Final report

Performance persistence in UK equity funds – A literature review

Submitted to:

Association of Unit Trust and Investment Funds
65 Kingsway
London WC2B 6TD

Prepared by:

T Giles, T Wilsdon & T Worboys
Charles River Associates Limited
1 Undershaft
London EC3A 8EE

January 2002

CRA No. D03374-00

Acknowledgement

We would like to thank Professor Schaefer of London Business School for his helpful comments during the preparation of this report.

Contents   *Page*

Tables   *Page*

Executive Summary

The Association of Unit Trust and Investment Funds (AUTIF) commissioned Charles River Associates Limited (CRA) to undertake an independent investigation of whether information on the past performance of UK unit trusts is useful for retail consumers (or their advisers) in making investment decisions.

This commission was undertaken in order to submit a robust response to a number of publications prepared either for, or on behalf of the FSA, which discuss the use of past performance and its use in the Comparative Tables. The findings of Bacon and Woodrow, the FSA's Occasional Paper 9 and the FSA Task Force on Past Performance have concluded that the past performance of equity fund information is not relevant to consumers in the selection of funds.

The first part of the commission has been to survey the academic and professional literature written on the subject of performance persistence in unit trusts (known as mutual funds in the US). The objective of this report is to provide the most comprehensive review of the literature to date. It reviews the literature cited in other studies and draws on evidence previously overlooked. Based on this thorough appraisal, it re-examines these conclusions. The findings are:

- **Many studies in the UK and the US do find evidence of persistence in past performance.** This suggests that there is valuable information in past performance data.

- **The importance of past performance depends on the fund's position.** There is strong evidence of persistence among poorly performing funds but only mixed evidence of persistence amongst the top performing funds. Discounting the value of information on persistently poorly performing funds throws up a significant regulatory risk.

- **Few studies look at persistence from a consumer's perspective.** Many studies are answering different questions (i.e. testing for the skill of the fund manager). The US literature has moved further in this direction and has lessons on the appropriate methodology for studies in the UK.

- **Recent papers suggest past performance information is useful but needs to be used appropriately.** Evidence suggests that consumers invest and spend a disproportionate amount of time considering top funds where past performance may be a weak predictor. At the same time, consumers tend to keep their losing funds, when in fact they should not. Therefore, there may be a valid role for regulation in the use of past performance information.

Accordingly we conclude that it is unreasonable to presume that consumers cannot benefit from past performance data in the UK. As none of these studies are exclusively focused on the viewpoint of UK consumers, further empirical analysis is required to fully evaluate how that might be possible. This will be the subject of a further report.

Section 1   Introduction

The Association of Unit Trust and Investment Funds (AUTIF) commissioned Charles River Associates Limited (CRA) to undertake research on whether information on past performance was useful for retail consumers (or their advisors) when making their investment decisions.[1] The results of our analysis will be presented in two reports:

- the first report is a comprehensive and objective review of the existing literature; and

- the second will provide new evidence based on a statistically and economically robust analysis.

Background

In September 1999, the FSA published a paper by Bacon and Woodrow (1999) entitled "Comparative Information Tables" that considered which indicators should be included in the FSA's league tables for investment products. In this paper, it was recommended that past performance should not be included as an indicator for retail consumers.

This conclusion was controversial and in order to examine the question in more detail FSA staff examined the issue again in an Occasional Paper entitled "Past Imperfect? The performance of UK equity managed funds" (Rhodes (2000)). In summary, it was asserted in this paper that:

> *"retail investors could not usefully exploit information on past performance." p.5*

In September 2001, the FSA published its "Report of the Task Force on Past Performance" ((FSA (2001b)). The Task Force has been strongly influenced by the Rhodes (2000) and Bacon & Woodrow (1999) papers. Based on this analysis, past performance figures have not just been considered to be of little value but as potentially misleading to consumers. Indeed the Task Force had seriously considered a ban on the use of any past performance figures in fund advertising in spite (or perhaps because) of the weight that consumers put on this information.

The future performance of funds is highly complex and not given to simplistic prediction, as our literature review reveals. However, we will show that the conclusion that past performance is of no value is difficult to sustain.

The literature review

This report surveys the academic and professional literature that has been written on the subject of performance persistence in unit trusts (known as mutual funds in the US). The remainder of the report follows the structure below:

---

[1] Worboys (1999), for example, considers consumer behaviour in the light of US evidence.

- Section 2 considers the use of past performance information from a consumer's perspective. This is important because the question we are addressing concerns the use of information by a retail investor; this may be materially different from that assumed in some of the published material covered.
- Section 3 reports the evidence of persistence from research using data on UK unit trusts. We contrast our analysis, based on an extensive review of the existing literature, with the analysis undertaken for the FSA.
- Section 4 considers the results from US studies and the methodological approaches that have been developed through the many studies undertaken to date. These areas could be of interest both for inferences about UK policy and for the most appropriate research methodology to apply in our forthcoming analysis.

CRA believe that the literature review in Rhodes (2000) and Bacon & Woodrow (1999) fails to provide the FSA with a balanced representation of the evidence. In particular, both studies fail to provide a comprehensive view of the available literature; to cite papers in a balanced way; or to build on the methodologies that have been used in the past.

Accordingly this paper is comprehensive and often makes a number of references that may demonstrate a single point. However, this is intended to convey the message that there is a considerable weight of evidence that persistence in past performance data does exist: contrary to the conclusions of previous analyses presented to the FSA.

Section 2   The consumer's perspective

In order to judge whether past performance information is useful to retail consumers when making investment decisions we need to determine if there is any relationship between performance in the past (either good or bad) and performance in the future, i.e. persistence. However, we only need to determine *if* there is evidence of persistence in past performance and that retail consumers can exploit this information. This would be sufficient to justify past performance figures as information that should be available to retail consumers.

As a secondary issue it may then be possible to consider the sources of persistence, i.e. *why* persistence occurs. Persistence in performance could result from a number of sources (e.g. market timing, stock selectivity or momentum). Many of the academic papers concentrate their attention on this issue, whilst our primary interest is in the existence of persistence *per se*. In looking at past papers we therefore need to consider a number of key points:

- whether the funds are comparable to those available to retail consumers, i.e. retail funds;
- the treatment of risk;
- whether charges have been taken into account;
- whether the holding periods correspond to the behaviour of retail consumers; and
- how the issue of survivorship of funds has been taken into account.

These are discussed briefly in turn.

Retail funds

In determining the benefit of using information regarding persistence we initially focus our attention on studies of UK unit trusts (although clearly not all of these will be applicable to retail consumers). However we are also interested in whether persistence has been found in US mutual funds as both their performance studies and consumer studies display more sophisticated methodologies than the UK and use more comprehensive datasets.

Risk and abnormal returns

Academic studies have often concentrated on the question of abnormal returns. That is the issue of whether any particular strategy is capable of outperforming the market once the risk of that strategy has been taken into account. Market efficiency suggests that there would be no persistence in abnormal returns. Consequently academics have undertaken many of these studies in order to test this.

On the other hand, market efficiency does predict that there would be persistence in returns that have not been adjusted for risk unless all funds are exposed to identical risk

or the riskiness of the funds changes rapidly over time. That is, we would expect funds that were exposed to a higher risk to have higher average returns and less risky funds to have lower average returns. This is a point that is often missed by commentators who review the results of academic work and that is not made explicitly in the Rhodes (2000) paper. This has the very important implication for our analysis – papers that do not find persistence after adjusting for risk may still find persistence in unadjusted, raw, returns.

UK consumers should be interested in persistence whether it is risk adjusted or not (although the way they use this information might differ) and previous research must be reviewed in this light.

Charges

In order for any predictive power to be exploited it must lead to material benefits for consumers. Any persistence must not be offset by charges to the consumer, resulting in lower performance after charges. In a complete analysis, measures of returns must reflect the actual charges that are incurred by different groups of consumers. In this literature review we examine whether researchers have considered the charges faced by retail consumers.

