_{\text{Market}}}{(1 - U) * R_{\text{Fund,Expected}}} = \pounds 1 * \frac{R_{\text{Market}}}{(1 - U) * (R_{\text{Market}} - \text{Net}[ER_{\text{Explicit}} + ER_{\text{Implicit}}])}$$

MP1 therefore incorporates the potential beneficial impact of active management into the price of investing, whereas RIY does not. It follows that MP1 does not place actively managed funds at an inherent disadvantage.

To illustrate, suppose that the market rate of return equals 10%, and consider an index tracker fund and an actively managed fund. Assume that neither fund levies an upfront charge, and that the total of ER_{Explicit} and ER_{Implicit} equals 1% for the index tracker and 3% for the actively managed fund. In this case, the index tracker's correctly defined (that is, including ER_{Implicit}) RIY is 1%, and the actively managed fund's RIY is 3%.

15 That is, if a given fund outperforms the market, one cannot simply look at the fund and determine whether or not that outperformance was due to skilful active management or good fortune.

Now consider measuring price using MP1. If active management yields no benefit, then the net total of the funds' ER_{Explicit} and ER_{Implicit} equals their gross total. In this case, the index tracker's MP1 equals 1.11 ($\text{£}1 * 10\%/9\%$) and the actively managed fund's MP1 equals $\text{£}1.43$ ($\text{£}1 * 10\%/7\%$). Now suppose that active management increases the actively managed fund's return by 2%. The net total of ER_{Explicit} and ER_{Implicit} then equals 1%. Consequently, both funds then have the same MP1 of $\text{£}1.11$.

1.2.3 The price of investing and the market rate of return

A fund's RIY is completely independent of the market rate of return. That is, if a given high-charging fund H's RIY is 3% and a given low-charging fund L's RIY is 1%, these RIYs remain constant for all levels of the overall market rate of return. Measuring the price of investing using RIYs thus naturally leads one to believe that neither the true price of investing through a given fund nor the relative price of investing through a high charging fund such as H rather than low charging fund such as L changes as the market rate of return changes.

The MP1 measured price of investing through a fund, on the other hand, does depend upon the overall market rate of return. To illustrate with H and L,¹⁶

$$MP1_H = \frac{R_{\text{Market}}}{R_{\text{Market}} - RIY_H} = \frac{R_{\text{Market}}}{R_{\text{Market}} - 3\%}$$

$$MP1_L = \frac{R_{\text{Market}}}{R_{\text{Market}} - RIY_L} = \frac{R_{\text{Market}}}{R_{\text{Market}} - 1\%}$$

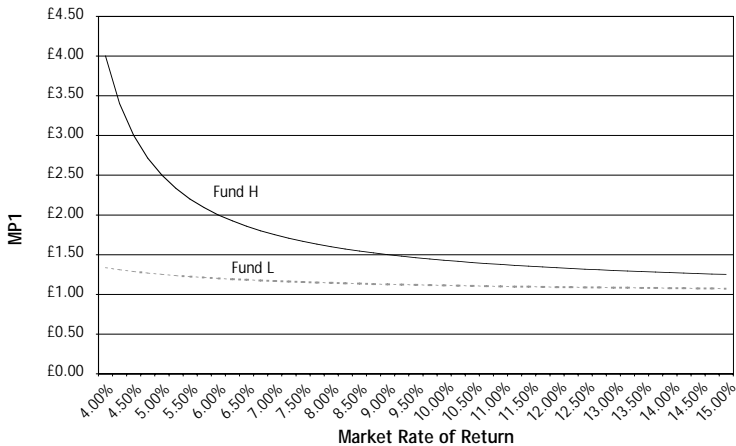
I plot these MP1s against R_{Market} in figure 1.

Examining this figure, two key features of MP1 become apparent. First, the MP1 measured price of investing rises as the market rate of return falls. Second, the rela-

16 I am implicitly assuming here that neither fund levies an upfront charge and that active management does not enhance performance. In this case, a fund's correctly defined RIY simply equals the sum of ER_{Explicit} and ER_{Implicit} .

Fig 1 MP1 and the market rate of return

In this figure I plot the MP1 of a high-charging fund H (RIY = 3%) and of a low charging fund L (RIY = 1%) as a function of the market rate of return.



tive price of investing through a high charging fund (H) rather than a low charging fund (L) also increases as the market rate of return decreases (as one can see by the fact that H's MP1 and L's MP1 become further apart at lower market rates of return). That is, price as measured by MP1 implies that investing through a high charging fund rather than a low charging fund is particularly costly when the market rate of return is low.

So, MP1 and RIY yield a different picture of how the overall market rate of return affects the price of investing. Which way of measuring price more accurately reflects reality?

The absolute price of investing

From an individual retail investor's perspective, one can think of investing as not spending money now so that one can spend more money in the future. Obviously, the more that one must give up now for a given amount in the future, the higher

the absolute price of investing. As the market rate of return (and so the return provided by an investment fund) falls, one must invest (i.e., not spend) more at this lower rate to acquire a given amount in the future. Hence, the absolute price of investing rises as the market rate of return falls. MP1 reflects this reality, but RIY does not.

The relative price of high charging and low charging funds

Suppose that one wishes to make a single lump sum investment now so as to obtain £500,000 in 25 years (for instance, to buy an annuity). Since H's charges and costs exceed L's, we know that one will have to invest more in H than in L to hit this £500,000 target (assuming the same gross return to each fund). But how much more?

Consider two scenarios. In the first, assume that the market rate of return equals 10% (its average over the last 10 years), and in the second assume it equals 7% (its long term average value in the Post-World War 1 period).

Table 1			
The Relative Price of Investing and the Market Rate of Return			
R_{Market}	Investment Required in High Charging Fund H	Investment Required in Low Charging Fund L	Additional Investment Required in H
10%	£92,125	£57,984	£34,141
7%	£187,588	£116,499	£71,059

As this table makes clear, a high charging fund becomes relatively more costly as the market rate of return falls (since the additional amount one needs to invest in H increases). MP1 captures this relationship, while RIY does not.¹⁷

17 Intuitively, this relationship arises because, as the market rate of return falls, the proportion of that return taken out in charges and costs by a high charging fund increases faster than the proportion of return taken in charges and costs by a low charging fund. To illustrate, if R_{Market} is 10%, then L's return (from the perspective of an investor) exceeds H's return by 28% (9% vs. 7%), but if the market rate of return falls to 7%, L's return exceeds that H by 50% (6% vs. 4%).

To infinity and beyond

MP1 does possess what may at first glance appear to be the odd property of going to infinity as the (long term average) return a fund provides to its investors falls toward zero. This fact is consistent with the meaning of MP1, for if a fund provides an investor with a return of zero, that investor will not obtain the market rate of return on even £1 no matter how much he invests. Yet, infinity being a mathematical concept, one may ask what an MP1 of infinity means in practical terms. The answer is simple. If one is thinking of choosing a fund with an MP1 of infinity, MP1 is saying: think again.¹⁸

Capturing the relationship between the price of investing and the overall market rate of return is important because the extraordinary rates of return of the last 10 years may not continue indefinitely. If the market rate of return does fall back towards its long term average value, both the absolute price of investing through a given fund and the relative price of investing through available investment alternatives may change substantially. A sensible measure of the price of investing should make this clear to a potential investor.

1.2.4 Applying MP1 to individual funds

While I aim in this paper to estimate the average value of MP1 for retail investing in the UK, it is nonetheless worth discussing briefly whether or not MP1 could in principle be applied to individual funds.

To put MP1s on individual funds, one requires fund specific measures of upfront charges (U), explicit charges (ER_{Explicit}), implicit costs (ER_{Implicit}), and the performance enhancing effect of active management (AM). Obtaining fund specific data on upfront and explicit charges (U and ER_{Explicit}) is straightforward (such information is now used to compute RIYs). Obtaining data on an individual fund's ER_{Implicit} and AM is less straightforward. Consider each in turn.

18 It is obvious from the plain meaning of MP1 that MP1 also equals infinity when the long run average return a fund provides to an investor is less than 0. Yet, if one were to ignore the plain meaning of MP1 and mindlessly apply the MP1 formula in the text in such cases, one would find that the formula yields nonsensical (negative MP1) results. So, for completeness, the full MP1 formula is as follows: it is the formula as presented in the text if $\text{Net}[ER_{\text{Explicit}} + ER_{\text{Implicit}}] < R_{\text{Market}}$ and it is infinity if $\text{Net}[ER_{\text{Explicit}} + ER_{\text{Implicit}}] \geq R_{\text{Market}}$.

Available evidence indicates that ER_{Implicit} is driven primarily by trading costs.¹⁹ Funds can (and do) now measure their own trading costs, so this information should be obtainable. Furthermore, an examination of fund level portfolio turnover data for the US suggests that, at least for equity funds, turnover at a given fund is highly correlated from year to year.²⁰ This finding in turn suggests that ER_{Implicit} too should be highly correlated from year to year (adjusting as appropriate for changes in trading costs that occur over time). If this suggestion is correct, then constructing reasonably accurate forward-looking fund specific measures of ER_{Implicit} may be possible.²¹

Turning to AM, the studies of performance persistency cited in the introduction find, on balance, that active management does not enhance individual fund performance (though it does create benefits for the economy as a whole). Assuming that this result is true, one does not in practice require an individual fund level measure of AM in order to compute individual fund MP1s (one can just set an individual fund's expected gross return equal to the market rate of return). Of course, if future investigations into fund performance do find that active management enhances performance, one would need to (and one would be able to) incorporate those results into an MP1 calculation.

Thus, the information one requires to put MP1s on individual funds is (at least in principle) available. That said, the practical hurdle of working out how to accurately estimate individual fund ER_{Implicit} s remains to be jumped. However, one should note that the current method of measuring the price of investing (RIYs) avoids the difficulty of measuring individual fund ER_{Implicit} s by simply not taking them into account. Since implicit costs constitute a significant proportion of the total price of investing and since the level of implicit costs varies considerably across funds, it may be worthwhile to ascertain whether the ER_{Implicit} hurdle can be leapt.

19 Carhart [1997] finds that portfolio turnover is highly correlated with ER_{Implicit} (though he does not phrase it quite this way), and dealing costs are highly correlated with portfolio turnover.

20 I obtained the portfolio turnover data from the CRSP Survivorship Bias Free Mutual Fund dataset. No comparable dataset is available for the UK.

21 Given that dealing costs constitute a significant portion of the overall price of investing, incorporating dealing costs into a measure of the price of investing would be worthwhile even if one chose to present that price in the form of an RIY rather than as an MP1 (recall that dealing costs do not now affect a fund's RIY).

2 A benchmark for the price of investing

Investment funds serve two functions. First, they provide valuable portfolio management services to individual investors. Second, they play a key role in creating and supporting the efficient capital markets that underpin the economy as a whole through their research, trading, and monitoring of corporate management (this monitoring occurs both directly through shareholder activism and indirectly through the market for corporate control).²²

An individual retail investor cannot avoid paying for the portfolio management services he himself obtains. However, an individual retail investor can avoid paying to create and support efficient markets by investing through an index tracker. Index trackers achieve their low MP1s in part by taking asset prices and firm management policies as given, and *then* selecting a diversified portfolio (while limiting portfolio turnover to the greatest extent possible). Thus, index trackers do not contribute to the price formation process and do not participate in the monitoring of firm management.²³

Since the benefits that flow from efficient markets are likely to far outweigh the costs of creating and supporting them, retail investors as a whole should find it worthwhile collectively (if not individually) to pay for the active management needed to bring efficient markets about. I refer to this cost as the “efficient markets tax”.

The efficient markets tax thus places a lower bound on the average MP1 of retail investment funds.²⁴ In this section I estimate that lower bound.

22 A body of research growing out of the work of Harold Demsetz has demonstrated the crucial role that providers of capital play in monitoring firm management. See, for example, Demsetz and Lehn [1985].

