MUTUAL FUNDS AND OUTPERFORMANCE: The difficulty of generating positive alpha

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Many mutual funds claim that they are able to generate outperformance. This claim is at odds with much of the academic literature on fund performance. This paper presents three academic arguments on the difficulty of generating outperformance by mutual funds — mathematical, theoretical and empirical. It also offers some explanations which help reconcile the contrasting views of academia and the funds industry on this issue.

One of the most successful developments in financial markets is the mutual fund industry, with US mutual funds holding nearly US$16 trillion in assets at the end of 2014 (ICI Factbook 2015). About 80 per cent of these funds are actively managed, i.e. using strategies whereby the fund manager aims to outperform the market (or their selected benchmark). In finance jargon, this is known as generating positive alpha. However, the claim by many of these active funds that they are able to generate outperformance is in stark contrast with much of the academic literature, which has documented little evidence of fund managers’ ability to generate outperformance.

A mathematical argument: The arithmetic of active management

The mathematical argument for the difficulty of generating outperformance is based on what Sharpe (1991) and Fama and French (2010) refer to as the arithmetic of active management, which goes as follows.

The return on the market as a whole represents the value-weighted average of all securities. Since the market as a whole cannot outperform itself, the outperformance of the market (i.e. the alpha of the market) is equal to zero. Investors in the market can be of two types, passive and active investors and, since these two types of investors make up the market, we must conclude that the two groups together have an average outperformance that is equal to zero (in the absence of any fees and costs).

Passive investors are those who replicate the market portfolio through optimal diversification. Since passive investors all follow the same optimal diversification strategy, they all expect to do no better or worse than the market, and so should obtain zero outperformance before taking fees and expenses into account. After fees and expenses, they would expect to underperform the market by an amount that is equal to their fees and expenses.
Active investors implement strategies based on security selection, market timing etc. and therefore deviate from an optimal diversification strategy. As the market only consists of two types of traders, and passive investors have an expected outperformance of zero, this means that active investors, on average (before fees and expenses), also must have an expected outperformance of zero. After fees and expenses, active investors, on average, expect to underperform, and since active investors have higher fees and expenses than passive investors (as they expend more resources on security analysis), after fees, active investors, on average, perform worse than passive investors. At the individual level, active investors can outperform or underperform the market, since active investors have different investment strategies. However, for every dollar of outperformance gained by an active investor, there must be a dollar of underperformance lost by another active investor. Mathematically, this can be described by the following formula:

\[ 0 = 0 + 1 - 1 \]  

(1)

where the zero on the left-hand side refers to the outperformance of the market as a whole; the zero on the right-hand side refers to the outperformance of passive investors, and the +1 and -1 refers to each dollar gained (winners) and lost (losers) by active investors. Since this equality must hold, it is clear that every dollar in outperformance gained by an active investor must be offset by a dollar lost. Stated differently, if there are winners among active investors, there must be losers among active investors. In addition, if there are persistent winners, then there must be (a group of) persistent losers. However, persistent losers should at some point run out of money and, if persistent losers cease to exist, persistent winners should also cease to exist.

The example above, of course, applies to the market as a whole and does not necessarily reflect the mutual fund industry. One can, however, apply the logic above to the mutual fund industry, where passive fund managers (before fees and expenses) should on average have zero outperformance. The question then becomes what the average outperformance of active managers would be. The equation above clearly demonstrates that it is very difficult for all active funds to persistently yield outperformance, since this outperformance must come from either another group of active investors who loses (and the question is which group of investors consistently underperforms so that active mutual funds are able to outperform) or from other actively managed funds (or a combination of both). It is questionable how long persistently losing actively managed funds or other active investors can stay alive in a competitive market.

One could perhaps think that retail investors, due to their behavioural biases, might be these persistent losers. However, the question is whether there are enough persistently losing retail investors to make all active managers winners.