The Rhodes (2000) paper does not consider charges explicitly but rather assumes that any short-term persistence must be offset by charges. This does not take into account that many consumers will be new consumers for whom any unavoidable portion of the charge can be considered sunk or that other consumers may have low switching costs due to the structure of their particular investment vehicle.

Holding periods

To fully consider the impact of charges on performance we need to take account of the assumed holding period of the investment. This needs to be consistent with the behaviour of retail consumers. For example, the benefits would be questionable if they required the consumer to reconsider their investment choice every month or alternatively to hold the fund for 20 years.

Survivorship issue

Finally, a significant number of funds are terminated through merger or closure. As it is more likely that a poorly performing fund will be closed rather than a fund that is performing well, this can introduce a significant bias into the analysis if it is not properly accounted for.

In serious academic studies the impact of this is often taken into account. However this can be done in a number of ways. From a consumer's perspective we want to include the real impact that closure can have on their returns. In the literature review we examine how researchers have accounted for the closure of funds.

A framework for analysis

To draw conclusions from the literature we need to review whether it is relevant from a consumer's perspective. Throughout our discussion of the UK literature (in Section 3) and the US literature (in Section 4) we note where differences in methodology make the results more or less relevant to answer the question at hand. We go on to summarise the most relevant studies in Table 7 and Table 14.

Section 3   UK literature review

Academic coverage of performance persistence in the UK unit trust industry has been relatively limited in comparison to the extensive amount of US literature (discussed in the next section). As a result the methodologies adopted, and both the size and quality of the data are generally less developed. However, as this literature is the most directly relevant to the question we are addressing we go through these papers in more detail.

1997-98 studies

The earliest study of persistence in UK unit trust performance[2] was by Fletcher (1997) who looked at a random sample of 101 UK unit trusts with Growth, General and Income objectives. Although based on a relatively small sample, the paper uses a relatively sophisticated methodology: using a number of alternative methods to calculate risk-adjusted returns.

Fletcher considers five portfolios of funds based on a ranking of five-year performance after taking account of risk. This was repeated looking instead at a two-year performance record. Survivorship bias was allowed for, where possible, through the continuation of funds following changes in name or transfers between management groups.[3] He compares the returns from the different portfolios and does not find evidence of performance persistence**.**

Quigley and Sinquefield (1998) build on this methodology by constructing portfolios based on relative performance in a particular year (i.e. ranking funds by decile) and then compare the performance of each of these portfolios in the next year. Their study considers many more funds than Fletcher, including all UK equity unit trusts that were in existence at any time between 1978 and 1997 (resulting in 752 funds in total).

They base their tests on performance before and after adjusting for risk. Using raw returns, they take the average of the performance of top and bottom portfolios over subsequent years and find an average difference of 3.54% between top and bottom decile portfolios. However, after allowing for trading costs[4] they do not find this to be a profitable investment strategy to follow. They go on to complete further more sophisticated analysis adjusting for risk firstly using a Capital Asset Pricing Model (CAPM) measure (see later discussion of Jensen's (1968) measure) and then a model that included market risk, size and value, i.e., a three-factor model.[5]

---

[2] This was pre-dated by papers considering persistence in pension and life funds, i.e. Budd (1989), and investment trusts, i.e. Bal and Leger (1996). Budd (1989) used 39 life and 18 pension funds and considered the performance of the managed fund sector, comparing two adjoining 5-year periods. This did not find evidence of persistence in top performing funds. Bal and Leger (1996) studied the performance of 92 UK investment trusts between 1975 and 1993. They found that fund rankings show significant inter-temporal persistence, especially in the income-producing group of funds.

[3] However, mergers were treated as fund terminations.

[4] A turnover of 80% p.a. and an average bid ask spread of 5%.

[5] See for example Fama and French (1993).

After accounting for risk in this fashion, they find that top decile returns are not significantly different from the average, but that low decile portfolios are found to have persistently poor subsequent annual performance using either risk model. Analysis of raw returns gives negative returns after adjusting for risk for the bottom four portfolios that are all statistically significant at the 5% level.[6] The result persists when three year, three factor, risk adjusted returns are used and also when expenses are adjusted for. This gives their conclusion:

> *"Does performance persist? Yes but only poor performance…Losers repeat, winners do not" p.90*

While this paper does not suggest persistence in positive returns, it certainly demonstrates that there is value in past performance data to the consumer, even after adjusting for trading expenses and risk.

However, it is important to note that the measure of return is based on bid-to-bid prices with gross re-investment. This does not take into account initial or annual charges to the consumer or the bid-offer spread. This reflects Quigley and Sinquefield (1998) objectives of measuring the performance of the fund manager not the returns to the customer.

Another methodology used to test persistence in performance data is ranking unit trust returns whether in raw or risk adjusted form over two consecutive time periods and measuring the proportion of the sample which continues in the same performance group (the group could contain "winners and losers" i.e. split in 2, quartiles – split in 4, quintiles – split in 5 or deciles - split in 10). This approach is often termed a "contingency table" and simple statistical tests can be used to draw conclusions about persistence of performance. This technique is used by a number of the recent UK papers including Blake and Timmermann (1998) and Lunde, Blake and Timmermann (1998), Allen and Tan (1999) and was applied in Rhodes (2000).

Lunde, Timmermann and Blake (1998) create portfolios of UK funds based on their abnormal (i.e., risk adjusted) returns over a 36-month period using a dataset of 2,300 UK unit trusts. They use a performance measure based on bid prices and net income and hence they also do not include transaction costs or management fees. The funds are sorted into quartiles and then it is assumed they are held for a further 36-month period, this is repeated over the sample. This resulted in transitional probabilities that link abnormal performance (top quartile performance is group IV, second quartile performance group III) in the pre and post sorting periods and gives a statistical measure of past performance.

If there were no persistence in performance we would expect to see each of the transition probabilities equal to 0.25. This is clearly rejected – the probability of repeated top performance in the top quartile is 0.355, and 0.332 in the bottom quartile:

---

[6] A difference of that size, or larger, would be observed less than 5% of the time, if there was actually no difference in corresponding population values.

Table 1: Persistence of peer group returns for UK equities – All funds

	Future performance			
	I	II	III	IV
Past performance	I (worst)	**0.332**	0.251	0.212	0.205
	II	0.224	0.267	0.288	0.221
	III	0.203	0.297	0.281	0.219
	IV (best)	0.242	0.184	0.219	**0.355**

Source: Lunde, Timmermann and Blake (1998).

Evidence of persistence is weaker with solely surviving funds used (due to the increased homogeneity of the funds), but it is still present:

Table 2: Persistence of peer group returns for UK equities – Surviving funds

	Future performance			
	I	II	III	IV
Past performance	I (worst)	**0.284**	0.240	0.221	0.255
	II	0.225	0.277	0.280	0.218
	III	0.221	0.303	0.266	0.210
	IV (best)	0.269	0.181	0.232	**0.317**

Source: Lunde, Timmermann and Blake (1998).

The economic significance of past performance is measured by comparing the mean abnormal returns on the four portfolios:

Table 3: Mean abnormal returns (monthly percentages) on funds sorted according to previous performance

	All funds	Surviving funds
I (worst)	-0.107	0.002
II	-0.039	0.004
III	-0.003	0.031
IV (best)	0.105	0.052

Source: Lunde, Timmermann and Blake (1998).

The difference between mean returns is 0.21% per month between the best and worst performing funds, giving a figure of 2.52% per year. The difference for solely surviving funds falls to 0.05% a month or 0.6% a year. They conclude:

> " while there is only weak evidence of persistence in the sample comprising funds that survived to the end of the period, inclusion of non-surviving funds introduces stronger evidence of persistence" p.20

Blake and Timmermann (1998) develop their earlier work on persistence by analysing persistence by sub sectors. In this case they sorted portfolios based on the previous 24

months and placed them in quartiles. These quartile portfolios were then formed and held for a month before the process was repeated.