23 Of course, actively managed funds do now engage in a degree of active management (more than) sufficient to bring about an efficient market.

24 If the market ceases to be efficient, then R_{Market} itself will probably fall.

2.1 The specification of an MCEM fund

The MP1 of a notional *Minimum Cost Efficient Markets* (MCEM) fund will be just high enough to provide core portfolio management services to its investors and to pay for a sufficient level of active management to bring about efficient markets.

One can obtain an idea of the level of active management needed by examining the US equity market in the late 1970s. I pick the late 1970s because the market had by then assumed its modern form (with the abolition of fixed commissions in 1975), the trading volume explosion of the 1980s had yet to occur, and the market was probably at least roughly as efficient then as it is now. In the late 1970s, turnover on the NYSE was about 25% per year.²⁵ Consequently, the MP1 of the MCEM fund must cover the dealing costs entailed by a portfolio turnover of 25% per year, and the internal management costs associated with that level of active management.

Given these requirements, consider the ER_{Explicit} , ER_{Implicit} , and U of an MCEM fund.

2.2 The MCEM fund ER_{Explicit}

ER_{Explicit} will cover the costs of providing portfolio management services (the base costs of running a fund, servicing investor accounts, etc.) and the internal management costs associated with running a portfolio with yearly turnover of 25% (less than 1/3 of the turnover of a typical actively managed fund).²⁶ To gauge the level of ER_{Explicit} needed to run an MCEM fund, then, one need only find the ER_{Explicit} of a moderately actively managed fund.

Examining my sample of 2530 actively managed UK and US funds (see below for details of the sample composition), I find that 12.5% have an ER_{Explicit} of 85 basis points (bp) or less.²⁷ Since it is therefore demonstrably possible to run an actively

25 Source: NYSE Fact Book, 1998.

26 Carhart [1997] and Orton, Ian, "Churn: Just why are portfolios turned over so often?", *Financial Times*, 16/10/99

27 1 basis point (bp) equals 1% of one percentage point. To illustrate, 15.00% and 14.99% differ by 1 bp.

managed fund on an ER_{Explicit} of 85 bp, I take 85 bp as my estimate of an MCEM fund's ER_{Explicit} .²⁸

2.3 The MCEM fund ER_{Implicit}

ER_{Implicit} arises from trading costs, and the cost of executing a given trade will obviously vary across equities, market conditions and funds. The figures I present below (prepared in consultation with a number of fund management companies) are thus indicative of the typical cost of execution across funds as a whole rather than a precise estimate of the trading costs of any specific fund. Furthermore, since I am using the cost of trading figure derived here to create a benchmark against which to judge the price of investing through retail investment funds, I err on the side of caution by assuming that funds do not exploit sophisticated trading strategies to lower their trading costs.²⁹ The cost of trading figure I derive here should therefore be taken as an upper bound on the average trading costs of a sophisticated fund.

The trading process involves the following stylised steps and costs:

- The fund decides to trade, and contacts a broker to undertake it. The broker collects a commission for performing that task;
 - Consultations with UK fund managers undertaken in preparation of this paper indicate that the typical commission on a round-trip trade will be in the region of 30 bp;
- The broker in turn executes the trade through a dealer. The dealer buys at the bid price and sells at the offer price. The difference between the bid and the offer is known as the spread or the touch. Conceptually, one can

28 Portfolio turnover data (available for only US funds) indicates that these funds are not closet index trackers.

29 For example, funds can lower their trading costs by trading with a “natural” counterparty. The natural counterparty for a given trade is an agent that actively wishes to take the opposite side of the trade in question. To illustrate, if fund company Z's UK Aggressive Growth Fund wishes to buy an equity that its Small Cap Fund wishes to sell, the Aggressive Growth fund and the Small Cap fund can cross their trades internally at a lower combined cost than if both traded on the open market. However, erring on the side of caution, I assume that funds trade on the open market.

think of the “true” price of the traded shares as the mid-point of the spread. Since a dealer buys a fund’s shares at a price below the mid-point and sells to the fund at a price above the mid-point, it costs the fund money to buy and sell shares;

- The turnover weighted average spread on the London Stock Exchange is about 75 bp.³⁰ In the course of a round-trip trade, a fund will pay the entire spread (half when selling, half when buying). The bid/offer spread thus adds 75 bp to the cost of a round-trip trade.
- Dealers (or other providers of liquidity) are not required to buy an unlimited number of shares at their initially posted prices. In the face of a significant volume of buys or sells, providers of liquidity will move the price at which they are willing to transact before the fund’s trade is completed. The process of trading can then drive up the cost of executing that trade. This cost is known as price impact;
 - A recent study of trading costs conducted by the US investment bank Donaldson, Lufkin & Jenrette found that trade impact costs added about 25 bp to the cost of a round-trip trade for a sample of large to mid-cap US stocks.³¹ The London Stock Exchange is not significantly more liquid than the NYSE or NASDAQ, so the trade impact costs for London are most likely no lower than 25 bp;³²
- Finally, funds in the UK must pay a 50 bp tax (stamp duty) on share purchases;
 - Stamp duty increases the costs of a round-trip trade by 50 bp.

30 Source: London Stock Exchange. The average spread on FTSE 100 equities is obviously lower than the average spread on small-cap equities.

31 “Transaction Cost Forecasts and Optimal Trade Scheduling”, Quantitative Services Group, DLJ

32 The people who collect the trade impact cost are the providers of liquidity. While these providers could in theory be other funds (implying that trade impact costs would average out to zero across all funds), funds are not really in the liquidity provision business. I therefore assume that non-fund intermediaries collect the trade impact costs, implying that trade impact costs do affect the average fund.

- Putting these costs together, ³³

Commission	30 bp
Bid/Offer Spread	75 bp
Price Impact	25 bp
Stamp Duty	50 bp
Total	180 bp

A portfolio turnover of 25% thus implies that the ER_{Implicit} of an MCEM fund equals

$$ER_{\text{Explicit,MCEM}} = 25\% \text{ turnover} * 180 \text{ bp} = 45 \text{ bp}$$

2.4 The MCEM Fund U

A significant number of low ER_{Explicit} funds in the UK and the US have no upfront charge. However, when a (UK) fund purchases equities on behalf of an investor, the fund must pay a stamp duty equal to 50 bp of the value of that purchase. A fund must cover the cost of that stamp duty either explicitly with an upfront charge or implicitly through continuing charges. I therefore set the upfront charge of an MCEM fund to 50 bp.

³³ Excluding stamp duty, this figure is about 30 bp higher than Carhart's [1997] estimate of the impact of portfolio turnover on fund performance. The actual average cost of trading in the UK may then be closer to 150 bp than to the 180 bp upper bound derived here.

2.5 The MP1 of an MCEM Fund

The notional MCEM fund will thus possess a U of 0.5%, an ER_{Explicit} of 0.85%, and an ER_{Implicit} of 0.45%. Assuming that R_{Market} equals 10% (its average value for the UK market over the 1987 to 1998 period), then $MP1_{\text{MCEM}}$ equals³⁴

$$\begin{aligned} MP1_{\text{MCEM}} &= \text{£}1 * \frac{R_{\text{Market}}}{(1 - U) * (R_{\text{Market}} - (ER_{\text{Explicit}} + ER_{\text{Implicit}}))} \\ &= \text{£}1 * \frac{10\%}{(0.995) * (10\% - 1.30\%)} = \text{£}1.15 \end{aligned}$$

3 The Unit Trust MP1

3.1 Approach

As I demonstrated above, one may express MP1 as

$$MP1 = \text{£}1 * \frac{R_{\text{Market}}}{(1 - U) * (R_{\text{Market}} - \text{Net}[ER_{\text{Explicit}} + ER_{\text{Implicit}}])}$$

and we know that

34 To err on the side of caution, I assume here that the net impact of explicit charges and implicit costs equals their gross level.

$$\text{Net } [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}] = R_{\text{Market}} - R_{\text{Fund,Expected},i} = R_{\text{Gap,Expected},i}$$

Consequently, if one could observe the long term average value of the gap ($R_{\text{Gap,Expected},i}$) between a given fund i 's return and the market rate of return, then calculating that fund's MP1 would be straightforward.

Unfortunately, one can in fact observe fund performance only over a limited historical period. And, over any given historical period, the observed gap between a fund's return (R_{Gap}) and the market return may differ from its true long-term average value due to the class of equities that make up its portfolio (its "Style"), general market conditions, and Chance.

Fund Style may affect R_{Gap} because a considerable proportion of funds draw their portfolios from a limited class of equities (e.g., Small-Cap stocks).³⁵ If the average return to the class of equities in which a fund specialises falls below (above) the overall market rate of return, the gap between the return the fund provides to its investors and the market rate of return will also tend to increase (decrease).

The specific characteristics of the continuing bull market in the US and (to a lesser extent) the UK may also have affected the average gap between R_{Fund} and R_{Market} . The extremely high (by historical standards) overall market rate of return over the last several years has been driven in part by the spectacular performance of a small number of stocks. The return provided by a fund that happened to underweight those stocks in its portfolio would then trail (far) behind the overall market rate of return. Such market conditions may then produce a relatively small number of "winner" funds (funds that happened to overweight the spectacular performers in their portfolios) and a relatively large number of "loser" funds (funds that happened to underweight the spectacular performers in their portfolios). Hence, under such conditions, one might expect to see a larger than normal gap between the performance of the typical fund and the overall market rate of return.

Chance captures the impact of idiosyncratic factors on a fund's return. For example, an imperfectly anticipated merger may boost one fund's realised return relative to another's even though the two funds held ex ante equivalent portfolios. Due to the

35 For example, Small-Cap funds constitute 17% of the actively managed UK funds and 23% of the actively managed US funds in my sample.

presence of Chance, then, a fund's observed R_{Gap} may be higher or lower than its true long term average value (even after controlling for fund Style and Bull Market effects). Consequently, for any one fund, one cannot tease out the portion of observed R_{Gap} due to Net $[ER_{\text{Explicit}} + ER_{\text{Implicit}}]$.

One may overcome the problem Chance creates by noting that the expected or anticipated impact of Chance on any given fund's R_{Gap} will equal zero. Consequently, if one examines a large sample of funds, the impact of Chance will average out to (almost) zero. One can then estimate the average value of Net $[ER_{\text{Explicit}} + ER_{\text{Implicit}}]$ (and so the average MP1 of retail investing) by controlling for the impact of fund Style and the Bull Market.

Given a sample of funds, one can proceed in two ways. The first departs from the premise that, over long periods of time and across funds, the impact of Style and Bull Markets will also tend to average out to zero.³⁶ If one's sample is such that this long term effect holds true, then one may subsume Style and Bull Market effects into Chance. One may then estimate the average unit trust MP1 by using the Simple Average method.

If this long term averaging out effect does not hold, then Style and/or Bull Market effects systematically affect fund R_{Gap} s. In this case, one can improve one's MP1 estimate by controlling for the impact of those effects by using econometric methods (controlling for these effects enables one to remove their influence from R_{Gap} and so deduce Net $[ER_{\text{Explicit}} + ER_{\text{Implicit}}]$ more accurately).

Consider the Simple Average and Econometric methods of estimating MP1 in turn.³⁷

36 To see this, note that while Small-Cap stocks may underperform or outperform the market over any given period, they are unlikely to consistently outperform or underperform the market.

37 I do not take fund size into account when measuring R_{Gap} under either method. Since investors select funds that have done well in the past, one will tend to find that funds that have done well in the past are large now. However, since a significant proportion of the wealth in those funds did not experience those high returns, computing a weighted average R_{Gap} based on current fund size overstates the average return experienced by investors. Examining the size/ R_{Gap} relationship prospectively, I find (using US funds in my sample in existence at the end of 1986) that size has no impact upon future R_{Gap} . Consequently, excluding size will not bias my results.

