Predicting Managed Fund Performance

The central research issue is "how useful is past performance information when consumers (or their advisers) are selecting a managed fund?“

Background

The use of past performance information is clearly linked to two related issues:

Predicting Managed Fund Performance

What is an acceptable performance measure?

A suitable measure would need to incorporate risk as well as return, given that performance figures are inextricably linked with the riskiness of investments.

Given a performance measure, can past performance be used as a guide to likely future performance?

Some relevant industry features:

Predicting Managed Fund Performance

The managed funds industry consists of collective investments schemes run by professional managers with the objective of producing returns for investors. Managed funds can be categorized into various types such as unit trusts, superannuation funds, etc.

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- It is also customary to differentiate between wholesale and retail funds.
- There are two general forms of managed fund structures, *close-ended* and (more commonly) *open-ended* funds.
- All investors (whether they are private individuals or market professionals) would be interested in whether good future performance can be chosen by looking at each fund's past performance

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- A measure of performance has to be relevant to both equity and fixed interest portfolios. It also may need to take into account of property and international equity, depending on the asset composition of the fund.

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- The main objective of a managed fund is to maximize returns while controlling the level of risk. Much of the performance reporting and advertising focuses entirely on returns achieved.
- However, all portfolios of investments are subject to risk and an indication of a funds' riskiness is required before any statement about historical returns can be meaningful.

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- Academic studies concentrate on whether a fund's achieved returns out-perform some appropriate risky benchmark which typically might be a composite market index. Performance is not superior if it cannot match that of a comparably risky diversified benchmark portfolio. We have been examining this.

Predicting Managed Fund Performance

- One potential strategy is passive diversification which should produce a performance which has the return and risk characteristics of the market average such as a composite market index.
- We will examine this and some of the related issues.

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- If the fund manager takes on more risk by trying to choose winning stocks then the investor needs a measure of whether or not the policy produced returns commensurate with the risk level adopted.
- However, even if a strategy worked in one period there is no guarantee that it will continue to work in the next. This leads on naturally to the issue of performance persistence.

Predicting Managed Fund Performance

- If past performance is going to be of use to investors, we need to know whether past performance (good or bad) is linked to future performance (good or bad); ie performance persistence.
- If this is the case then this information can assist investors to make better investment choices. If there is no link between past performance and future performance in a statistical sense, then knowledge of past performance will not help an investor in choosing a likely high performance fund or in avoiding a probable below-average performer.

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- **Transaction costs**

  Retail consumers face significant transaction and management costs for most managed funds. Ongoing fees typically range from 1% for a cash or fixed interest fund to 2.5% for an equity fund (about 0.4% more if no entry fee charged).

  An entry/exit price spread is charged for funds except cash-type funds, ranging from about 0.2% for very low volatility funds to 0.6% for active high growth funds.

  Entry fees are typically 2.5 – 4.0%.

Predicting Managed Fund Performance

- The first question in any discussion of performance is can funds add value in the sense of “beating the market”? Early studies of managed fund performance focused on this issue. These studies were done to test the Efficient Markets Theory. They also assist investors to decide whether it is better to invest in an actively managed fund or an index fund. The subject is complicated, as different results are obtained depending on what benchmark is used. A stock market index (such as the All Ordinaries or Dow Jones) has inherent biases.

- However, this whole topic is outside the scope of this lecture, as it addresses a different issue.

Predicting Managed Fund Performance

- Recently more attention has also been focussed on whether past performance of individual funds can be used as a guide to their future performance.
- Can consumers successfully use measures of past performance as a decision tool for fund selection? This issue is also referred to as performance persistence.

Predicting Managed Fund Performance

- There are more US studies of mutual fund performance than in other countries. They tend to have larger data sets and to be the first to use more sophisticated measurement methods.
- Early studies of performance persistence indicated that superior performance does not persist through time [see Sharpe (1966) and Jensen (1968)]. Perhaps the most influential work on the topic is that of Jensen (1968), who concluded that not only *average* fund performance but also *individual* performance was no better than that predicted from mere random chance. Studies in the early 1990's, on the other hand, suggested that some mutual funds have persistent superior performance. [Grinblatt and Titman (1992), Hendricks, Patel, & Zeckhauser (1993), Goetzmann & Ibbotson (1994), Elton, Gruber & Blake (1996a), and Gruber (1996)].