The advantage of this methodology is that we can incorporate all the data on funds without making assumptions about the returns on funds invested in funds that have closed. However, this assumes that the portfolio is constantly reviewed and reformed. Any finding of persistence would need to be re-examined after accounting for charges.

Table 4: Mean abnormal returns (monthly percentages) for performance sorted portfolios of UK funds

	UK equity growth	UK equity general	UK equity income	UK smaller companies	UK balanced
A. Peer group adjusted returns					
Best performers	**0.176**	**0.130**	0.147	**0.270**	0.085
Worst performers	-0.118	-0.050	**-0.127**	**-0.318**	-0.095
B. Risk adjusted returns, equal-weighted portfolios					
Best performers	0.068	0.026	0.173	**0.232**	-0.022
Worst performers	**-0.127**	-0.065	-0.087	**-0.313**	-0.051
C. Risk adjusted returns, optimally-weighted portfolios					
Best performers	**0.119**	-0.035	0.134	**0.292**	0.039
Worst performers	**-0.140**	-0.063	-0.089	-0.302	-0.237

Source: Blake and Timmermann (1998). Bold denotes statistically significant at the 5% level Optimal weighting uses method of Gruber et al. (1996) based on modern portfolio theory.

The vast majority of UK equity portfolios derived from best performers have produced positive mean abnormal returns over the period whereas all the worst performers have produced negative mean abnormal returns.

Converting the above monthly figures into yearly returns results in mean abnormal returns of around 3% or –3% for the three different return groups (A, B and C) in the smaller companies sector – a large difference of 6% between the best and worst performers. The UK growth sector sees yearly differences in the region of 2 to 3.5% between the best and worst performers. The other funds show smaller differences between the best and worst performers but are all still positive and above 0.3%.

The strongest results therefore come in the UK smaller companies sector, with 5 out of 6 abnormal mean return figures statistically significant and UK equity growth with 4 out of 6 significant. Smaller companies and their returns relative to larger firms are often discussed in the literature, with an example being Quigley and Sinquefield's (1998) UK study and their use of a size variable.[7]

Blake and Timmermann conclude by saying that they find evidence of persistence in performance amongst both the best and worst performing UK funds and that their findings:

---

[7] Also see Fama and French (1993).

> *"...suggest that there is considerable persistence in abnormal returns and that past
> abnormal returns do provide important information useful for selecting future portfolios"*
> *p.73*

1999 studies

Following Blake's interest in sub-sectoral performance, Fletcher (1999) analysed 85 UK
unit trusts that have North American investment objectives over an 11-year period
between 1985 and 1996. He finds support for the assertion of market efficiency after
costs have been accounted for and no evidence of predictability in performance. This
work uses a small sample covering one sector and only partially accounts for
survivorship bias problems.[8]

The WM Company (1999) also used a contingency table approach, using five-year
returns. This is in contrast to many of the papers reviewed above that have focused on
shorter periods. They also only cover one sector – UK Growth and Income. They found
no evidence of a trust achieving top quartile performance in a five year period repeating
this in the next five years but did find:

> *"evidence of shorter term persistence with a defined top quartile in one year continuing to
> outperform as a group in the subsequent year"*

It should be noted that the focus here is solely on a defined top quartile. The bottom
quartile is not considered even though it is often noted that poor performance persists.

The most recent UK paper prior to Rhodes (2000) was Allen and Tan (1999). They find
further evidence of persistence in UK managed funds. Using 131 funds from 1989-1995
using four different tests; contingency tables based on winners and losers, chi squared
independence testing on those tables[9], Ordinary Least Squares (OLS) regression
analysis of CAPM risk adjusted returns and independent Spearman Rank Correlation
Coefficient (SRCC) calculations.[10]

Their table compares the performance in a two-year period to the subsequent two-year
period. This is repeated for 1990-91, 1992-93, 1993-94 and 1994-95. Winners and
losers are categorised by employing the median as a benchmark. So for example, of the
winners in the first period, 53.7% are winners in the subsequent period compared to
46.3% that are losers.

---

[8] For a detailed sectoral breakdown of survivorship bias issues see Blake and Timmermann (1998).

[9] The chi squared test evaluates whether one factor influences the probability of a second factor.

[10] Spearman's rank order correlation test checks for the existence, strength and direction of a relationship
between two rankings.

Table 5: Two-way tables of ranked alphas over successive two-year intervals

	Successive period	
	Winners	*Losers*
Initial Winners	66 (53.7%)	57 (46.3%)
Initial Losers	56 (45.2%)	68 (54.8%)

Source: Allen and Tan (1999). The top two funds in each quartile have been removed.

The findings here imply that performance persists for longer than the one year predicted by the "hot hands literature" begun in the US by Hendricks et al (1993) and works for at least a two year period. From these results Allen and Tan feel it may be better for an investor to hire a current top-performing manager since they are more likely to be the next period top performer. In this way an investment strategy could earn consumers excess returns, although the effect of costs on exiting consumers obviously needs to be considered.[11] Using the same periods as above, a similar test is carried out using four way tables.

Table 6: Four-way tables of ranked alphas over successive two-year intervals

	Successive period			
	Top ¼	Second ¼	Third 1/4	Fourth ¼
Initial period	(%)	(%)	(%)	(%)
Top ¼	**34**	26	21	19
Second ¼	16	36	40	10
Third ¼	25	21	24	**31**
Fourth ¼	24	16	16	**40**

Source: Allen and Tan (1999).

A figure of 25% would indicate no performance persistence. In contrast, the results show persistence in the top and bottom quartiles once again. Allen and Tan finish by describing how they adjusted for volatility and say:

> *"We investigated persistence of performance for raw returns and risk-adjusted returns and found that past returns and relative rankings are useful in predicting returns and rankings, even after adjusting for risk." p.587*

The FSA analysis

The review of the UK literature above gives rise to a number of concerns regarding the literature reviews provided by Bacon and Woodrow (1999) and Rhodes (2000) and their subsequent analyses.

---

[11] Allen and Tan's (1999) regression results produce a coefficient which leads you to expect the bottom fund to be in the 47th percentile and the top fund to be in the 53rd percentile for monthly risk adjusted returns.

Bacon and Woodrow completed the initial work for the FSA on past performance. They were initially asked to review only a small number of professional and academic journals by the FSA. Of the UK studies, they did not review Fletcher (1997), Blake and Timmermann (1998), Lunde, Blake and Timmermann (1998) and Fletcher (1999). It is therefore unsurprising that they could not make a comprehensive assessment of the literature.

Given the scope of their task they were also only able to undertake a relatively simplistic analysis. This relied primarily on graphical representation and a limited time period. In comparison, Blake and Timmermann (1998) in their UK study used over 2300 funds over 23 years, using sophisticated statistical and financial economic techniques.

For this reason, we can understand the necessity of the FSA undertaking further research. The Rhodes' (2000) paper represents an advance on the previous work completed by Bacon and Woodrow for the Comparative Information Tables. However, even this improvement showed a significant lack of knowledge of the amount of work that has been completed in this area (see the Bibliography and Table 7 for the UK literature). Rhodes comments:

> "The conclusion from an examination (of the past performance) literature is that repeat performance (if there is any) is both small in effect and short-lived." p.5

He then goes on to infer from this that:

> "The conclusion ... is that retail investors could not usefully exploit information on past performance." p.5

This paper however has some key flaws that lead to these conclusions being questionable. These include:

1. It still does not review all the relevant UK literature on past performance (see Table 7); based on a comprehensive review it is clear that the conclusions above are not supported;
2. The paper does not recognise the different questions being addressed in each of these papers;
3. On dismissing past performance it does not consider how consumers are to base their decisions in the absence of this information; and
4. It goes on to use a quantitative methodology that does not reflect the substantial advances discussed in the financial economics literature, in the UK and even more so the US literature.