3.1.1 The Simple Average method

The Simple Average method begins with the premise that

$$R_{\text{Gap},i} = \text{Net} [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}] + \text{Chance}_i$$

Assuming that Chance averages out to zero for the sample of funds under consideration, it follows that

$$R_{\text{Gap,Average}} = \text{Average} [\text{Net} [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}]]$$

Substituting (measurable) $R_{\text{Gap,Average}}$ for $\text{Net} [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}]$, it follows that

$$\text{MP1}_{\text{Average}} = \frac{R_{\text{Market}}}{(1 - U_{\text{Average}}) * (R_{\text{Market}} - R_{\text{Gap,Average}})}$$

3.1.2 The Econometric method

The Econometric method posits that

$$R_{\text{Gap},i} = \text{Net} [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}] + \text{Style Effects}_i + \text{Bull Market Effects}_i + \text{Chance}_i$$

Consider each term of the above equation.

$$\text{Net} [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}]$$

Funds that engage in extensive active management of their portfolios will have high explicit expense ratios (they will be spending more on management, they will engage in more research, etc.). It is likely that such funds will also have high implicit expense ratios. Hence, one would expect ER_{Implicit} and ER_{Explicit} to be positively correlated. One can then use (observable) ER_{Explicit} to estimate (undisclosed) ER_{Implicit} . I do so using the following specification,

$$\text{Net} [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}] = \alpha_1 + \alpha_2 * ER_{\text{Explicit},i}$$

where α_1 is a constant.

Unfortunately, I lack data on ER_{Explicit} for a number of actively managed UK funds. In the case of actively managed UK funds, then, I assume that

$$\text{Net } [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}] = \alpha_1$$

Under this formulation, one can still estimate the average value of $\text{Net } [ER_{\text{Explicit}} + ER_{\text{Implicit}}]$ for actively managed UK funds, but one cannot explore how the price of investing varies as the level of explicit charges varies.

Style effects

I allocate each fund to one of 5 Styles (based upon classifications used by the fund management industry), namely Growth, Growth and Income (GI), Income, Mid-Cap, and Small-Cap. I indicate Style by means of the following zero/one indicator variables:

- Growth_i, GI_i, Income_i, Mid_i, and Small_i: $\text{Style}_{j,i} = 1$ if fund i is of Style j , and it equals 0 otherwise;³⁸

For each fund i I then create the following $\text{Style}_{\text{Gap}}$ variables,³⁹

$$\text{Style}_{\text{Gap},j,i} = \text{Style}_{j,i} * (R_{\text{Market}} - R_{\text{Style},j})$$

where $R_{\text{Style},j}$ equals the average return on equities of Style j (measured by the return on a broad index consisting equities of type j). $\text{Style}_{\text{Gap}}$ thus captures the difference between the market return and the return on the class of equities in which a given fund specialises.⁴⁰

38 To illustrate, suppose that fund z is a Small-Cap fund. In this case, Small_z equals 1 and $\text{Growth}_z, \text{GI}_z, \text{Income}_z,$ and Mid_z all equal 0.

39 Growth stocks and Income stocks between them constitute the entire market. I therefore assume that GI funds on average hold the market portfolio, and hence that $\text{GI}_{\text{Gap}} = 0$.

40 Continuing the illustration from above, suppose that the market rate of return (over the period the fund's performance is examined) equals 10%, and that the average return on Small-Cap stocks equals 7%. Then

$$\text{Small}_{\text{Gap},z} = \text{Small}_z * (R_{\text{Market}} - R_{\text{Small}}) = 1 * (10\% - 7\%) = 3\%$$

and $\text{Growth}_{\text{Gap},z}, \text{GI}_{\text{Gap},z}, \text{Income}_{\text{Gap},z}$ and $\text{Mid}_{\text{Gap},z}$ all equal 0 (since fund z is a Small-Cap fund).

To capture the impact of Style, I assume that

$$\begin{aligned} \text{Style Effects}_i = & (S_G * \text{Growth}_{\text{Gap},i}) \\ & + (S_I * \text{Income}_{\text{Gap},i}) \\ & + (S_M * \text{Mid}_{\text{Gap},i}) \\ & + (S_S * \text{Small}_{\text{Gap},i}) \end{aligned}$$

and estimate the S_j from the data. The S_j measure the extent to which $\text{Style}_{\text{Gap},S}$ translate into $R_{\text{Gap},S}$. If the portfolios of funds of Style j consist of a representative sample of class j stocks, then S_j will equal 1. However, in practice, funds of Style j need not hold their entire portfolio in stocks of class j , and the stocks of class j that they do hold need not form a representative sample of the stocks in class j . Hence, $\text{Style}_{\text{Gap},S}$ may not translate one to one into $R_{\text{Gap},S}$, implying that the S_j may differ from 1.⁴¹

Bull market effects

To capture the effect of the recent Bull market on fund $R_{\text{Gap},S}$, I assume that

$$\text{Bull Market Effects}_i = B_1 * \text{BullIM}_i$$

where

- $\text{BullIM}_i = R_{\text{Market},i} - 10\%$ if $R_{\text{Market},i} > 10.0\%$, and 0 otherwise;

Under this formulation, fund $R_{\text{Gap},S}$ can increase during periods when the market rate of return exceeds the 10% average rate of return on the UK market over the 1987 to 1998 period (the period I examine). Such an increase would then not influence the estimate of Net $[ER_{\text{Explicit}} + ER_{\text{Implicit}}]$, and so would not affect my estimate of the average MP1 of retail investing.

41 For example, if the portfolios of Small-Cap funds consist of representative samples of Small-Cap stocks, then a 3% gap between the average return on Small-Cap stocks and the market rate of return will increase the average Small-Cap fund R_{Gap} by 3%. But, if Small-Cap funds tend not to hold representative portfolios of Small-Cap stocks, then the average impact of a Small-Cap of 3% could be greater than or less than 3%.

The estimated equation

Putting all of these effects together, I estimate the following R_{Gap} equation:

$$\begin{aligned}
 R_{\text{Gap},i} = & \alpha_1 + (\alpha_2 * ER_{\text{Explicit},i}) \\
 & + (S_G * \text{Growth}_{\text{Gap},i}) + (S_I * \text{Income}_{\text{Gap},i}) \\
 & + (S_M * \text{Mid}_{\text{Gap},i}) + (S_S * \text{Small}_{\text{Gap},i}) \\
 & + B_1 * \text{BullM}_i + \text{Chance}_i
 \end{aligned}$$

I discuss the estimation procedure below.

Estimating this equation will enable one to separate out the portion of (observed) R_{Gap} due to (not directly observable) Net $[ER_{\text{Explicit}} + ER_{\text{Implicit}}]$ from the portion due to Style effects and Bull Market effects. For the average fund, this portion will equal

$$\text{Average Net Fund} = [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}] = \hat{\alpha}_1 + \hat{\alpha}_2 * \text{Average} [ER_{\text{Explicit},i}]$$

where a “^” denotes an estimated coefficient. It follows that the MP1 of the average fund equals

$$\text{MP1}_{\text{Average}} = \frac{R_{\text{Market}}}{(1 - U_{\text{Average}}) * (R_{\text{Market}} - (\hat{\alpha}_1 + \hat{\alpha}_2 * \text{Average}[ER_{\text{Explicit},i}]})}$$

3.2 The Sample

The sample consists of:

- broad domestic equity UK and US mutual funds;
- that were in existence for at least 12 months over the January 1987 to December 1998 period.

Calculating an MP1 entails comparing a fund's return with the return on the relevant market portfolio. I therefore limit my attention in the unit trust section of this analysis to broad domestic equity funds because one can easily obtain what is generally agreed to be a reliable long-term return series for the relevant market return for such funds. Since I am aware of no reason to indicate that broad equity funds are significantly more costly than other funds, and since broad equity funds account for a significant portion of wealth under management in any event,⁴² I take the broad equity fund MP1 as my measure of the general unit trust/mutual fund MP1.

I choose the 1987 to 1998 sample period for two reasons. First, it is the period for which I have life office data (see below). Second, 1987 saw the introduction of the Big Bang reform of the London Stock Exchange. This reform significantly affected trading costs, and so introduces complications to combining pre- and post-1987 data.

I define a broad equity fund to be an equity fund in either the Growth, Growth and Income (GI), Income, or Small-Cap sectors, as classified by Micropal (UK) or ICDI (US).⁴³ Micropal does not provide classifications for dead (no longer in existence) funds in their standard database. Instead, I obtained classifications for dead UK funds with the assistance of Micropal consultants. I did not have an ICDI classification for 1390 US funds. I counted such a fund as a broad equity fund if the equity composition of its portfolio exceeded 85% for at least one year of its existence and if its name indicated that it was a general equity fund (e.g., I excluded funds that

42. Broad equity funds in the UK unit trust sector account for half of total unit trust funds under management (source: Micropal, end of 1998 figures).

43. ICDI classifications are reported in the CRSP Survivorship Bias Free Mutual Fund dataset.

specialised in overseas equities and specific sectors). 227 funds entered the sample via this method.⁴⁴ I classified a fund in the sample as a Mid-Cap fund on the basis of its name (US only).

I sorted the sample into actively managed and index tracker funds. The UK sort was done on the basis of Micropal classification, and the US sort was done on the basis of fund name. It is likely that I mistakenly classified some US index trackers as actively managed funds, as I attempted to err on the side of caution when assigning funds to the index tracker sample.⁴⁵

The overall sample consists of 2530 actively managed funds (621 UK and 1909 US) and 85 index trackers (33 UK and 52 US). See Table 3 for a detailed description of the sample.

3.3 Data and Summary Statistics

3.3.1 Unit Trust Data Sources

I draw my UK fund data from Micropal. My dataset includes both live (as of 31 December 1998) and dead funds, and so is survivorship bias free.⁴⁶ Micropal provides historical data on monthly fund performance, but provides only current data on $ER_{\text{Explicit},t}$, fund size, and U.⁴⁷

I draw my US fund data from the CRSP Survivorship Bias Free Mutual fund dataset. This dataset provides historical data on monthly fund performance as well as historical annual information on $ER_{\text{Explicit},t}$, fund size, and U. As its name suggests, this dataset contains data on both live and dead funds.

44 Omitting these funds from the sample does not materially alter any of the results below.

45 I dropped 2 index trackers from the UK sample (the HSBC Trixie Index fund and the Gartmore PSF Index tracker) and 3 “extended market” index trackers from the US sample as these funds were not tracking either the overall market or a Style portfolio that I had included.

46 Excluding dead funds from the analysis leads to biased results because funds that were live during some portion of the sample period but die before the end of the sample period are likely to have performed worse than funds that survived the entire sample period.

47 Quigley and Sinquefeld [1999] provide a detailed discussion of the coverage and idiosyncrasies of Micropal data.

Table 3
Sample Composition

		UK Actively Managed	US Actively Managed	UK Index Trackers	US Index Trackers
All Funds	Observations	621	1909	33	52
	Size (Live Funds Only) £1998 Million Average/St. Dev.	£196/£424	£380/£1797	£183/£294	£1954/£6679
	Months in Sample Average/St. Dev.	101.8/44.9	60.5/42.7	60.4/37.0	50.8/40.3
	Status at end of 1998				
	Live	396 (64%)	1684 (88%)	33 (100%)	50 (97%)
	Dead	225 (26%)	225 (12%)	0 (0%)	2 (3%)
Fund Style	Growth	236 (38%)	502 (26%)	—	—
	Growth and Income (Overall Market Index)	150 (24%)	743 (39%)	31 (94%)	44 (85%)
	Income	130 (21%)	181 (10%)	—	—
	Mid-Cap (US Only)	NA	45 (2%)	—	—
	Small-Cap	105 (17%)	438 (23%)	2 (6%)	8 (15%)

Notes: The sample consists of all UK and US broad domestic equity unit trusts/mutual funds that were in existence for at least 12 months over the January 1987 to December 1998 sample period. I count as a broad domestic equity unit trust a domestic equity unit trust of the type that Micropal assigns to the Aggressive Growth, Growth, Growth and Income, Income, and Small-Cap categories. Micropal classifications are available for live UK funds and US funds after 1993. Classifying such funds is thus straightforward. Micropal does not provide a "Mid-Cap" classification, however, so I assign funds to this category on the basis of fund name. I classified dead UK funds on the basis of discussions with Micropal consultants. I classified pre-1993 US funds on the basis of fund name and the equity share of their portfolio (I count as an equity fund one with at least 85% of its portfolio in equities at the end of at least one year over the sample period). I split the UK sample between actively managed funds and index trackers on the basis of Micropal classification, and I split the US sample on the basis of fund name. This system is imperfect, and it is likely that some US index trackers are in the actively managed fund sample. I obtained my UK data from Micropal, and my US data from CRSP (which reports ICDI (now Micropal) fund classifications).