Predicting Managed Fund Performance

- However, more recent studies tend to show that the persistence results may be subject to more doubt.
- Firstly, Brown, Goetzmann, Ibbotson, & Ross (1992), Brown & Goetzmann (1995), and Malkiel (1995) find that survivorship bias in the construction of the mutual fund samples may give rise to the appearance of persistent superior returns.
- Secondly, Carhart (1997), DGTW (1997) and Wermers (1997) report that a naïve momentum investment strategy can explain the apparent persistence in performance, especially among well performing funds.

Predicting Managed Fund Performance

- **Grinblatt and Titman** (1992) examine a sample of 279 funds over the period 1975-1984 *using the P8 benchmark. This benchmark is a composite passive portfolio which takes account of size, dividend yields and past returns. They use regression to calculate excess returns ('alpha')for each fund. This risk adjusted measure will be positive and significant if there is superior performance. They divide the sample into 1975-1979 and 1980-1984 sub-periods and examine whether above-average performance in the earlier period is indicative of above-average performance in the later period*. Their results provide weak support for the hypothesis that better than average performance persists over time.

Predicting Managed Fund Performance

- **Hendricks *et al.*** (1993) look at no-load (i.e no entry fee) growth-oriented mutual funds from 1974-1988. The data consists of quarterly returns (net of management fees) for a total sample of 165 funds. They transform all returns into excess returns by subtracting the one-month US Treasury bill rate. They find stronger evidence that funds that do well in the past do well in the short-term future. In their study, funds in the top octile (one eighth) of past performers over the previous year (as measured with raw returns), outperformed the lowest octile of past performers in the following year. They also report theoretical profits from a strategy of buying past winners as well as selling past losers. However, information about performance beyond the previous four quarters does not seem to predict future performance. They report positive persistence for four quarters and then a reversal. Therefore, they call their findings a “hot hand” phenomenon.

Predicting Managed Fund Performance

- **Brown *et al.*** (1992) argue that results of persistence will appear spuriously in samples limited to surviving mutual funds. Their argument is that to choose high risk strategies and survive in the first half of the sample period is likely to lead to above average returns. If these funds continue their high risk strategy and continue to survive, they are also likely to achieve above normal returns in the second half of the sample. Therefore, only using a sample of surviving funds biases result towards finding performance persistence. The degree of this bias, amongst other factors, depends on the fraction of managers who drop out of the sample and whether their characteristics differ systematically from surviving managers.

Predicting Managed Fund Performance

- **Khan and Rudd** (1995) use a sample of 300 equity and fixed-income mutual funds with in sample periods running from 1983-1987 for equity funds and 1986-90 for fixed income funds. They then test performance persistence in 1988-93 for equity funds and 1990 to 1993 for fixed income funds. They use a variety of performance metrics based on 'alphas' *(i.e. risk adjusted returns)* plus style analysis. Their persistence analysis is based on contingency table analysis. They do not find any equity fund performance persistence but did find fixed income fund performance persistence even after controlling for fund style and management fees.

Predicting Managed Fund Performance

- **Brown & Goetzmann** (1995), use data on both surviving and non-surviving funds, in a sample that is largely free of survivor bias. This sample consists of all common stock funds running from 1976 (372 funds) through to 1988 (829 funds).. They use probabilistic regression analysis to analyse fund disappearance and report that past performance over several years is the major determinant of fund disappearance. Fund growth plays only a marginal role, and other variables; size and age are negatively related to disappearance, whilst expense ratio is positively related to it. They report clear evidence of relative performance persistence, especially in "losing" mutual funds. They suggest that investors can use historical information to beat the pack. Evidence that historical information can be used to beat previously set benchmarks, such as the return on the S&P 500 index is weaker, and depends on the time period of the analysis