In particular, Rhodes does not discriminate between two different questions: (1) whether there are profitable investment strategies for retail consumers based on past performance information, and (2) whether there is evidence of persistent skill of the fund manager. Most surprisingly, Rhodes does not appear to focus his analysis from a consumer's perspective, e.g., consumers care about cumulative returns rather than annual returns. Therefore even if persistence is transitory (that is performance reverts to the average) this still represents a permanent gain to the value of the fund.

Further, Rhodes (2000) relies on his observation that poorly performing funds are a small and inconsequential part of the unit trust industry. However, if consumers were discouraged from taking account of past performance:

- management incentives would be weakened and underperformance could become more prevalent; and

- the flow of funds into poorly performing funds is likely to increase.

It is equally of concern that Rhodes used a methodology significantly at odds with the conventional literature. Although he adopted the contingency table approach commonly used by authors in the UK, his analysis adopts a model of risk that runs contrary to past research and economic theory.

Table 7: Summary of recent UK studies of unit trust performance persistence

Authors	Year	Coverage		Methodology				Results
		Period	Funds covered	Risk and other adjustments	Retail charges	Holding period	Survivorship taken into account	Persistence
Fletcher	1997	81-89	101	Yes	No	5 and 2 years	Partial	No
Fletcher	1999	85-96	85 funds with American investment objectives	Yes/No	No	Reformed every year	No	No
Quigley and Sinquefield	1998	78-97	752 funds Growth, Income, Equity Income or smaller companies	Yes and No. CAPM and Size and value	No (but adjusts for expenses)	Reformed every year using last years performance data	Yes	Yes, persistence in poor performance
Blake, Lunde & Timmermann	1998	72-95	2,300	Yes	No	Reformed every 36 months	Yes	Yes, especially after accounting for survivorship
Blake & Timmermann	**1998**	**72-95**	**2,300**	**Yes/No**	**No**	**Reformed every month based on 24 months of performance**	**Yes**	**Yes**

| Authors | Year | Coverage | | Methodology | | | | Results |
		Period	Funds covered	Risk and other adjustments	Retail charges	Holding period	Survivorship taken into account	Persistence
Allen & Tan	**1999**	**89-95**	**131 managed funds**	**Yes/No**	**No**	**Performance over one year**	**No**	**Yes, even after accounting for risk over 1-2 years.**
WM Company	1999	79-98	UK Growth and Income	No	No	Five year period	No	No
Rhodes	2000	80-98	UK Equity Growth, UK Growth and Income, UK Income and Income sector	Accounts for risk through adopting a 'novel' utility based approach	No	2 years comparison of annual performance	Yes	No, weak persistence pre 1987, no persistence from then on

Source: CRA analysis. Authors are in bold if they were not referenced in the Bacon & Woodrow (1999), Rhodes (2000) or FSA (20001a) and (2001b) analysis.

Section 4   US studies

Rhodes (2000) considers unit trust performance in the UK but rightly acknowledges that a great deal of the most sophisticated and statistically significant work has been completed in the United States. However, he does not consider:

1. A large amount of the relevant US literature including a number of recent papers.

2. How the methodologies used in the US might be applicable to the UK.

This is of particular concern as a large amount of the recent work and the excluded UK and US work have included evidence of performance persistence.

Below we summarise the most important US papers. Due to the number of papers involved we do not present these in the same level of detail as the previous chapter but focus on their findings.

Earlier abnormal returns studies

Much of the literature in the US predates that in the UK and the earlier work is frequently cited as the justification for concluding that past performance shows no persistence. However these papers are not focused on the question of persistence *per se*. Accordingly it is wrong to rely on them to dismiss persistence. For this reason, we do not place much weight on these, but report them in Table 8 below for completeness.

The focus of our attention is on the more recent papers: to see what they conclude about persistence and which methodologies have been applied. However, some of these earlier papers have had a significant impact on subsequent methodology. In particular, Jensen provided one of the first major studies of mutual fund performance in his seminal (1968) study.[12] He estimated the abnormal return of a portfolio using what is now known as the Jensen's alpha measure. This measure is the intercept from the regression of portfolio excess returns on the market portfolio excess returns:

$$R_{Pt} - R_{ft} = \alpha_p + \beta_P (R_{Mt} - R_{ft}) + \varepsilon_{Pt} \tag{1}$$

Of these variables R_{Pt} is the return of a unit trust in month t, R_{ft} is the return of one-month Treasury bills, R_{Mt} is the monthly return of the market benchmark used, α_p is the regression intercept, i.e., the abnormal return of the portfolio. That is the return generated in excess of that caused by the portfolio's exposure to risk factors. It is often referred to as "Jensen's alpha" or simply "alpha". The beta coefficient, β_P, is the CAPM based measure of the portfolio's exposure to market risk.

Using alpha to look for the presence of continued manager skill above a risk-adjusted benchmark Jensen concludes that:

---

[12] Friend, Brown, Herman and Vickers (1962) and Sharpe (1966) are other examples of early US work on mutual fund performance.

"There is very little evidence that any individual fund was able to do significantly better than that which we expected from mere random chance." p.415

Table 8: Summary of early US studies focusing on identifying abnormal returns

Author/s	Year	Period	Funds covered	Performance Persistence
Friend, Brown, Herman and Vickers	**'62**	**1953-58**	**All**	**No**
Sharpe	**'66**	**1954-63**	**All**	**No**
Jensen	'68	1945-64	All	No
Friend et al.	**'70**	**1960-68**	**All**	**No**
McDonald	**'74**	**1960-69**	**All**	**Minor**
Mains	**'77**	**1955-64**	**All**	**Partial**
Kon & Jen	**'79**	**1960-71**	**All**	**Yes**
Shawky	**'82**	**1973-77**	**All**	**No**
Chang & Lewellen	**'84**	**1971-79**	**All**	**No**
Henriksson	**'84**	**1968-80**	**All**	**No**
Lehman & Modest	**'87**	**1969-78**	**All**	**Yes**

Source: Allen and Tan (1999); Zimmermann (2000); authors are in bold if they were not referenced in the Bacon & Woodrow (1999), Rhodes (2000) or FSA (20001a) and (2001b) analysis.

Early persistence studies

Our review will focus on papers that are testing for persistence directly. We are particularly interested in papers that consider both risk and raw unadjusted return. Not surprisingly, often studies find persistence in risk-adjusted returns more elusive than persistence in unadjusted returns.[13] Accordingly, we take care not to reject the possibility of persistence if the study has simply found insignificant persistence in risk-adjusted returns.

One of the earliest studies testing for persistence was Carlson (1970), which first compares consecutive ten-year periods, finding no obvious persistence in performance. He then considers absolute and risk adjusted returns, finding that persistence is more difficult to find in risk-adjusted returns. He split funds into both halves and quartiles over two consecutive five-year periods and finds that the values are very slightly above those based on chance over the eleven periods he observes.

Grinblatt and Titman (1989a) developed this methodology in two important ways. Firstly samples of fund returns were constructed so mutual funds' gross returns could be approximated. This enabled estimates to be made of the effect of survivorship bias, total transaction costs and the existence of abnormal performance.

---

[13] An early US example of this is Carlson (1970) for example. Blake and Timmermann (1998) show a similar result for the UK in Table 4.

Secondly an eight-factor portfolio benchmark developed by the authors was used to reduce the possibility that passive strategies could have an influence on the results. Risk adjusted performance, in particular amongst aggressive-growth and growth funds and funds with small net asset values, was found to be positive but when expenses were netted off this effect disappeared. Their paper led to some statistical evidence of performance persistence over five year return periods but no economically significant strategies.