Table 4
Variable Definitions

Parameter	Definition
$R_{Market,i}$	The average return on the own country MSCI equity index over the period that fund i is in the sample
$R_{Fund,i}$	The average return on fund i (from the perspective of an investor) over the period the fund is in the sample (calculated on a bid to bid, dividends reinvested basis)
$R_{Gap,i}$	$R_{Gap,i} = R_{Market,i} - R_{Fund,i}$
U	Fund i 's upfront charge (the bid/offer spread in the UK, the total load fee in the US), expressed as a percentage of the initial investment
$ER_{Explicit,i}$	Fund i 's total explicit charge ratio (explicit charges/funds under management). This ratio equals the total expense ratio (for US funds) or the annual management charge + 20 basis points (for UK funds).
BullMi	$BullMi_i = R_{Market,i} - 10\%$ if $R_{Market,i} > 10\%$, and 0 otherwise
$Growth_{Gap,i}$	The gap between the market rate of return and the return on the MSCI Growth Stock Index over the period that fund i was in the sample for Growth funds, and 0 for all other funds. Growth stocks are those with high Market/Book ratios.
$Income_{Gap,i}$	The gap between the market rate of return and the return on the MSCI Value Stock Index over the period that fund i was in the sample for Income funds, and 0 for all other funds. Value stocks are those with low Market/Book ratios.
$Mid_{Gap,i}$	The gap between the market rate of return and the return on the S&P 400 over the period that fund i was in the sample for Mid-Cap funds, and 0 for all other funds (US only).
$Small_{Gap,i}$	The gap between the market rate of return and the return on the FTSE 250 (UK) or the S&P 600 (US) over the period that fund i was in the sample for Small-Cap funds, and 0 for all other funds.

Note: See the text for complete definitions.

3.3.2 Variable definitions and summary statistics

One may find brief definitions of the variables used in the analysis in Table 4, and summary statistics for these variables in Table 5. In this section I present detailed variable definitions.

Market and style returns (R_{Market} , R_{Growth} , R_{GI} , R_{Income} , $R_{Mid-Cap}$ and R_{Small})

To measure the Market or a Style rate of return, I first construct a monthly index of the value of a £100 investment made at the beginning of the sample period in the relevant Market or Style portfolio. This return is calculated on a bid to bid, gross dividends reinvested basis. The Market or Style return for fund i then equals

Parameter	UK Actively Managed		US Actively Managed		UK Index Trackers		US Index Trackers	
	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.
$R_{Market,i}$	10.26%	3.84%	22.00%	6.62%	14.77%	2.71%	22.95%	6.09%
$R_{Fund,i}$	6.91%	6.37%	12.59%	8.74%	13.57%	4.04%	18.81%	7.22%
$R_{Gap,i}$	3.16%	3.75%	9.42%	8.17%	1.20%	2.79%	4.13%	6.22%
U	5.34%	1.45%	1.34%	2.24%	2.66%	2.45%	0.27%	1.08%
$ER_{Explicit,i}$	1.40%	0.41%	1.45%	0.95%	0.98%	0.33%	0.45%	0.36%
$BullM_i$	1.30%	2.65%	12.09%	6.43%	4.81%	2.65%	12.95%	6.09%
$Growth_{Gap,i}$	0.72%	1.82%	- 4.83%	3.76%	—	—	—	—
$Income_{Gap,i}$	- 0.29%	0.86%	4.34%	3.30%	—	—	—	—
$Mid_{Gap,i}$	—	—	5.89%	3.41%	—	—	—	—
$Small_{Gap,i}$	2.90%	3.22%	14.57%	7.63%	7.48%	7.85%	16.63%	5.35%

Notes: See Table 3 for sample composition and Table 4 for variable definitions. In the case of UK funds, summary statistics for U and $ER_{Explicit}$ are computed using only live funds (as of 31 December 1998). $Style_{Gap}$ summary statistics are computed using only funds in each Style class (for example, the mean $Small_{Gap}$ for actively managed UK funds of 2.90% is the mean $Small_{Gap}$ for actively managed UK Small-Cap funds. All other actively managed UK funds have a $Small_{Gap}$ of 0).

the annualised geometric average real monthly return (henceforth “average return”) on that Market or Style index over the period that fund i is in the sample.⁴⁸ I denote the return on the market over the period that fund i was in the sample as $R_{\text{Market},i}$ and the return on the Style j portfolio over the period fund i was in the sample as $R_{\text{Style},j,i}$.

I set R_{Market} equal to the return on the overall market portfolio, taking as the “market” portfolio the relevant (UK or US) Morgan Stanley Capital International (MSCI) equity market portfolio. I use the MSCI portfolio for two reasons. First, MSCI constructs its portfolio to measure the return on the “obtainable” market portfolio.⁴⁹ This portfolio thus provides a fair benchmark against which to judge equity fund performance.⁵⁰ Second, MSCI constructs its equity market portfolios using the same method for each country it covers. Since MSCI covers all of the major and most of the minor equity markets in the world, using MSCI benchmark portfolios also facilitates international comparisons.

48 I use geometric averages here because they correctly incorporate the impact of varying returns over time, whereas simple averages do not. To illustrate, suppose that the index value for fund j equals £100 at the beginning of month 1, £150 at the beginning of month 2, and £75 at the beginning of month 3. It follows that

$$R_{j,1} = \frac{150}{100} = 1.5; R_{j,2} = \frac{75}{100} = 0.5$$

The correct average return factor for this fund over these two months is: $75/100 = 0.75$. However, the simple average monthly return factor for this fund is: $(1.5 + 0.5)/2 = 1$. The simple average return implies that the value of the fund does not change, which is of course incorrect. The monthly geometric average return for this fund is: $(1.5 * 0.5)^{1/2} = 0.87$. Two months of this average rate of return turns £100 into: $£100 * 0.87 * 0.87 = £75$. The geometric average return therefore yields the correct value.

49 While in theory it would be best to measure the market rate of return by the return on an all-share index (all listed companies at full market cap weight), it may not be possible in practice for a fund manager to form a portfolio that replicates the all-share index due to liquidity constraints on the availability and/or trading volume of some of the all-share’s constituent firms. An MSCI index underweights (relative to an all-share index) these illiquid stocks so as to create an in practice obtainable market return benchmark. MSCI provides a detailed description of the methods it uses to construct its indices at www.msci.com.

50 As a practical matter, the average unit trust MP1 would not change materially if one instead used the return on the FTSE All-Share (UK) and the S&P Composite (US) as one’s measure of R_{Market} .

I define Style portfolios as follows:

- R_{Growth} : the return on the relevant (UK or US) MSCI Growth Stock portfolio (growth stocks are those with high market/book ratios). Source: Datastream;
- R_{Income} : the return on the relevant MSCI Value Stock portfolio (value stocks consist of those with low market/book ratios). Source: Datastream;
- R_{GI} : I set this return equal to R_{Market} ;
- $R_{\text{Mid-Cap}}$ (US Only): the return on the S&P 400;⁵¹
- R_{Small} : the return on the S&P 600 (US) or the FTSE 250 (UK).⁵²

To illustrate, if UK fund q is in the sample from October 1997 to December 1998, and UK fund w is in the sample from January 1987 to June 1994, then $R_{\text{Market},q}$ equals the average return on MSCI's UK market portfolio for the period October 1997 to December 1998, and $R_{\text{Market},w}$ equals the average return on MSCI's UK index from January 1987 to June 1994.

Base fund parameters (R_{Fund} , ER_{Explicit} , U)

Fund returns

To measure the return on fund i , I first construct a monthly index of the value of a £100 investment (bid to bid, gross dividends reinvested) in that fund made at the time the fund enters the sample.⁵³ The value of R_{Fund} for fund i then equals the average return on this index over the period that fund i is in the sample.

51 The S&P 400 are 400 largest cap firms after the S&P 500.

52 The S&P 600 are the 600 smallest firms in the S&P 1500, and the FTSE 250 are the smallest 250 firms in the FTSE 350.

53 Micropal provides gross (before tax) and net dividends reinvested returns for live funds, but provides only net dividends reinvested returns for dead funds. Following Quigley and Sinquefeld [1999], I therefore "gross-up" the net dividends reinvested returns of dead funds in the following manner. For each month, I calculate the average difference between net and gross dividends reinvested returns for all of the live funds in my sample, and I then add this average difference to the return of each dead fund.

Explicit charges ($ER_{Explicit}$)

CRSP reports historical values of $ER_{Explicit}$ for live and dead US funds, so I set a US fund's $ER_{Explicit}$ equal to its last reported value.

Micropal reports an annual management charge for live UK funds. I therefore set $ER_{Explicit}$ for a live UK fund equal to the reported annual management charge plus 20 bp (to cover explicit expenses not included in the annual management charge).

Upfront charges (U)

I set the level of each live fund's upfront charge equal to its current bid/offer spread in the case of UK funds (if it reports a bid/offer spread to Micropal) and to the total load fee for US funds (combining front-end loads, rear-end loads, and deferred sales loads).

Micropal does not provide historical data on bid/offer spreads. In the case of the UK, then, I set the average value of U equal to its average value for live funds that report bid/offer spreads. I set U for dead US funds equal to the last reported value of their total loads.

It is possible that this approach may overstate the U investors actually pay, as funds/intermediaries may at times offer discounts on a fund's posted spread. However, there are no data on the extent to which such discounting occurs. Furthermore, variations in U of the order that discounting may create (e.g., changing U from 5% to 2.5%) will have only a trivial impact upon measured MP1. Given this lack of data and lack of impact, I do not incorporate bid/offer spread discounting into my analysis.

R_{Gap}

$R_{Gap,i}$ equals

$$R_{Gap,i} = R_{Market,i} - R_{Fund,i}$$

Fund returns are occasionally extremely high or extremely low. The R_{Gap} s for such funds are consequently very large as well. To limit the impact of these outliers on the analysis, I modify raw R_{Gap} s as follows. I use the econometric method (see

below) to estimate predicted R_{Gap} s for actively managed UK and then for actively managed US funds. For each group, I then compute a residual R_{Gap} for each fund and a residual R_{Gap} distribution.⁵⁴ The funds with extreme (either very high or very low) residual R_{Gap} s are the outliers. To limit their influence, I set the residual R_{Gap} for outlier funds (those either below 2.5th percentile or above the 97.5th percentile of the residual R_{Gap} distribution) equal to the 2.5th or 97.5th value of that distribution. I then set the R_{Gap} of such funds equal to their predicted value plus either the 2.5th or 97.5th percentile value of the residual R_{Gap} distribution, as appropriate.⁵⁵

I do not modify index tracker R_{Gap} s in this fashion due to the small size of the index tracker sample and because there are no extreme outliers.

3.4 Analysis

I apply the methods developed above to empirically estimate MP1, examining actively managed funds and index trackers in turn (I summarise the results of this section in Figure 2). I conclude this section by assessing the extent to which the disclosed price of investing accurately reflects the true price of investing.