One argument that is frequently raised in this discussion is that of market inefficiency, i.e. active fund managers are able to exploit certain market inefficiencies. However, even if the market is inefficient, Equation (1) still needs to hold. The argument of inefficiency merely suggests that there is one group of investors that is not responding to new information in a correct way and, therefore, they become persistent losers. Again the question is who these persistent losers are. One could perhaps think that retail investors, due to their behavioural biases, might be these persistent losers. However, the question is whether there are enough persistently losing retail investors to make all active managers winners. According to Black and Kirkwood (2010) direct equity ownership by Australian households is less than 20 per cent in 2010, while both institutional and foreign investors hold close to 40 per cent each.
A theoretical argument: Efficient allocation of capital

The second argument as to why it is so difficult to generate outperformance is based on the efficient allocation of capital. Berk and Green (2004) present a theoretical framework where active managers compete for fund flow. In this framework, some managers are assumed to be skilled and have the ability to generate risk-adjusted outperformance. Individual investors who invest in mutual funds are sensitive to the performance of a mutual fund (see, for example, Sirri and Tufano 1998), and allocate their investments to those funds that yield the highest outperformance. The excess demand, and consequently inflow to funds that are able to generate outperformance, implies that funds which do not outperform or generate underperformance see little inflow into their funds, and likely even see outflow as investors reallocate investment from losers to winners. The consequence of this will be that losers become smaller (or even cease to exist), while winners grow in size. But Equation (1) tells us that for every dollar of outperformance, there must be a dollar of underperformance and, thus, if some losers cease to exist, it must imply that some winners become losers.

This shift from winners to losers can happen in two ways. First, it can be due to the impact of inflow on the size of a mutual fund. When a fund is able to generate outperformance, the inflow into the fund will cause the fund to increase in size. However, generating outperformance may be more difficult when the fund increases in size, i.e. there are decreasing returns to scale in terms of managerial ability. Second, not all managers may have the same ability to generate outperformance, and those with lower abilities (who previously were able to generate outperformance by trading against losers) may no longer have the ability to generate outperformance as some of the losers have disappeared.

The process of reallocating money to those funds that are able to generate outperformance continues until a steady state is reached. In the framework of Berk and Green (2004) there are two possible steady states. First, if there are no decreasing returns to scale in managerial ability (i.e. managers can continue to exploit their talents regardless of the size of the fund), then the process of reallocation of capital from individual investors (i.e. investing in those funds that outperform and divesting from those that underperform) will continue until there is only one fund left, run by the manager with the greatest managerial ability. But if there is only one fund that invests all the money of individual investors, then Equation (1) tells us that the outperformance of that fund must be equal to zero. Second, if there are decreasing returns to scale, then the reallocation of capital will continue up to the point where all managerial talent is fully exploited. In that case, the outperformance of mutual funds after the reallocation of capital must be zero as well because, if a fund that could generate outperformance still existed, investors would allocate more money to this fund until its outperformance was comparable to other funds.

An empirical argument: 45 years of empirical evidence

The third argument for the difficulty of generating outperformance is based on the empirical evidence produced by academia over the past 45 years. This literature (Sharpe 1964; Lintner 1965) emerged rapidly after the introduction of the Capital Asset Pricing Model which, for the first time, presented a statistical means for evaluating the risk-adjusted performance of investments and investment strategies. The question of whether investors are able to outperform the market is an age-old question and the mutual fund industry provides an ideal case to explore this question. This is because: fund managers are professional investors, who should be highly skilled relative to other investors and, hence, if outperformance is to be observed anywhere, the fund industry should be a good starting point; and mutual funds report the returns of their investment strategies, making the evaluation of their performance relatively straightforward.

One of the first studies into the performance of mutual funds is that of Jensen (1968), who examines the risk-adjusted outperformance of 115 US open-end mutual funds over the period 1945-1964. He reports that:

The evidence on mutual fund performance discussed above indicates not only that these 115 mutual funds were on average not able to predict prices well enough to outperform a buy-the-market-and-hold policy, but also that there is little evidence that any individual fund was able to do significantly better than that which we expected from mere random chance. (p. 415)
A little less than a decade later, McDonald (1974) finds that:

> For the mutual fund sample as a whole, the data clearly show neither significantly ‘superior’ nor ‘inferior’ performance over the decade 1960−1969. (p. 331)