1990-95 studies

Brown, Goetzmann, Ibbotson and Ross (1992) look at rankings of performance data and the importance of survivorship bias. In analysing survivorship bias they find mutual funds that perform poorly relative to their peers are more likely to be closed down. Therefore if analysis is conducted during 1985-95, for example, but a fund is closed in 1990 then this fund's information will be missing from the first part of the sample period – 1985-90. This leads to a survivorship-biased sample as if funds are sorted into superior and inferior performers in periods 1 and 2 and compared, spurious performance persistence could be shown to exist. This means better performers in period 1 could also perform better in period 2 even though there is no performance persistence.[14]

They rank performance over three sub periods:

Table 9: Contingency tables of performance persistence 1976-1987

126 funds	1979-81 winners	1979-81 losers
1976-78 winners	**44**	**19**
1976-78 losers	**19**	**44**
136 funds	1982-84 winners	1982-84 losers
1979-81 winners	35	33
1979-81 losers	33	35
153 funds	1985-87 winners	1985-87 losers
1982-84 winners	52	25
1982-84 losers	25	52

Source: Drawn from Table 1 of Brown, Goetzmann, Ibbotson and Ross (1992)

If there were no evidence of persistence we would expect the cross product to be close to 1. However, in the case of 1976-81 $(44 \times 44)/(19 \times 19) = 5.36$, 1979-84 is 1.12 and 1982-87 is 4.24. 1979-84 is therefore the period where performance is seen to be very close to random while performance persists quite strongly in the other periods. This is also supported by tests of statistical significance. The tables do not show whether the performance that persists is either positive or negative however. Later results show that poor performance causes some of the persistence.

---

[14] The exclusion of poorer performing funds could also lead to understating performance persistence in under-performing funds as funds with persistently poor returns which are then shut are excluded from the sample.

Grinblatt and Titman (1992) study 279 funds between 1974 and 1984, comparing the slope coefficients in cross-sectional regressions of abnormal returns from the last five years data on abnormal returns from the first five years. They find that funds achieve a 0.28% abnormal return in the subsequent five-year period for every 1% abnormal return that is achieved during the first five-year period. They sum up by saying:

> *"The results presented in this paper indicate there is positive persistence in mutual fund performance ... Irrespective of the source or sources of the persistence we can assert that the past performance of a fund provides useful information for investors who are considering an investment in mutual funds" p.1983*

Hendricks, Patel and Zeckhauser's (1993) article examines quarterly returns data over the period 1974-88, with the data constructed to mitigate survivorship bias. They find that the persistence of relatively superior mutual fund performance proves to be significant at least for the first four quarters and that there is a similar effect for under-performing funds. They describe funds delivering sustained short-run superior performance as having "hot hands", and those delivering sustained short-run inferior performance as having "icy hands". *Ex ante* investment strategies which identify whether funds have either hot or icy hands and rank them can improve on risk adjusted benchmarks by 6% a year and against traditional benchmarks by 3 or 4% a year. These results are robust to a number of explorations, and interestingly icy hands funds are more inferior than hot hands are superior. The effect of time decay is also investigated with the result being strongest 2 to 8 quarters after the measurement period.

Grinblatt & Titman (1993) apply a performance measure that seeks to avoid problems with the inefficiency of benchmarks by employing portfolio holdings. They study performance of mutual funds quarterly between 1976 and 1985 and find, as with their earlier study, that the strongest evidence of abnormal risk-adjusted performance was in the aggressive growth category of funds. They found that those fund managers who achieved superior performance exhibited persistence in that performance, and that those funds that lagged continued to perform badly. They consider whether investors could have mimicked the funds based on SEC disclosures and conclude that:

> *"Given the 2%-3.5% gross abnormal returns of the funds, it is still plausible that the net abnormal returns to mimicking investors would still have been positive." p.67*

Goetzmann and Ibbotson (1994) use contingency tables and a relatively large sample of 728 mutual funds. They found that both past returns and relative rankings are useful for predicting future returns and rankings in the short term. In addition they found that funds that exhibit higher variance tend to be more consistently successful (repeat winners).

**Table 10: Four-way table of raw returns over four successive three-year intervals
1976-87**

	Successive period			
	Top ¼	Second ¼	Third ¼	Fourth ¼
Initial period	(%)	(%)	(%)	(%)
Top ¼	**41**	31	19	10
Second ¼	18	33	34	15
Third ¼	10	23	39	29
Fourth ¼	5	8	21	**66**

Source: Goetzmann and Ibbotson (1994). Above 25% is above that which you would expect at random.

**Table 11: Four-way table of ranked alphas over four successive three-year intervals
1976-87**

	Successive period			
	Top ¼	Second ¼	Third ¼	Fourth ¼
Initial period	(%)	(%)	(%)	(%)
Top ¼	**35**	25	21	19
Second ¼	23	35	26	16
Third ¼	19	25	30	25
Fourth ¼	23	14	24	**38**

Source: Goetzmann and Ibbotson (1994). Above 25% is above that which you would expect at random.

Kahn and Rudd (1994) is a good illustration of a paper trying to understand the source of persistence rather than test for its existence. They attempt to identify the importance of style and selection components. They used a sample of equity and fixed income funds and tested these funds with both a contingency table and regression analysis (regressing period 2 performance against period 1 performance) approach. Persistence was found in fixed income fund performance even after controlling for fund style and management fees.

Volkman and Wohar (1995) consider 332 funds and find performance persists in a number of scenarios. They find a significantly positive relationship between the performance of a fund and deciles that are composed of medium sized funds. They also find negative persistence in performance for both small and large funds supporting ideas that small funds can be risky when newly formed and that large funds can become inefficient.

Malkiel (1995) analyses equity mutual funds over a twenty-year period up to 1991. He used contingency tables and a strategy of purchasing the mutual funds that had the best performance record over the previous year. Although he found performance persisted in the 1970s he did not find evidence of performance persistence in the 1980s and therefore concluded that security markets must be efficient. This conclusion is similar to that of Rhodes (2000) in the UK.

Brown and Goetzmann (1995) look at funds over the period 1976-88 with 829 funds in the sample by 1988, up from 372 in 1976. They use a more sophisticated approach with contingency tables, a CAPM alpha measure and a 3 factor alpha measure.[15] They found that performance persisted in funds that under performed the S&P 500 index and also felt that poorer funds are more likely to be shut down.[16] They consider whether persistence can be used to beat the market and find that preceding year performance proves to be an excellent predictor of future negative performance. They question why this result is so strong and posit that it is due to the inability of investors to short losing mutual funds. Brown and Goetzmann (1995) find:

> "clear evidence of relative performance persistence. Investors can use historical information to beat the pack." p.697

Rhodes (2000) does not discuss this conclusion in detail, stating that much of the persistence is again attributed to poor performers only, with the erroneous implication that this is therefore not important.

Post 1995 studies

Elton, Gruber and Blake (1996) use a 188-fund sample ranking funds into deciles based on their performance the previous year. They use a four factor alpha model and find evidence of performance persistence after both 1 and 3 years, even after adjusting for risk. This persistence (the difference in risk-adjusted return between the top and bottom deciles) was put down to differences in the selection skill of the managers, and expenses.

Using a selection based on alphas over the past 3 years the top decile produces a positive excess return of only 0.9 basis points a month, whereas one composed of those in the bottom decile produces a negative return of -43.7 basis points. They say:

> "There is definite information about future performance conveyed by past performance" p.156

Sauer (1997) and Phelps and Detzel (1997), although not widely referred to in prominent US studies, also consider performance. Sauer (1997) finds statistically significant evidence of performance in his sample, covering the period 1980-92 but when he splits the funds into investment objectives and considers growth and growth and income sectors he finds this performance is no longer present. The usefulness of the information therefore depends on whether consumers choose by fund or by fund sector. He also finds information is contained in prior period performance when ranking portfolios, but that an artificially created portfolio only exhibits superior performance in four of eight periods and so concludes past performance does not contain useful information. Phelps and Detzel (1997) consider fund returns between 1975 and 1996

---

[15] Based on research by Elton, Gruber, Das and Hlavka (1993) which finds returns on S & P stocks, Non S & P stocks and returns on bonds are significant factors in performance assessment.