3.4.1 The price of investing through actively managed funds

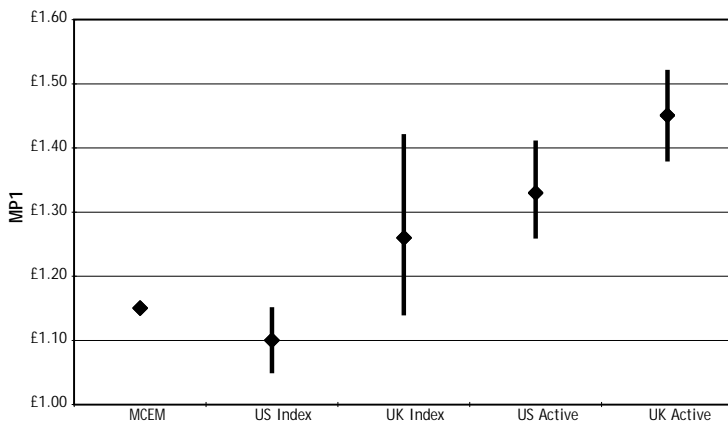
I begin by deriving the MP1 of investing through UK and US actively managed funds. I then assess the plausibility and implications of these estimates.

54 Where Residual $R_{\text{Gap},i} = R_{\text{Gap},i} - \text{Predicted } [R_{\text{Gap},i}]$

55 If one uses raw R_{Gap} s in the analysis, the estimated average R_{Gap} increases. This process thus has the effect of lowering estimated MP1s.

Figure 2 The Price of Retail Investing

I measure the price of investing by MP1, which is the amount one must invest in a fund in order to obtain the market rate of return on £1. For each fund type, the diamond indicates the best estimate of MP1, and the vertical line represents the 95% confidence bound around that estimate.



The UK

Recall that

$$MP1 = \text{£}1 * \frac{R_{\text{Market}}}{(1 - U) * (R_{\text{Market}} - \text{Net}[ER_{\text{Explicit}} + ER_{\text{Implicit}}])}$$

Using the Simple Average method, one sets

$$\text{Average} [\text{Net} [ER_{\text{Explicit}} + ER_{\text{Implicit}}]] = R_{\text{Gap, Average}}$$

The best estimate of the true value of $R_{\text{Gap, Average}}$ is its average value for the UK sample. Using the data on the standard deviation of individual fund R_{Gap} s to esti-

mate the 95% confidence bound for the estimate of the average value of R_{Gap} for UK actively managed funds as a whole, it follows that

Table 6	
UK Actively Managed Funds	
Average [Net [ER_{Explicit} + ER_{Implicit}]]:	
The Simple Average Method	
Best Estimate	95% Confidence Bound
3.16%	2.86% – 3.46%

To estimate MP1 on the basis of this R_{Gap} estimate, I set R_{Market} equal to 10% (its average value over the 1987 to 1998 sample period) and U equal to its average value for the UK sample (5.34%). Consequently,

Table 7	
UK Actively Managed Funds	
MP1: The Simple Average Method	
Best Estimate	95% Confidence Bound
£1.54	£1.48 – £1.61

The Simple Average method is based upon the premise that Style and Bull Market effects average out to zero over the sample. However, an inspection of Table 5 reveals significant disparities between Style and Market returns. It may therefore be possible to improve upon the accuracy of the Simple Average method by using the Econometric method.

Table 8
Estimating R_{Gap} For Actively Managed Funds

Dependent Variable: R_{Gap}								
Parameters	Specification A1		Specification A2		Specification A3		Specification A4	
	UK Funds		UK Funds		US Funds		US Funds	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
α_1	2.71*	0.17	2.88*	0.16	2.37*	0.21	0.31	0.28
$ER_{Explicit}$	—	—	—	—	—	—	1.51*	0.17
BullM	0.13	0.08	—	—	0.35*	0.02	0.35*	0.02
Growth _{Gap}	- 0.17	0.17	- 0.23	0.19	- 0.36*	0.09	- 0.31*	0.09
Income _{Gap}	0.82**	0.40	1.00*	0.37	0.59*	0.09	0.62*	0.09
Mid _{Gap}	—	—	—	—	0.59*	0.20	0.53*	0.20
Small _{Gap}	0.77*	0.13	0.82*	0.13	0.60*	0.03	0.59*	0.03
R ² (Adjusted)	0.17		0.16		0.44		0.48	

I estimate

$$R_{Gap,i} = \alpha_1 + \alpha_2 * ER_{Explicit,i} + S_G * Growth_{Gap,i} + S_I * Income_{Gap,i} + S_M * Mid_{Gap,i} + S_S * Small_{Gap,i} + B_1 * Bull_{Mi} + Chance_i$$

where the dependent variable $R_{Gap,i}$ equals the percentage point gap between the market return and the return fund i provided its investors over the period fund i was in the sample. I drop $ER_{Explicit}$ from the UK regressions due to a lack of data. Returns are annualised geometric average monthly returns (in percentage points). See Table 5 for variable definitions and Table 6 for summary statistics. Preliminary analysis indicated that Chance is heteroskedastic. I therefore estimate the specifications using the White correction for the standard errors. In unreported regressions, I also estimated a multiplicative heteroskedastic model (as implemented in the econometrics software package Shazam) but did not find any material difference in either coefficient estimates or statistical significance. A "*" (**) denotes significance at the 1% (5%) level.

Estimating the R_{Gap} equation discussed above, I find that $\text{Style}_{\text{Gap}}$ s significantly affect fund performance (see Specification A1 in Table 8).⁵⁶ These results imply that a non-trivial portion of the average value of R_{Gap} for UK actively managed funds is due to Style effects in general and to the underperformance of Small-Cap funds in particular. Consequently, the Simple Average method overstates the true long term average value of R_{Gap} for UK actively managed funds, and so leads to an over-estimate of their MP1.

To illustrate how Net $[\text{ER}_{\text{Explicit}} + \text{ER}_{\text{Implicit}}]$ and Style effects combine to create observed R_{Gap} s, consider Small-Cap funds. Specification A1 states that

$$R_{\text{Gap},i} = \alpha_1 + (S_S * \text{Small}_{\text{Gap}}) + \text{Chance}_i = 2.71\% + (0.77 * \text{Small}_{\text{Gap}}) + \text{Chance}_i$$

On average, a Small-Cap fund saw small-cap stocks underperform by 2.90% (see Table 5). Given this level of underperformance, the average Small-Cap fund would underperform by⁵⁷

$$R_{\text{Gap,Average}} = 2.71\% + (0.77 * 2.90\%) = 4.94\%$$

Of this average R_{Gap} of 4.94%, 2.23% ($0.77 * 2.9\%$) is due to the underperformance of Small-Cap stocks, and the remaining 2.71% is independent of the return on Small-Cap stocks. The 2.71% is then due to the funds themselves, and so is equal to Average Net $[\text{ER}_{\text{Explicit}} + \text{ER}_{\text{Implicit}}]$.

Taking these Style Effects into account, the R_{Gap} analysis (Table 8, Specification A1) implies that

$$\text{Average Net } [\text{ER}_{\text{Explicit}} + \text{ER}_{\text{Implicit}}]_{\text{UK Active}} = \alpha_1 = 2.71\%$$

The Econometric method therefore implies that

56 I find that BullIM is not significant (probably because the Bull Market in the UK has been less extreme than that in the US). Dropping the insignificant BullIM parameter from the equation increases the estimate of α_1 (see Table 8, Specification A2). Since increasing α_1 increases the estimate of Net $[\text{ER}_{\text{Explicit}} + \text{ER}_{\text{Implicit}}]$ for actively managed funds, I err on the side of caution and base my estimate of the UK actively managed fund MP1 on Specification A1.

57 Recall that Chance_i will average out to (almost) zero across all Small-Cap funds, and so will not affect the average R_{Gap} of Small-Cap funds.

Table 9	
UK Actively Managed Funds	
Average [Net [$ER_{Explicit}$ + $ER_{Implicit}$]]:	
The Econometric Method	
Best Estimate	95% Confidence Bound
2.71%	2.37% – 3.05%

Setting R_{Market} and U equal to their average values, it follows that

Table 10	
UK Actively Managed Funds	
MP1: The Econometric Method	
Best Estimate	95% Confidence Bound
£1.45	£1.38 – £1.52

The US

Comparing the Simple Average and the Econometric methods for the case of the UK indicates that $Style_{Gap}$ s affect R_{Gap} s. Inspecting the summary statistics for the US sample in Table 5 reveals that $Style_{Gap}$ s and BullIM are likely to be far more important for the US than for the UK ($Style_{Gap}$ s are larger and US funds experienced a more extreme Bull market). Consequently, the Simple Average method is clearly inappropriate in the case of the US. I therefore proceed directly to the Econometric method.

Recall that, lacking data on $ER_{Explicit}$ for the complete UK sample, I was unable to include an $ER_{Explicit}$ term in the UK regressions. To provide a comparable estimate for the US, I therefore first estimate the US R_{Gap} equation without an $ER_{Explicit}$ term

(Table 8, Specification A3) and then estimate the full R_{Gap} equation discussed above (Table 8, Specification A4).

As expected, both specifications indicate that $\text{Style}_{\text{Gap}s}$ and BullM significantly affect fund $R_{\text{Gap}s}$. Controlling for these effects and using Specification A3, the analysis implies that

$$\text{Average Net } [ER_{\text{Explicit}} + ER_{\text{Implicit}}]_{\text{US Active}} = 2.37\%$$

Hence,

Table 11	
US Actively Managed Funds	
Average [Net [ER_{Explicit} + ER_{Implicit}]]:	
The Econometric Method	
Best Estimate	95% Confidence Bound
2.37%	1.95% – 2.79%

Setting U equal to its US sample average of 1.34% and R_{Market} equal to 10% (to put UK and US funds on an equal footing), it follows that

Table 12	
US Actively Managed Funds	
MP1: The Econometric Method	
Best Estimate	95% Confidence Bound
£1.33	£1.26 – £1.41

Comparing the UK and the US results, one finds that the average long-run value of R_{Gap} (Net $[ER_{\text{Explicit}} + ER_{\text{Implicit}}]$) is about 30 bp lower for US funds. This higher long-run R_{Gap} , together with higher average upfront costs, pushes the UK actively managed fund MP1 above that of the US. I discuss the likely cause of this difference in the next section.

Turning now to the relationship between ER_{Explicit} and long-run R_{Gap} (Table 8, Specification A4), I find that⁵⁸

$$\text{Net } [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}]_{\text{US Active}} = 1.50 * ER_{\text{Explicit},i}$$

This result suggests that the expected price of investing through a given fund increases as its explicit charges increase, and that the combined net impact of explicit charges and implicit costs on fund performance is likely to be about 50% higher than one would expect on the basis of explicit charges alone.⁵⁹

Are these estimates plausible?

Taking the UK MP1 estimate first, a possible reason to doubt the £1.45 figure derived above is that the analysis is all top-down: I start with observable R_{Gap} , strip out the portion of R_{Gap} that does not determine MP1, and then calculate MP1 on the basis of what is left. It is therefore conceivable that some other factor similar to Style (or even bad luck) affected average R_{Gap} over my sample period, and that I do not know what this factor is. Not knowing what it is, I do not control for it. This hidden factor could then bias my MP1 estimate up (or, equally likely, down).

Given this possibility, it would increase one's confidence in this MP1 estimate if one could obtain roughly the same number working from the bottom up. To do so, note that the top-down analysis above finds that explicit charges and implicit costs create an average gap of 270 bp between R_{Market} and R_{Fund} . ER_{Explicit} can account for 140 bp of that gap. What can account for the remaining 130 bp?

58 The constant term (α_1) is insignificant.

59 Using Specification A4 rather than A3 to estimate the long-run average R_{Gap} for US funds does not materially alter the results.