Focusing more on the question of whether fund managers are able to time the market correctly by increasing their market exposure before the market rises and decreasing their exposure before the market drops, Henrikson (1984) concludes that:

> The empirical results do not support the hypothesis that mutual fund managers are able to follow an investment strategy that successfully times the return on the market portfolio. (p. 73)

Making use of the Fama and French (1993) three-factor model and findings on the profitability of momentum strategies, Jegadeesh and Titman (1993) and Carhart (1997) examine whether there is persistence in the outperformance of mutual funds. Carhart finds that:

> The only significant persistence not explained is concentrated in strong underperformance by the worst return mutual funds. The results do not support the existence of skilled or informed mutual fund portfolio managers. (p. 57)

More recently, Fama and French (2010) document that:

> On a practical level, our results on long-term performance say that true α in net returns to investors is negative for most if not all active funds, including funds with strongly positive α estimates for their entire histories. (p. 1916)

While these quotes are just a snapshot of the literature on mutual funds; in general, the empirical evidence against managerial ability to outperform in mutual funds overshadows the literature that documents managers’ ability to outperform.

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Of course, the evidence presented above is all based on US mutual funds, but the evidence on fund performance in Australia and New Zealand is not very different. In Australia, Robson (1986) indicates that over the period 1969−1978, Australian mutual funds, on average, were not able to generate risk-adjusted outperformance. Hallahan and Faff (1999) similarly document very little evidence on outperformance and in addition find little evidence of market timing skills. Gallagher (2001) reiterates this finding for Australian superannuation funds and concludes that there is no evidence for positive market timing or security selection skills.

The research done on the New Zealand market paints a similar picture. Bauer et al. (2006) examine the performance of 143 funds in New Zealand over the period 1990−2003, and find that these funds on average have not been able to outperform the market. More recently, Frijns and Tourani-Rad (2015) find no evidence on outperformance for KiwiSaver funds.

**Reconciling the industry experience with the academic experience**

Given the arguments presented above that highlight the difficulty in generating outperformance, how is it possible that many funds claim the ability to generate outperformance? One of the factors that can explain this discordant view is that funds and academics may use very different benchmarks to assess outperformance. The mathematical argument would only hold if the performance of funds is measured against the same benchmark. Similarly, the fact that the empirical evidence demonstrates such a strong case against the possibility of generating outperformance sits in the definition of the benchmarks.
The academic literature has reached a consensus that outperformance is any return that is not due to risk taking. Hence a New Zealand mutual fund that benchmarks itself against the NZX50 can achieve ‘outperformance’ by allocating part of its investments to international markets. If the additional returns due to an allocation abroad were actually driven by a source of risk, then from an academic point of view this would not be outperformance, but a compensation for risk. Likewise, if an Australian investment fund that benchmarks itself against the ASX200 ‘outperforms’ its benchmark by seeking exposure to small caps, then again from an academic point of view, this might not be true outperformance, since small caps are generally known to carry an additional risk premium.

An even stronger example would be the case of a hedge fund, which for prolonged periods of time may report ‘outperformance’, while in reality it is taking exposure to some hidden risk factor (such as catastrophe or liquidity risk). Although this difference in definition of outperformance may sound trivial (whether an additional return is generated due to true outperformance or risk-taking, an additional return is generated), the implications are quite deep. True managerial talent and the ability to truly outperform are very rare, and should carry a premium in terms of fees charged to investors. Risk taking is cheap and easy to implement.

A fund manager who mistakes his ability for talent (and charges a high fee), but in reality is doing nothing more than taking exposures to known risk sources (which can be achieved at a much lower fee), will not only be overcharging his customers for a skill that he or she does not possess but also exposing customers to risks that are not communicated to them, and are probably not well understood.

The academic literature has documented various sources of risk to which one can seek exposure. A fund manager who mistakes his ability for talent (and charges a high fee), but in reality is doing nothing more than taking exposures to known risk sources (which can be achieved at a much lower fee), will not only be overcharging his customers for a skill that he or she does not possess but also exposing customers to risks that are not communicated to them, and are probably not well understood.

References