[16] Other authors have speculated that a variety of constraints, such as a lack of a formal performance review, can lead to funds being kept open when performing poorly.

and find that once fund returns are adjusted for size and style characteristics fund performance persistence disappears.

Carhart's (1997) paper uses CAPM, three and four-factor alpha models to estimate performance. The model attributes performance and gives the proportion of mean return attributable to four different strategies – high versus low beta stocks, large versus small market capitalisation stocks, value versus growth stocks and one-year return momentum versus contrarian stocks.[17]

Carhart estimates that funds in the top deciles will earn returns around 3.5% higher than funds in the bottom decile after one year, although all this difference is due to the poor performance of funds in the bottom decile.

In raw terms he notes that buying last year's top decile funds and selling the bottom decile funds yields a return of 8%. Of this 8% return, differences in market value and momentum of stocks explain 4.6%, expense ratios 0.7% and transaction costs 1.0% but about 1% is explained by the sorting of portfolios and is concentrated in the bottom deciles. Investors employing an investment strategy could capture this difference in return between the best and worst performing funds, with Carhart himself saying:

> *"buying last years winners is an implementable strategy" p.80*

This shows that performance persistence exists, and that it is possible to use this information to implement a strategy, at least in the short term.

Jain and Wu (2000) provide analysis considering whether funds advertising following a period of superior performance exhibit continued superior performance. They use a sample of 294 funds that are advertised in either Barron's or Money magazine. They consider returns in the year both pre and post advertisement, finding the post advertisement period performance of the funds is, on average, significantly inferior when compared to their benchmarks. This leads them to conclude that pre-advertisement superior performance is not due to skill and that out-performance of advertised funds does not persist. They do not consider underperformance.

Wermers (2001) completes what he feels is the most comprehensive study yet of performance persistence – using a new database looking at fund performance at both the stockholding and net return levels – and finds that:

> *"prior-year winning funds beat prior-year losers, during the following year, by almost 5 percent per year at the net return level, as well as beating market indexes by 2 percent per year." p.1*

---

[17] Advantages of this model are that it explains considerable variation in returns, both time series and cross-sectionally. It is also not substantially affected by multicollinearity and improves on average pricing errors compared to Jensen's 3 factor alpha models, eliminating almost all patterns in pricing errors. The power of these and other measures is currently a topic of interest – see Kothari and Warner (2001) for example.

He finds prior-year winners experience cash inflows of around 20 to 30% per year but prior-year losers experience cash outflows of 2-6% per year. Past winners continue to beat past losers for at least two years following the ranking year. The strategy of holding a fund which was in the highest (or lowest) net quintile the previous year gives an average net return spread between prior-year winners and losers of 4.8% and 5.3% for total net asset and equally weighted portfolios of funds respectively. The gross figures are 5.9% and 5.7% respectively. These results provide strong evidence of one-year performance persistence. Additionally investing in growth-orientated funds with the highest prior year returns is a strategy that beats holding the market portfolio by 2 to 3% over the first year following the ranking and almost as much the following year. He concludes:

> *"that hot hands do exist, that hot hands persist, and that consumers may find fund managers with hot hands through the use of some fairly simple indicators" p.1*

How consumers use performance information

A number of US studies have considered how consumers use past performance information, whether they are using it appropriately and the possibility of regulation being required.

The 1990 US Consumer Reports survey of mutual fund investors led to past performance and level of risk being recognised as the two most important factors for mutual fund investment decisions.

Capon, Fitzsimmons and Prince (1996) considered the consumer purchase decision in more detail and described the process as follows:

1. Consumers gather information on mutual funds from both internal sources (e.g., memory of previous experience) and external sources (e.g., advertising, brochures and newspaper articles). These are termed *information sources.*
2. With this information a set of product and service attributes are then developed (price, performance, level of service) which are important to the consumer when assessing various product offerings. These are termed *selection criteria.*
3. The consumer uses these selection criteria to determine which unit trust or mutual fund (from the set of alternatives) to purchase.

Past performance is a particularly complicated example as it can be used as both an information source and a selection criterion. In the information source stage a consumer may use performance rankings to either choose possible performance measures (one-year, three-year or five-year returns) or to decide between value and growth funds, or small and large fund families for example. They may then choose a one-year return as their most important selection criterion when choosing from alternative funds. A survey of 3,386 people in the US provides the following rankings:

Table 12: Importance of information sources in mutual fund investments

Information source	Mean	(Standard deviation)
Published Performance Rankings	4.57	(0.73)
Advertising	3.13	(1.21)
Commission- Based Financial Advisers	2.60	(1.59)
Seminars	1.89	(1.34)
Recommendations of Friends/Family	1.74	(1.05)
Recommendation of Business Associates	1.56	(0.85)
Fee- Based Financial Advisers	1.34	(0.91)
Books	1.17	(0.63)
Direct Mail	1.11	(0.42)

Source: Capon Fitzsimmons and Prince (1996); A 5 point scale is used: 1 = not at all important; 5 = extremely important. Each variable is significantly different from its adjacent variable at p<.01; The wording of the question was as follows: How important were the following sources of information to you in purchasing mutual funds? Please respond with a number from 1 to 5 based on how important the information source was to you, where: 1 = not at all important; 5 = extremely important.

Table 13: Importance of selection criteria in mutual fund investments

Selection criteria	Mean	(Standard deviation)
Investment Performance Track Record	4.62	(0.64)
Fund Manager Reputation	4.00	(0.77)
Scope (Number of funds in the family)	3.94	(1.06)
Responsiveness to Enquiries	2.30	(1.08)
Management Fees	2.28	(1.31)
Investment Management Style	1.68	(1.12)
Additional Features (Checking, brokerage)	1.38	(0.92)
Confidentiality	1.35	(0.83)
Community Service/Charity Record	1.09	(0.48)

Source: Capon Fitzsimmons and Prince (1996); A 5 point scale is used: 1 = not at all important; 5 = extremely important. Each variable is significantly different from its adjacent variable at p<.01; The wording of the question was as follows: How important were the following selection criteria to you in purchasing mutual funds? Please respond with a number from 1 to 5 based on how important the information source was to you, where: 1 = not at all important; 5 = extremely important.

Performance-related variables were shown to be both the most important information source and selection criteria. In addition investors were shown to be generally uninformed about their funds with 75% of people not knowing the style of their fund (e.g. value, growth) and 72.3% not knowing whether their funds had a domestic or international focus.

With this level of importance being placed on past performance, academic papers have called for regulation to improve its use rather than constrain it. For example, Ippolito's (1992) study is of particular interest as it considers how investors react to new information about product quality. He hypothesises that as long as low quality funds exist a rational investor can observe this using performance information and allocate money towards funds with good past performance and away from those with poor past performance. This belief is supported by the finding of serial correlation (successive

values in the time series being correlated with each other) in the residuals of US mutual fund returns in data covering the period 1965-84. This conclusion leads him to state:

> *"The mutual fund industry provides one compelling observation in favour of an information approach to regulation" p.68*

He feels that a regulatory role, in markets where quality assessments are difficult, could be in ensuring that producers report timely and comparable information about performance.