We know that ER_{Implicit} is largely determined by dealing costs. As I discussed above, the cost of a round-trip trade is in the region of 150 bp to 180 bp. The average turnover on US actively managed funds is between 70% to 90% per year, and (though precise data are lacking) consultations with the fund management industry and articles in the financial press indicate UK funds engage in a similar level of turnover.⁶⁰ An average turnover of 70% to 90% implies an ER_{Implicit} in the region of 105 bp to 160 bp.

Consequently, observed ER_{Explicit} and the level of ER_{Implicit} implied by likely average portfolio turnover together imply that the gross sum of ER_{Explicit} and ER_{Implicit} will be in the region of 245 bp to 300 bp. My estimate of Net [ER_{Explicit} and ER_{Implicit}] is then in the middle of the range that one would expect given observable explicit charges and likely implicit costs.

Thus, the evidence does not support the hypothesis that the MP1 I calculate above is really due to some hidden factor (or systematic bad luck on the part of active fund managers) that I do not take into account. Indeed, the evidence suggests further that, on average,

$$\text{Net } [ER_{\text{Explicit}} + ER_{\text{Implicit}}] = \text{Gross } [ER_{\text{Explicit}} + ER_{\text{Implicit}}]$$

That is, it appears to be the case that, on average, resources devoted to actively managing a fund do not create any off-setting improvement in fund performance.^{61, 62}

Turning now to the difference between the price of investing through actively managed funds in the UK and the US, note that US funds do not pay stamp duty when they trade. If they did, then the average long-run R_{Gap} for US funds would be about 35 bp to 45 bp higher than observed (assuming that portfolio turnover remained unchanged). Since the estimated long-run R_{Gap} of UK funds exceeds that

60 See, for example, Orton, Ian, "Churn: Just why are portfolios turned over so often?", *Financial Times*, 16/10/99

61 This result is consistent with that of Carhart [1997].

62 It is important to note, however, that I examine only the UK and the US. These two markets are among the most efficient equity markets in the world, and one would expect the benefits of actively managing a fund to decrease as market efficiency increases. Hence, my results in no way rule out the possibility that active management may enhance fund performance in less efficient markets.

of US funds by 34 bp, one may conclude that the higher long-run R_{Gap} of UK funds is due entirely to Stamp duty. Higher upfront charges together with Stamp duty then combine to push the actively managed fund MP1 in the UK above that of the US.

The estimates of the price of investing through actively managed UK and US funds I derive above are thus entirely consistent with what one would expect on the basis of observable explicit charges and likely implicit costs. If my estimates had been considerably higher, or if the UK and US estimates had diverged to a more significant degree than likely differences in trading costs could explain, one might have concluded that the analysis omitted a significant factor. If my estimates had been considerably lower, one might have concluded that active management did improve fund performance (on average). As the estimates stand, I conclude that the price of investing through actively managed funds is most likely in the region I identify, and that each £1 spent on managing a fund (either on explicit charges or implicit costs) reduces the total return to the fund's investors by about £1.

3.4.2 The price of investing through index trackers

I begin by deriving the MP1 of investing through UK and US index trackers. I then consider what the analysis implies for the differences between investing through index trackers and actively managed funds.

The UK

I could not run the full R_{Gap} equation for UK actively managed funds because Micropal did not provide ER_{Explicit} data on the significant proportion of actively managed funds that ceased to exist at some point over the sample period. Fortunately, the index trackers in my sample were all live when I collected my data, so I possess ER_{Explicit} data for all of them. I therefore analyse the price of investing through these funds with the full R_{Gap} equation (skipping the Simple Average approach for the reasons discussed above). One may find the UK (and US) index tracker R_{Gap} equations in Table 13.

This analysis implies (Specification I1) that the long-run average R_{Gap} of a UK index tracker fund equals

$$\text{Net } [ER_{\text{Explicit},i} + ER_{\text{Implicit},i}]_{\text{UK Index}} = 1\% + 0.88 * ER_{\text{Explicit},i}$$

Table 13
Estimating R_{Gap} For Index Tracker Funds

Dependent Variable: R_{Gap}				
Parameters	Specification I1		Specification I2	
	UK Funds		US Funds	
	Estimate	Standard Error	Estimate	Standard Error
α_1 (constant)	1.00*	0.40	0.45*	0.21
$ER_{Explicit}$	0.88*	0.39	0.91*	0.39
BullM	- 0.25*	0.06	0.07*	0.03
Small _{gap}	1.15*	0.03	0.94*	0.03
R^2 (Adjusted)	0.86		0.97	

I estimate

$$R_{Gap,i} = \alpha_1 + \alpha_2 * ER_{Explicit,i} + S_S * Small_{Gap,i} + B_1 * Bull_{Mi} + Chance_i$$

where the dependent variable $R_{Gap,i}$ equals the percentage point gap between the market return and the return fund i provided its investors over the period fund i was in the sample. Returns are annualized geometric average monthly returns (in percentage points). See Table 4 for variable definitions and Table 5 for summary statistics. Preliminary analysis indicated that $Chance$ is heteroskedastic. I therefore estimate the specifications using the White correction for the standard errors. A "*" (**) denotes significance at the 1% (5%) level.

Setting $ER_{Explicit}$ equal to its UK index tracker average value of 0.98% (see Table 5), it follows that

Table 14	
UK Index Trackers	
Average [Net [$ER_{Explicit}$ + $ER_{Implicit}$]]:	
The Econometric Method	
Best Estimate	95% Confidence Bound
1.86%	0.97% – 2.77%

Setting R_{Market} equal to 10% and U equal to its UK index tracker average value of 2.7%, the average MP1 of investing through a UK index tracker equals

Table 15	
UK Index Trackers	
MP1: The Econometric Method	
Best Estimate	95% Confidence Bound
£1.26	£1.14 – £1.42

The US

Turning to the US, the R_{Gap} analysis (Table 13, Specification I2) implies that

$$\text{Net [} ER_{Explicit,i} + ER_{Implicit,i} \text{]}_{UK\ Index} = 0.45\% + 0.91 * ER_{Explicit,i}$$

Setting $ER_{Explicit}$ equal to its sample average value of 0.45%,

Table 16 US Index Trackers	
Average [Net [$ER_{Explicit}$ + $ER_{Implicit}$]]: The Econometric Method	
Best Estimate	95% Confidence Bound
0.86%	0.41% – 1.31%

Setting U equal to its sample average value of 0.27% (most US index trackers do not levy an upfront charge) and R_{Market} equal to 10%, it follows that

Table 17 US Index Trackers	
MP1: The Econometric Method	
Best Estimate	95% Confidence Bound
£1.10	£1.05 – £1.15

Index trackers vs. actively managed funds

The analysis above indicates that, in both the UK and the US, the price of investing through an index tracker basically equals⁶³

$$\text{Net } [ER_{Explicit,i} + ER_{Implicit,i}] = \text{Base Implicit Costs} + 1 * ER_{Explicit,i}$$

As in the case of actively managed funds, then, the expected price of investing through an index tracker increases as its level of explicit charges increases.

63 Though the $ER_{Explicit}$ coefficient estimates for both the US and the UK are slightly less than 1, the difference is not statistically significant.

However, an index tracker's long-run R_{Gap} increases at a rate of 1 to 1 with Explicit charges rather than 1.5 to 1 as in the case of (US) actively managed funds. The likely cause of this difference is that higher charging index trackers probably do not also engage in more extensive dealing. Consequently, a rise in ER_{Explicit} is not associated with a rise in ER_{Implicit} .

The US index tracker results indicate that the average price of investing through such a fund (MP1 of £1.10) is less than that of investing through either an actively managed fund (average MP1 of £1.32) or through a notional MCEM fund (MP1 of £1.15). The price of investing through an MCEM fund is less than that of investing through the average actively managed fund because a MCEM fund does not bear the cost of active management in excess of that needed to bring about an efficient market.⁶⁴ Index trackers go MCEM funds one better by largely avoiding active management all together and passing on the cost savings to their investors.

The average price of investing through a UK index tracker is slightly higher than that of investing through a MCEM fund, though lower than that of investing through an actively managed fund. The relatively high price of investing through UK index trackers arises from a combination of relatively high annual charges (0.98% vs. 0.45% for the US) and relatively high base implicit costs (1% vs. 0.45% for the US).⁶⁵

3.4.3 The disclosed vs. total price of investing for UK Unit Trusts

Ideally, disclosed costs and charges would provide both a reasonable indication of the likely (average) price of investing through a given fund and an accurate indication of the relative price of investing through available fund propositions (e.g., active managed funds vs. index trackers). To assess the extent to which they do so, I calculate the MP1 implied by explicit charges alone and compare that MP1 to one based upon total costs and charges for three UK funds: namely, a notional MCEM fund, an average UK index tracker, and an average actively managed fund.

64 As I demonstrated above, each £1 spent on active management reduces a fund's return by, on average, about £1. Reducing expenditure on active management therefore lowers the price of investing through a fund (at least in efficient markets such as the UK or the US).

65 It is important to note, however, that the high average level of annual charges for UK index trackers masks the fact that some have very low annual charges.

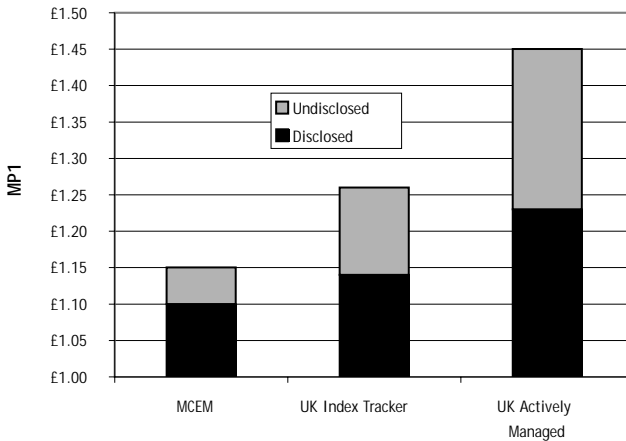
I find that

Table 18			
The Disclosed Vs. Total Price of Investing for UK Funds			
Costs and Charges Taken into Account	MCEM Fund	Index Tracker	Actively Managed Fund
Disclosed Charges Alone (U, ER_{Explicit})	£1.10	£1.14	£1.23
All Costs and Charges ($U, ER_{\text{Explicit}}, ER_{\text{Implicit}}$)	£1.15	£1.26	£1.45

I plot the disclosed vs. total price of investing in Table 19. As one can see, explicit charges alone provide a poor guide to the total price of investing through both index trackers and actively managed funds. In addition, explicit charges present a misleading picture of the relative price of investing in an actively managed fund rather than an index tracker. On the basis of explicit costs alone, the MP1 of the typical actively managed fund exceeds that of an average index tracker by about 10p. In reality, however, the MP1 of the typical actively managed fund exceeds that of the average index tracker by about 20p.

Table 19

The Disclosed and Total Price of Investing For UK Funds



The total expected price of investing through a given fund is determined by its upfront charges, explicit charges (e.g., the annual management charge), and implicit costs (arising principally from dealing costs). However, investors can observe only upfront charges and explicit charges. To assess the extent to which disclosed charges alone provide an accurate indication of the total price of investing through a fund, I compare the MP1 based upon disclosed charges alone with the MP1 based upon all costs and charges for three UK funds: a notional MCEM fund, the average index tracker, and the average actively managed fund. The price of an MCEM fund is set so as to provide a retail investor with the core portfolio management services he requires and to pay for a degree of active management sufficient to support efficient capital markets. To carry out the MP1 calculations, I set R_{Market} equal to 10% (its average value over the 1987 to 1998 sample period).

4 The price of investing through Life Offices

Due to their institutional structure, estimating the price of investing through life offices raises a number of issues that did not appear in the case of unit trusts. I therefore begin this section by discussing how I adapt my general approach (including how I measure MP1) to this case. I then discuss the life office sample and data, and then estimate the life office MP1.