Predicting Managed Fund Performance

- **Elton, Gruber and Blake** (1996) use a sample free of survivor bias consisting of all 'common stock' funds with $15 million plus of net assets, from 1997 to 1993, a total of 188 funds. They use a benchmark which captures the influence of four factors, the S&P 500 index to represent the market, a size factor, a growth factor, and a bond index factor. They estimate excess performance for each fund ('alphas'). Funds are ranked and placed in portfolios based on deciles of performance. They then rank subsequent performance for each portfolio. They find that ranking using one year's past data *gives greater persistence* evidence than ranking using three year's data. Raw returns *give greater persistence* than risk-adjusted returns. They conclude in favour of persistence in the short run *and* in the long run. However, 3-year past returns are better than one-year's data in predicting returns over the next three years than. They suggest there is more to persistence of performance than the 'hot hands' phenomenon. They suggest that the very poor performance of the lowest decile is largely accounted for by the fact that it contains the majority of funds with very high expenses.

TABLE I

Overview of US Mutual Fund Performance Studies

The table summarises some major studies of mutual fund performance and indicates the key results produced by each study. The foundations of the table including several t-statistic calculations lie in *Ippolito (1993)*, who describes in detail the assumptions and mathematical foundations of these calculations (Ippolito, 1993:43). A conspicuous point to note is a large variability of results, even when similar methodologies, data or time frames are used.

Study	Year	Period Covered	No. Funds	Type of Fund	Survivor Bias present	Benchmark	Avg Alpha (b.p. / yr)	t-Value (abs)	Performance persistence
Sharpe	'66	1954-63	34	All	Yes	DOW-JONES	-34	2.42	No
Jensen	'68	1945-64	115	All	Yes	S&P 500	-110	5.63	No
Carlson	'77	1648-67	82	STOCK	Yes	S&P 500	60	N/r	Yes
						DOW-JONES	14	11.38	
McDonald	'74	1960-69	123	All	Yes	EW-NYSE	62	N/r	No
Mains	'77	1955-64	70	All	Yes	S&P 500	9	N/r	Partially[a]
Kon & Jen	'79	1960-71	49	All	Yes	EW-CRSP	6	N/r	Yes
							-67		
Shawky	'82	1973-77	255	All	Yes	EW-NYSE	-43	1.16	No
Chang & Lewellen	'84	1971-79	67	All	Yes	VW-CRSP	58	0.75	No
							139	2.1	
Henriksson	'84	2/68-6/80	116	All	Yes	VW-NYSE	-24	0.80	No
							84	1.89	
Lehman & Modest	'87	1968-72	130	All	Yes	VW-CRSP	-141	3.68	Yes
		1973-77					-79	1.98	
		1978-82					140	4.01	
		1968-72					-485	14.34	
		1973-77					-545	17.3	
		1978-82					-385	13.32	
Grinblatt & Titman	'89	1975-84	157	STOCK	No	VW-CRSP	-60	0.76	No[b]
						8P PORT	60	0.61	
Ippolito	'89	1965-84	143	All	No	S&P 500	81	4.01	No
						VW-NYSE	87	4.20	
Brown, Goetzmann & Ibbotson	92	1976-81	126	Growth equity	No	S&P 500 index	N/r	N/r	Yes but demonstrate effects of survivor bias
		1982-84	136						
		1985-87	153						
Grinblatt & Titman	92	1974-84	279	Mutual funds, all.	Yes	8 factor benchmark	N/r	N/r	Yes
Hendricks, Patel & Zechauser	93	1974-88	165	Mutual Funds, all.	No	Various benchmarks	17-20	N/r	Yes
Elton et al.[a]	'93	1965-84	143	Mutual funds, all	N/c	S&P 500	N/c	N/c	N/c
						VW-NYSE	Results varied		
Goetzmann & Ibbotson	94	1976-88	728	Mutual Funds	Yes	S&P 500	N/c	N/c	Yes
Brown & Goetzmann	95	1976-88	372-829	Mutual Funds	No	Performance against median fund and various indices	Worst -3.98	-1.69	Yes, relative performance persistence
				All common stock			Best 4.64 (CAPM)	1.46	
Kahn &Rudd	95	1983-87,	300	Mutual funds equity and fixed income	Yes	S&P 500 and style indices	N/r	N/r	No for equity,
		1986 prediction							Yes for fixed income
		1988-93							
Malkiel	95	1971-91	724 Max in 1 year (but	Mutual funds, all	Yes	Wilshire 5000	-93.0	-1.78	Yes but stronger in 70's than
						S&P 500	-320	-5.27	

Predicting Managed Fund Performance

- What can we conclude from this broad-ranging literature? A few non-controversial inferences might be drawn.