Another example is provided by Gruber (1996). He found that an investor buying the top decile of funds based on their four-factor alpha would have earned a risk adjusted return of over 0.75% a year between 1985 and 1994. Gruber is surprised not that persistence exists, but by the strength of its effect. He finds:

> *"While expenses provide information about future performance, past performance provides stronger and to some extent independent information about future performance" p.796*

He develops a theory of sophisticated and unsophisticated investors and finds that future performance is in part predictable from past performance. He explains that:

> *"A group of sophisticated investors seems to recognise this, as evidenced by the fact that the flow of new money into and out of mutual funds follows the predictors of future performance." p.807* [18]

Gruber (1996) feels that money remains in funds that are performing poorly and are predicted to continue to do poorly, because of three types of clientele. The first type is unsophisticated investors who rely on advertising and other factors when making fund choices, the second is institutionally disadvantaged investors and the third is tax-disadvantaged investors. This suggests that disadvantaged investors could be helped to exit poorly performing funds and increase their financial sophistication by clear information on past performance data being made available.

Sirri and Tufano (1998) do not specifically review performance but instead consider a model of mutual fund buying behaviour, considering different methods of search and search costs. On reviewing the literature they conclude that poor performers repeat and there is mixed evidence on persistence among high performers. Based on these papers they expect to find a reduction in net assets for poorly performing funds as people realise these funds may continue to perform poorly and a weak increase in net assets as people believe excellent funds performance may repeat. In actual fact they find a far stronger relationship for higher performing funds with people flowing into these funds but failing to leave poor performers at the same rate.

Furthermore, Barber, Odean and Zheng (2000) consider whether individuals may benefit from chasing performance and find that it may be reasonable for investors to chase mutual fund performance. They note that:

---

[18] Supported by Ippolito (1992), Capon et al (1996) and Barber et al (2000).

"There is strong empirical evidence that losing mutual funds repeat. Thus divesting one's losing funds would enhance investor returns." p.3

They report evidence of how investors react when completing mutual fund transactions using a survey of 78,000 households and a final sample of 226,592 mutual fund purchases and 85,731 sales. Investors tend to buy funds with strong past performance with the top two performance deciles accounting for roughly a fifth of investments but 54% of purchases. These deciles also account for 38% of sales whilst the bottom two deciles only account for 14% of sales and 12.5% of investments.[19] This information combined with the evidence on persistence suggests consumers are not behaving rationally. With poor performance persisting more strongly and for a longer period of time than that of strong performance, investors should sell their losing rather than winning funds but they actually find the converse is true.

When purchasing funds, investors tend to believe a fund's performance is overly representative of its future prospects and therefore purchase a larger proportion of recently well performing funds. There is some evidence to support this behaviour.

However, the converse applies when selling funds – investors hold losers too long and sell winners too soon. Here investors do not behave as though past returns predict the future when in fact they do. Promotion of the correct interpretation of past performance could help increase the rationality of investor's purchases and accordingly their returns.

"Investors should therefore buy funds with low operating expenses and sell their losing funds. Unfortunately they do not." p.30

Wermers (1997) finds, as do many US and UK studies, persistence in fund returns over the short-term. He notes that interestingly the National Association of Securities Dealers (NASD) had recently pressed Morningstar into including one-year performance rankings of mutual funds. Some people may question this decision but it shows that if people can potentially derive a return over and above that which they could otherwise expect by use of this information then it should be made available.

The FSA analysis

Overall, the US literature review undertaken by Bacon and Woodrow (1999) and Rhodes (2000) omits a considerable amount of the existing research. Many recent papers are overlooked completely (see Table 14).

Rhodes (2000), in his review of the US literature quotes Carhart (1997). The concluding remarks of this study, and the ones selected, say:

"While the popular press will no doubt continue to glamorise the best-performing mutual fund managers, the mundane explanations of strategy and investment costs account for almost all the predictability in mutual fund returns." p.81, and Rhodes p.16

---

[19] It is also noted that investors are less price sensitive to operating costs than load (up front) fees.

However, the previous sentence contains the following:

> *"important rules of thumb for wealth maximizing mutual fund investors: (1) Avoid funds with persistently poor performance; (2) funds with high returns have higher than expected returns next year, but not in years thereafter." p.81* [20]

It can be seen that the author has not represented the researcher's full conclusions. In addition, there are a number of methodological developments in the more sophisticated US studies that have not been incorporated into this analysis.

As shown in the table below we believe that the US literature presents a very different picture to that presented in the analysis prepared for the FSA.

---

[20] His third point notes the negative effect expenses and transaction costs have on performance.

Table 14: Summary of recent US studies of unit trust (mutual fund) performance persistence

Author/s	Year	Period	Funds covered	Performance persistence
Carlson	**'70**	**1948-67**	**Stock**	**Yes**
Grinblatt & Titman	**'89**	**1974-84**	**Stock**	**Partial**
Grinblatt and Titman	'92	1974-84	All	Yes
Brown, Goetzmann, Ibbotson & Ross	**'92**	**1976-87**	**All**	**Yes**
Ippolito	'92	1965-84	Sample of 143	Yes
Hendricks, Patel & Zeckhauser	'93	1974-88	Equity	Yes
Goetzmann & Ibbotson	'94	1976-88	All	Yes
Kahn & Rudd	**'94**	**1983-90**	**Equity and Fixed Income**	**Yes**
Volkman & Wohar	**'95**	**1980-89**	**Intl.**	**Yes**
Grinblatt, Titman & Wermers	**'95**	**1974-85**	**All**	**Yes**
Malkiel	**'95**	**1971-90**	**Equity**	**Partially**
Elton, Gruber & Blake	'96	1977-93	Stock	Yes
Gruber	**'96**	**1984-94**	**All**	**Yes**
Carhart	'97	1962-93	All	Yes
Sauer	'97	1976-92	All	Partial (for funds overall)
Phelps and Detzel	'97	1975-95	Equity	No
Hendricks, Patel & Zeckhauser	**'97**	**Simulation**	**600 funds, and 393 survivors**	**Yes**
Wermers	**'97**	**1975-1994**	**All**	**Yes**
Carpenter & Lynch	**'99**	**33 years of simulations**	**Simulated**	**Yes**
Jain & Wu	**'00**	**1994-96**	**Advertised funds**	**No**
Wermers	**'01**	**1974-94**	**All (stockholdings and net returns)**	**Yes**

Source: CRA analysis; Allen and Tan (1999); see bibliography for extended source information on papers; authors are in bold if they were not referenced in the Bacon & Woodrow (1999), Rhodes (2000) or FSA (20001a) and (2001b) analysis.

Section 5   Conclusions

The FSA conclusions seem to reflect a prior belief: that charges are the most important dimension of the investment decision and including past performance would mean these would be ignored by consumers. For example, the FSA consider the consumer investment decision in Annex A of Comparative Tables – bulletin number 1 (FSA 2001a). They rightly state that people consider past performance to be the most important indicator when choosing a fund and give the price of investing little thought. They note a 1998 AUTIF survey that finds that only 14% of respondents cited reasonable charges as a reason for investing in the fund that they had. The FSA go on to say:

> *"Yet, picking a fund on the basis of past performance while ignoring charges is not a logical way to select a fund that will produce a high average return over the long term." p.4*

However, the results from the AUTIF survey are not dissimilar to a 1996 SEC/OCC study which found only 19% of people knew their fund's annual expense ratio and even fewer knew why it was important to investors. However, the US is not intending to diminish the importance of past performance. Indeed the FSA approach appears to believe only charges <u>or</u> performance can be used, ignoring the possibility that charges and performance are jointly important.

The FSA's statement regarding the evidence on past performance is very strong:

> *"An enormous amount of evidence put together over 30 years shows past performance does not repeat. Hence a retail investor cannot improve his chances of picking a fund that will perform well in the future by picking one that has performed well in the past." p.4*

However, this statement is clearly at odds with a balanced assessment of the literature. In particular, it completely ignores the significance of the widely reported persistence found in poorly performing funds. We find mixed evidence on whether positive performance of unit trusts (and mutual funds) repeats but strong evidence that poor performance persists.