4.1 Approach

4.1.1 Adapting the Analysis to Life Offices

Life offices offer highly intermediated investments (investing through a life office takes the form of buying a “policy”) characterised by complicated charging structures and significant amounts of investor pooling. A given investor’s return is thus highly dependent upon his or her exact policy and circumstances. It follows that performance data comparable to those one finds when examining unit trusts and mutual funds are simply not available.⁶⁶

Furthermore, while regulations require that each “life office” files an annual statement of its financial position, single economic entities sometimes find it convenient to divide themselves into numerous legal entities for reporting purposes.⁶⁷ Allocating joint costs across these entities is no doubt influenced by accounting convenience as well as economic fundamentals.

66 Since 1995 life offices have been required to disclose a policy’s estimated (technically defined) charges if premiums are paid over the full term of the policy. Yet, since a significant number of investors do not do so (see the PIA Persistency reports), disclosed charges give at best a qualitative measure of average charges. Trade publications (e.g., *Money Management*) provide information on the performance of individual headline policies (such as a 25 year personal pension plan with contributions of £200 per month). But this may not provide a good estimate of the average return to a life office’s investors.

67 For example, the Prudential divides itself into 9 separate life offices for reporting purposes.

Calculating the average price of investing through a life office on an investor by investor basis is therefore impossible, and even doing so on an office by office basis is difficult.

Instead, I pursue a top-down approach by combining all life offices together. I then treat this combined entity as a single unit trust. Similarly, I amalgamate all investors into a single representative investor, and consider the price that this representative investor pays to invest through life offices as a whole.

This approach will enable me to derive a rough overall estimate of the price of investing through life offices. But the need to look at the available (highly aggregated) data prevents me from exploring the possibility of individual fund/policy measures of MP1 and from examining the relationship between explicit charges and implicit costs.

Life Offices as pure investment funds

By approaching the price of investing through life offices in this way, I am treating life offices as pure investment funds. In doing so, I am ignoring two key aspects of their business, namely pure insurance and risk-reduction. If these aspects of the business add significant amounts of value to the policies investors purchase, then by ignoring them my approach will overstate the true price of investing through life offices (or understate the services which are purchased for this price).⁶⁸ To assess the potential magnitude of this distortion, consider the insurance and risk-reduction aspects of investing through a life office in turn.

To gauge the importance of the pure insurance aspect of life office business, note that total claims arising from death, "other insurable events" and permanent health

⁶⁸ It is important to bear in mind here that adding an insurance element to its long-term investment policies in itself neither increases nor decreases the total return a life office provides to its investors, and so will not affect the life office MP1. Rather, the insurance element redistributes total returns across investors (from those who do not make pure insurance claims to those who do). This redistribution adds value from the perspective of an individual investor by providing the investor with a higher return in states of the world where the investor places a high value on that return at the expense of lowering the investor's return in states of the world where the investor places a lower value on that return. Adding an insurance element to its investment products will raise a life office's MP1 to the extent that providing that element increases the life office's costs. However, the incremental cost of providing a small insurance element must be trivial given that life offices already have the infrastructure in place to run long term investment funds.

policies accounted for less than 9% of total claims paid out by life offices in 1997.⁶⁹ Even this 9% figure overstates the claims that fall under “insurance” properly considered, for in many cases of claims due to death (the principal source of “insurance” claims) the claim paid out is worth no more than the invested value of the premiums paid in (a unit trust would provide the same benefit to one’s heirs). Thus, life offices can be thought of as essentially running investment funds with a small pure insurance element. Ignoring the value an investor may assign to the insurance element should not therefore greatly distort my analysis.

Life offices also offer an investor who takes out a “with profits” policy a unique form of risk reduction by smoothing the impact of market fluctuations on the terminal value of those policies. While the terminal value of a with profits policy is determined primarily by the investment performance of the life office’s main fund over the life of that policy, life offices put some portion of the investment gains that occur during periods of strong performance into a reserve. They then use the funds in the reserve to top-up the terminal value of policies that mature during periods of weak performance. Since an investor cannot know in advance if his or her long term policy will come due during a period of strong or weak performance, this smoothing should reduce the variance of the policy’s terminal value. This reduction in variance adds value for a risk-averse investor.

However, investing through a life office also exposes investors to additional risks. An investor who takes out a regular premium policy (a policy requiring regular payments) generally receives a very low (and quite possibly negative) real rate of return if regular payments are not maintained (especially in the policy’s early years). Since a considerable proportion of investors in regular premium policies do fail to maintain regular payments,⁷⁰ regular premium policies are (ex ante) risky investments. It is thus an open question whether the overall net effect of taking risk into account would be to raise or to lower the price of investing through a life office.⁷¹ For simplicity, then, I assume that the benefits of smoothing offset the costs of persistency risk.

69 Source: Form 42, 1997 FSA Returns. See below for details of the sample.

70 Source: PIA Persistency Reports. PIA data measures persistency only over initial years, and there are no publicly available data on long term persistency. However, it is not unusual to find that 30% of a life office’s investors fail to persist for even 3 years.

71 Murthi, Orszag, and Orszag [1999] provide an illuminating discussion on this point.

4.1.2 Adapting MP1

Given the degree to which I am aggregating funds and investors here, it does not make sense to separate out upfront and continuing charges (to the extent that such an undertaking would even be feasible or informative given life office accounting). I therefore fold all charges into continuing charges.

Consequently, the life office MP1 ($MP1_{LO}$) equals

$$MP1_{LO} = \frac{R_{Market,LO}}{R_{Fund,LO}}$$

where $R_{Market,LO}$ is the geometric average rate of return on the combined life office portfolio and $R_{Fund,LO}$ is the representative investor's geometric average rate of return (this return includes claims, which are one way that investors realise their returns).⁷²

By measuring $MP1_{LO}$ in this way, I am implicitly assuming that life offices provide their investors with the portfolio they desire. I therefore take portfolio composition as given and calculate R_{Market} on the basis of that portfolio (rather than, for example, setting R_{Market} equal to the return on UK equities). Consequently, the fact that the return on the combined life office portfolio tends to be lower than the return on an all equity portfolio does not as such increase the life office MP1. However, since the return on the life office portfolio is generally lower, the life office MP1 will be higher than the unit trust MP1 for a given gap between R_{Fund} and R_{Market} (as costs then eat up a higher proportion of the lower total return provided by the life office portfolio).

Of course, an individual investor cannot reasonably decide between investing through a unit trust and a life office on the basis of MP1 alone (since the investor would have to determine the value he or she personally attaches to each investment vehicle's unique features). However, the life office MP1 will yield an at least roughly accurate measure of the average price of investing through them.

72 I use geometric averages here for the reasons discussed above in footnote 35.

4.2 The sample

The Insurance Directorate (formerly of the Department of Trade and Industry, currently of the FSA) requires that each life office files an annual statement of its financial position. These statements (previously DTI and now FSA Returns) provide the only detailed public data on life office expenses and performance. SynThesys Information has done an excellent job collecting, checking, and making consistent all post-1985 FSA Returns for all life offices. I use their database (SynThesys Life) for this analysis.

My sample consists of all life offices that do long term business in the UK. Life offices divide their long term business into two branches: the Industrial (IB) and the Ordinary (OB). The IB covers the door to door, generally small premium business, and the OB covers what one would normally think of as the retail investing business. Since the IB business constitutes a small and declining share of total life office funds under management, and since IB policies are not in the same economic market as unit trusts/OB life policies in any event, I limit my focus to the OB business.⁷³

I take as my sample period the period covered by SynThesys data, namely the years 1987 to 1998.⁷⁴

4.3 Data and summary statistics

Estimating MP1 requires a measure of the market rate of return on the aggregated life office portfolio and of the average return received by investors as a whole. Consider $R_{\text{Market},LO}$ and $R_{\text{Fund},LO}$ in turn. Before proceeding, I note that one may find a summary of variable definitions in Table 20, and summary statistics in Table 21.

73 IB assets accounted for only about 2% of total funds under management in 1997 (Source: FSA Returns). The generally small premium size and the need to maintain a door to door sales force combine to create high expense ratios for IB business. For example, the declared expense ratio on 10 year IB endowment policies averages about 6%.

74 FSA Returns report a life office's year-end financial position. Calculating the return to investors in year t therefore entails comparing year t with year $t-1$ FSA Returns. Thus, since my FSA data series begins in 1986, the sample period can begin no earlier than 1987.

Table 20
Life Office Variable Definitions

Parameter	Formula	Definition
Average Funds Under Management in year t	The average of funds under management in at the end of year t-1 and the end of year t	Ordinary branch funds under management
$R_{Market,LO}$	$R_{Reported,LO} + 45 \text{ bp}$	The real annual return on the (not directly observable) aggregated life office portfolio. I set this return equal to $R_{Reported,LO}$ plus 45 bp to cover implicit dealing costs (based on a 25% portfolio turnover)
$R_{Reported,LO}$	Reported Gross Gain on LO Portfolio/ Average Funds Under Management	The observable gross return on the life office portfolio (return before explicit costs but after implicit costs)
$ER_{Reported,LO}$	Reported Expenses Borne by Investors/ Average Funds Under Management	The Life Office equivalent of an Explicit Expense Ratio. However, I use $ER_{Reported}$ rather than $ER_{Explicit}$, as this ratio reflects charges disclosed on FSA returns but not necessarily disclosed to investors.
$R_{Fund,LO}$	$R_{Reported,LO} - ER_{Reported,LO}$	The return to the representative investor (including investment income and claims)

Life offices offer highly intermediated investments characterized by complicated charging structures and significant amounts of investor pooling. A given investor's return is thus highly dependent upon his or her exact policy and circumstances. It follows that performance data comparable to those one finds when examining unit trusts and mutual funds are simply not available. To examine the price of investing through life offices, I therefore pool all life offices together and treat the aggregated life office as a single unit trust. I then combine all investors into a single representative investor, and examine the price of investing from the perspective of this representative investor. I provide detailed definitions in the text.

Table 21
Life Office Summary Statistics

Year	Average Funds Under Management	$R_{Market,LO}$	$R_{Reported,LO}$	$ER_{Reported,LO}$	$R_{Fund,LO}$
1987	£267.60	6.15%	5.70%	3.35%	2.35%
1988	£286.53	7.48%	7.03%	3.61%	3.42%
1989	£323.21	15.00%	14.55%	3.68%	10.87%
1990	£324.61	-16.53%	-16.98%	3.67%	-20.66%
1991	£319.40	11.83%	11.38%	5.41%	5.97%
1992	£364.67	12.17%	11.72%	3.18%	8.54%
1993	£441.37	22.02%	21.57%	3.84%	17.73%
1994	£478.16	-5.91%	-6.36%	2.66%	-9.02%
1995	£498.59	14.31%	13.86%	2.30%	11.56%
1996	£559.01	10.72%	10.27%	3.56%	6.70%
1997	£628.18	16.66%	16.21%	4.62%	11.59%
1998	£717.55	13.66%	13.21%	2.73%	10.47%
Geometric Averages (All Years)	£413.30	8.45%	8.00%	3.55%	4.44%
Geometric Averages (Post 1993)	£569.82	9.57%	9.12%	3.17%	6.00%

This table presents summary statistics on the aggregated life office portfolio. One may find variable definitions in Table 20. Average funds under management are measured in £billions (in £1998). All returns are in real terms.

4.3.1 $R_{Market,LO}$

Ideally, one would simply set the market rate of return on the combined life office portfolio in a given year equal to the market rate of return on the assets in that portfolio in that year. Unfortunately, regulations do not require that life offices disclose the composition of their portfolios in any great detail, so one cannot measure $R_{Market,LO}$ in this manner.