- Clearly consumers need to be given clear information about fee structures: entry and exit costs plus on-going management costs. There are very few studies of fees per-se.

- Most consumers would want to hold a fund for several years at least. Swapping funds can incur significant transaction costs. Fee structures are important in the choice between active and passive funds, as is the time horizon for investment purposes.

Predicting Managed Fund Performance

- The research methodology is complicated, as studies need to take account of:

- The risk of different funds. We have reviewed a whole battery of different benchmarking techniques. These sometimes give contrary results. They are sometimes not even closely associated, depending on how they are constructed. The benchmark should reflect the underlying composition of the portfolio whose performance is being measured. (There is little point in benchmarking a fund with a significant fixed interest or foreign equities component against a purely domestic equities index.

Predicting Managed Fund Performance

- Some funds (generally poor performing funds) are terminated during the period studied, skewing the results ("survivorship bias").
- Different performance measures are possible (eg against different benchmarks, compared to peers, etc).
- Returns need to be adjusted for fees.

- Different time periods can be used for comparison. We have reviewed a considerable range of studies drawn from the US. For German purposes you need studies of German funds.

Predicting Managed Fund Performance

- Performance comparisons can be quite misleading if not done properly.
- Returns are only meaningful if adjusted for risk/volatility or comparing "like with like".

- To be meaningful, comparisons need to distinguish between the performance of an asset class and the relative performance of a fund manager compared to its peers or the benchmark(s).
- Good past performance seems to be a fairly weak predictor of future good performance over the long term. It depends on the period of the prediction window; there appear to be stronger results in the shorter-term, (one to two years) than in the longer term.

Predicting Managed Fund Performance

- More studies seem to find that bad past performance increased the probability of future bad performance.
  - Where persistence was found, studies came to inconsistent conclusions about which time periods (pre- and post-) were correlated.

- Fund managers constantly strive to match the performance of competitors If one firm is outperforming its peers, others will try to copy its methods and/or headhunt its staff. If it attracts a large inflow of funds it is likely to be difficult to place these funds and maintain relative performance, if it is an active as opposed to a passive fund.

Predicting Managed Fund Performance

- The future return on investments is extremely hard to predict, so a significant part of a fund's performance (compared to its peers) may be random luck.
- The methods which work best in one set of market conditions will not work best at other times. For example, value and growth style managers tend to excel at different times. However, it is hard for a consumer to predict the likely market conditions over the next few years. One of the problems with many of these studies is that they might not track a manager through a full cycle of market conditions

Predicting Managed Fund Performance

- The findings are consistent with other research that shows that it is hard for fund managers to consistently outperform the relevant benchmark.
- **What are the constraints faced by typical retail investors?**
  - **The publication of percentage return figures without indicating the risk of the fund is likely to be misleading. Given different likely holding periods it would be useful, if the fund history permits to report a series of return/risk figures over a variety of time horizons: eg: one year, three years, five years**

Predicting Managed Fund Performance

- While investors will vary in their individual preferences, the following issues will generally be relevant to some degree in selecting an asset mix, product and fund manager:
  - Risk of capital loss
  - Volatility of investment value over time
- Time horizon before moving / withdrawing investment
- They will need a clear indication of the likely asset mixes within the fund's portfolio and a clear indication of the objectives and investment style of the fund.

Predicting Managed Fund Performance

- They need a clear statement of the fee structure and an indication of performance gross and net of fees.

- If it is a passive index fund they need some indication of how closely it has succeeded in tracking the index in its past performance statistics.

- This brings us to the topic of our next lecture. Measuring the performance of passive investment fund performance.