Rhodes (2000) holds the belief that these funds are a small and inconsequential part of the unit trust industry (contrary evidence is suggested by Barber, Odean and Zheng (2000)). If consumers were discouraged from taking account of past performance:

- management incentives would be weakened and underperformance could become more prevalent; and
- the flow of funds into poorly performing funds is likely to increase.

The real question, therefore, is whether the FSA could improve the use of such information. We hope that our forthcoming empirical analysis will help in the development of effective presentation of past performance data.

Annex 1   Bibliography

Allen D. E., and Tan M. L., 1999, A Test in Persistence of the Performance of UK Managed Funds*, Journal of Business Finance and Accounting*. Vol. 24, No 2, 155-178.

Bacon and Woodrow, 1999, Comparative Tables, report prepared for the FSA.

Bal, Y. and Leger, L., 1996, The performance of UK investment trusts, *Service Industries Journal* 16, 67-81.

Barber, Brad M., Terrance Odean and Lu Zheng, 2000, The Behaviour of Mutual Fund Investors, *Working paper*, 1-47.

Blake, David. & Alan Timmermann*,* 1998, Mutual Fund Performance: Evidence from the UK, *European Finance Review,* 2: 57-77.

Brown, Stephen J., William N. Goetzmann, 1995, Performance Persistence, *Journal of Finance* 52, 679-698.

Brown, Stephen J., William Goetzmann, Roger G. Ibbotson, and Stephen A. Ross, 1992, Survivorship bias in performance studies, *Review of Financial Studi*es 5, 553-580.

Capon, Noel, Gavan J. Fitzsimmons and Russ A. Prince, 1996, An individual level analysis of the mutual fund investment decision, *Journal of Financial Services Research* 10, 59-82.

Carhart, Mark M., 1997, On Persistence in Mutual Fund Performance, *Journal of Finance* 52, 57-82.

Carpenter, Jennifer N., and Anthony W. Lynch, 1999, Survivorship Bias and Attrition Effects in Measures of Performance Persistence, *Journal of Financial Economics* 54, 337-74.

Chang, E. C., and W. G. Lewellen, 1984, Market Timing and Mutual Fund Investment Performance, *Journal of Business* 57, 57-72.

Elton, Edwin J., Martin J. Gruber, Sanjiv Das, and Christopher R. Blake, 1996, The persistence of risk-adjusted mutual fund performance, *Journal of Business* 69, 133-157.

Fama, Eugene F., and Kenneth R. French, 1993, Common risk factors in the returns on bonds and stocks, *Journal of Financial Economics* 33, 3-53.

Fletcher, Jonathan, 1999, An Examination of UK Unit Trust Performance within the Arbitrage Pricing Framework, *Review of Quantitative Finance and Accounting* 8, 91-107.

Fletcher, Jonathan, 1997, The Evaluation of the Performance of UK American Unit Trusts, *International Review of Economics and Finance* 8, 455-466.

FSA, 2001a, Comparative tables: Bulletin Number 1.

FSA, 2001b, Report of the Task Force on Past Performance.

Goetzmann, William N., and Roger G. Ibbotson, 1994, Do winners repeat? Patterns in mutual fund performance, *Journal of Portfolio Management* 20, 9-18.

Grinblatt, Mark, and Sheridan Titman, 1989a, Mutual fund performance: An analysis of quarterly portfolio holdings, *Journal of Business* 62, 393-416.

Grinblatt, Mark, and Sheridan Titman, 1989b, Portfolio Performance Evaluation: Old Issues and New Insights, *Review of Financial Studies* 3, 393-421.

Grinblatt, Mark, and Sheridan Titman, 1992, The persistence of mutual fund performance, *Journal of Finance* 42, 1977-1984.

Grinblatt, Mark, and Sheridan Titman, 1993, Performance measurement without benchmarks: An examination of mutual fund returns, *Journal of Business* 66, 47-68.

Grinblatt, Mark, Sheridan Titman and Russ Wermers, 1995, Momentum investment strategies, portfolio performance and herding: A study of mutual fund behaviour, *American Economic Review* 85, 1088-1105.

Gruber, Martin. J., 1996, Another puzzle: the growth in actively managed funds, *Journal of Finance* 51, 783-810.

Hendricks, Darryll, Jayendu Patel, and Richard Zeckhauser, 1993, Hot hands in Mutual funds: Short run persistence of performance, 1974-88, *Journal of Finance* 48, 93-130.

Hendricks, Darryll, Jayendu Patel, and Richard Zeckhauser, 1997, The J-Shape of Performance Persistence Given Survivorship Bias, *Review of Economics and Statistics* 79, 161-166.

Henriksson, R. D., 1984, Market Timing and Mutual Fund Performance: An Empirical Investigation, *Journal of Business* 57, 73-96.

Ippolito, Richard A., 1992, Consumer reaction to measures of poor quality: Evidence from the mutual fund industry, *Journal of Law and Economics* 35, 45-70.

Jain, Prem C., and Joanna Shuang Wu, Truth in Mutual Fund Advertising: Evidence on Future Performance and Fund Flows, *Journal of Finance* 55, 937-958.

Jensen, Michael C., 1968, The performance of mutual funds in the period 1945-1964, *Journal of Finance* 23, 389-416.

Kahn, Ronald N. and Andrew Rudd, 1995, Does historical performance predict future performance? *Financial Analysts Journal,* 43-52.

Lehman, B. N., and Modest, D. M., 1987, Mutual fund performance evaluation: A comparison of benchmarks and benchmark comparisons, *Journal of Finance* 42, 233-265.

Lunde, A., Timmerman, A., and Blake, D., 1998, The hazards of mutual fund underperformance: A Cox regression analysis. *Working paper, Department of Economics UC San Diego,* 1-39.

Malkiel, Burton G., 1995, Returns from investing in equity mutual funds 1971 to 1991, *Journal of Finance* 50, 549-572.

Phelps, S. and L. Detzel, 1997, The Non-persistence of Mutual Fund Performance, *Quarterly Journal of Business and Economics* 36, 55-69.

Quigley, Garrett and Rex A. Sinquefield, 1998, Performance of UK equity unit trusts. Published in *Journal of Asset Management* 1, 72-92, 2000.

Rhodes, M. 2000, Past imperfect? The performance of UK equity managed funds, *FSA Occasional Paper* 9, 1-58.

Roberts, J., 2001, Past Performance can be a guide, *Conference and internal paper*.

Sauer, D. A., 1997, Information Content of Prior Period Mutual Fund Performance Rankings, *Journal of Economics and Business*, 549-567.

Sirri, Erik R., and Peter Tufano, 1998, Costly search and mutual fund flows, *Journal of Finance*, 53, 1589-1622.

Volkman, David A. and Mark E. Wohar, 1995, Determinants of persistence in relative performance of mutual funds, *The Journal of Financial Research* 18, 415-430.

Wermers, Russ, 1997, Momentum investment strategies of mutual funds, performance persistence, and survivorship bias, *Working paper, Graduate school of Business and Administration, University of Colorado at Boulder, Boulder, Col.*

Wermers, Russ, 2001, Predicting Mutual Fund Returns, *Working Paper, Robert H. Smith School of Business, University of Maryland.*

Worboys, Tim, 1999, Competition under conditions of imperfect information; Evaluating fund's optimal strategies to attract investors. An empirical examination of UK Mutual Funds, in conjunction with the FSA, *MSc Dissertation, University of York*, 1-36.

WM Company, 1999, *Company report for Virgin Direct.*

Zimmermann, Heinz, 2000, Capital Asset Pricing Model & Mutual Fund Performance Studies – Review and Evidence, *Presentation*, University of St. Gallen.

Additional references are available on request