Instead, I estimate the portfolio market rate of return as follows. Life offices do disclose information that enables one to calculate a reported rate of return on their portfolios. This reported rate of return ($R_{Reported,LO}$) will equal the underlying market rate of return net of any implicit portfolio management costs. To convert this reported rate of return into the market rate of return on the life office portfolio, I assume that portfolio turnover equals 25% (about 1/3 of the average turnover of a unit trust). On the basis of the trading cost estimate derived above, this level of turnover will create a gap of about 0.45% between $R_{Reported,LO}$ and $R_{Market,LO}$. I therefore assume that (denoting the year with a “t” subscript)

$$R_{Market,LO,t} = R_{Reported,LO,t} + 0.45\%$$

I measure $R_{Reported}$ as follows:

$$R_{Reported} = \frac{\text{Reported Gross Gain on the LO Portfolio in Year } t}{\text{Average Funds Under Management in Year } t}$$

The reported gross gain on the LO portfolio equals the increase in funds under management plus total expenditure minus premiums invested. Average funds under management in year t equal the average of funds under management at the end of year t-1 and at the end of year t.⁷⁵

75 In more detail, $R_{Reported}$ is calculated as follows. A life office's total long term (i.e., investment) business assets are found in FSA Form 13, Line 99 (henceforth “Fxx,Lyy”). Long term business assets contain those of both the IB and OB sections of a life office. I allocate assets between the two business segments in proportion to their reported liabilities (i.e., Funds Carried Forward, as reported on F40, L59). The gross gain to the fund thus equals the increase in ordinary branch total assets plus Total Expenditure (F40, L29) minus Earned Premiums (F40, L11).

4.3.2 R_{Fund}

Investors as a whole obtain a return equal to

$$R_{Fund,LO,t} = R_{Reported,LO,t} - ER_{Reported,LO,t}$$

where $ER_{Reported,LO}$ is the combined life office reported expense ratio.

$$ER_{Reported,LO} \text{ equals}^{76}$$

$$ER_{Reported,LO,t} = \frac{\text{Reported Expenses Borne by Investors in Year } t}{\text{Average Funds Under Management in Year } t}$$

where expenses borne by investors equal total expenditure after subtracting claims incurred and taxes paid.⁷⁷

4.4 The Life Office MP1

Over the entire sample period, the average market rate of return on the combined life office portfolio equals 8.45%, and the average return obtained by investors as a whole equals 4.44%. Consequently,

$$MP1_{LO,All-Years} = \frac{R_{Market,LO,All-Years}}{R_{Fund,LO,All-Years}} = \frac{8.45\%}{4.44\%} = \text{£}1.90$$

But this MP1 is certainly too high. Inspecting Table 21 indicates that the $ER_{Explicit,LO}$ fell dramatically in 1994, and has generally remained below its pre-1994 levels

76 I use “ $ER_{Reported}$ ” here rather than “ $ER_{Explicit}$ ” because, while these expenses are *reported* on FSA returns, I have not investigated the extent to which they are *explicitly* disclosed to investors.

77 In detail, Reported Expenses Borne by Investors equals Total Expenditure (F40, L29) – Claims Incurred (F40, L21) – Taxation (F40, L24).

since then. As a result of this change (perhaps due to the introduction of Disclosure reform in 1994/1995), it may be misleading to combine pre-1994 data with 1994 to 1998 data.⁷⁸

If one instead computes the Life Office MP1 using only post-1993 data, one finds that

$$MP1_{LO,Post-93} = \frac{R_{Market,LO,Post-93}}{R_{Fund,LO,Post-93}} = \frac{9.56\%}{5.95\%} = \text{£}1.60$$

This figure of £1.60 falls within the region of the actively managed unit trust MP1 of £1.45. Logic suggests that the life office and unit trust MP1s should not be too far apart, as life offices and unit trust companies have access to the same underlying technology of fund management and compete for the same business (albeit by offering slightly different fund propositions to retail investors). However, the number of assumptions required to calculate the life office MP1 might mean that the confidence interval around this figure is wide.

78 As a result of Disclosure reform, life offices were required to reveal a great deal more information about their explicit charges. Consequently, one might expect that Disclosure reform increased competition in the life office sector, bringing down explicit charges. Disclosure reform took effect on 1 January 1995, and so would have affected charging structures in 1994 (as they would have been disclosed on 1 January 1995).

5 Why investors select high MP1 funds

A recent AUTIF survey found that people looking to invest in a unit trust wish to (a) beat the return provided by a building society or current account and (b) obtain value for money.⁷⁹ But while the managed portfolios that people buy do generally deliver on the first objective, investors apparently pay a higher price for those portfolios than one might expect given their second objective. In this section I explore this seemingly anomalous behaviour. I show that the way that people choose funds combines with the way that funds compete for business to create an equilibrium where typical retail investors seeking value for money (low cost funds) will on average mistakenly select high cost funds instead.⁸⁰

5.1 How investors choose funds

People pick funds largely on the basis of (strong) past performance. Past performance is the reason people cite most often when asked why they chose the fund they did, and past performance also lies behind many of the other popular reasons that people cite (e.g., press recommendations).⁸¹ Furthermore, people do exactly what they say: studies of net fund inflows find that they are highly sensitive to past performance (Ippolito [1992], Sirri and Tufano [1993], Chevalier and Ellison [1997]).

Investors appear to give explicit charges (let alone implicit costs) little thought. AUTIF's survey found that only 14% of respondents cited "reasonable charges" as a reason for choosing the fund they did, and the SEC/OCC's [1996] survey found that only 19% of investors even knew their largest fund's annual expense ratio.⁸²

79 AUTIF [1998]

80 Due to a lack of previous research on life offices, I limit my analysis here to unit trusts and mutual funds.

81 AUTIF [1998]

82 This lack of attention comes as no surprise given that funds do not disclose their total costs and that people generally lack the knowledge of finance that would enable them to understand the impact of those costs on the price they pay to invest (Schagen and Lines [1996], SEC/OCC [1996]).

Unfortunately, focusing upon past performance and ignoring costs is not a consistently good way to go about selecting a value for money investment fund. Recall that a given fund's MP1 is likely to be high when the gap between that fund's net return and the market rate of return (R_{gap}) is likely to be large. And while it is true that good performance will reduce that gap, a good past (gross) performer has a no more than random chance of being a good long term future (gross) performer (WM [1999], PricewaterhouseCoopers [1998], Quigley and Siquefield [1999]).

High explicit charges, on the other hand, do have a strong and predictable negative impact upon net performance (Carhart [1997]). It follows that retail investors could lower their price of investing by selecting funds with low explicit charges. But retail investors do not generally pursue that strategy.⁸³

5.2 The market equilibrium

Retail investors largely ignore charges when selecting a fund, but they do not actively seek out high cost funds (i.e., holding past performance constant, a retail investor would as happily pick a fund with low explicit charges as with high explicit charges). Yet, investors on average do not select low charging funds.

To see why this might be, begin by considering the possible strategies available to a new fund. A fund acts to maximise profit, which is a positive (and probably non-linear) function of funds under management and continuing charges (I ignore upfront charges here for simplicity).⁸⁴ Given that investors behave as described

83 To be sure, many retail investors select a fund only after consulting with a financial advisor, and regulation requires that financial advisors give "best advice". The fact that such investors still choose high MP1 funds is thus something of a puzzle. Some light is shed on this puzzle by noting that, in the words of the PIA ("The Evolution Project", PIA Discussion Papers, paragraph 63), "there is a large element of opinion in what does or does not amount to best advice in any particular case, and there is no external yardstick [against which to judge advice given]". In practice, therefore, the best advice requirement places few constraints upon what funds an advisor can recommend.

84 Since a fund's operating costs will have a large fixed component, doubling funds under management or doubling charges (holding all else constant) almost certainly more than doubles profits. I note that these profits will not always manifest themselves as accounting profits (i.e., a payment to shareholders in one form or another). Rather, much of true profit may end up in wages and/or other expenses.

above, how would a fund choose its risk profile and charges so as to maximise profit?⁸⁵

Since new investors pick funds that beat the market, a fund will have an incentive to take risks so as to try to become a top performer. This risk-taking is worthwhile because while new investors select funds that have done well, a fund's incumbent investors tend to remain in the fund barring disastrous underperformance.⁸⁶ It follows that increasing risk has more upside than downside. Consequently, funds (especially new funds) will tend to adopt a relatively risky strategy.⁸⁷

If a fund pursues a relatively risky strategy and is successful, then its *gross* return will significantly exceed that of the market. It follows that its *net* return will still significantly exceed that of the market if its explicit charge ratio lies at or below that of a typical fund. Since the fund's profit per £1 under management will increase non-linearly as its explicit expense ratio increases, and since increasing its expense ratio (at least up to a level in line with that of a typical fund) will have a relatively small impact on new investment, a fund has no incentive to minimise its explicit expense ratio.⁸⁸

85 I assume here that funds profit only from explicit charges and not from implicit costs.

86 To illustrate with Chevalier and Ellison's (1997) figures, a 2 year old fund that beats the market by 10 percentage points can expect net inflows equal to about 60% of its funds under management in year 3. If the same fund gambles and underperforms by 10 percentage points, however, it loses only about 15% of its funds under management. Further limiting the downside of taking big bets, I note that disposing of an unlucky fund is not costly, as an unlucky fund (one that experiences several years of poor performance) can simply be acquired by a larger fund with superior performance. In such cases, the combined fund reports the performance of acquiring fund, so the acquiring fund pays no penalty for acting in this manner. Such behaviour contributes to the "survivorship bias" discussed above in relation to measuring the average unit trust MP1.

87 And so one finds. WM [1999] demonstrates that equity fund performance is significantly more volatile than the return on the underlying market. Chevalier and Ellison [1997] find that funds alter their risk profiles over the course of the year so as to maximise fund inflows.

88 I have ignored the effect of advertising/marketing and reputation on fund inflows here, though these factors undoubtedly play an important role (in part because I am aware of no formal economic studies on the topic). However, since high charging funds will be in a better position to exploit advertising and to pay high commissions, etc., incorporating the effects of advertising and marketing would most likely only increase the relative attractiveness of the high charging strategy. Howard Davies explored this dynamic in his 1998 Henry Thornton lecture ("Why (Some) Financial Services Should Be Regulated", delivered at the City University Business School on 4 November 1998).

As a fund matures, a given year's return has a reduced effect upon its overall net of market return. Consequently, mature funds have less incentive to gamble and less ability to grow rapidly by attracting new fund inflows (Chevalier and Ellison [1997]). Profits will then come largely from funds currently under management. How will such a fund behave to maximise profits?

Since investors display considerable amounts of inertia, the consistent but "slight" underperformance that is likely to follow from high explicit charges will have a limited impact on funds under management. A large reduction in the explicit expense ratio would, however, dramatically affect profits per £1 under management. Hence, established funds may have no incentive to reduce explicit expense ratios.

Given a choice between a high charging fund with good past performance and a low cost index tracker (low MP1, slight underperformance due to charges), investors will tend to choose the high MP1 fund. Funds in turn may find it more profitable to levy high charges and trust to episodes of good performance to attract investors than to offer low MP1 funds. Consequently, investors may (unconsciously) demand, and investment companies may (consciously) supply, high MP1 funds.

6 Conclusion

Retail investors cannot easily measure the price of investing through the investment funds they must choose between, in part because a significant element of this price is mostly not disclosed at all. Moreover, even where retail investors can identify elements of this price, they may not place sufficient weight on this information in taking investment decisions.

If retail investors had the knowledge and the information needed to assess which funds provided value for money portfolio management and risk management services, then they would be able to exercise more effective investment decisions. There may be scope to move further towards this by improving the knowledge and understanding of retail investors through a combination of better disclosure and increased public awareness, including through the publication of comparative information. The FSA intends to pursue these possibilities further, in consultation with the industry, consumers, and other interested parties.

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Registered as a Limited Company in England and Wales No. 1920623.
Registered Office as above.