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The Role of Active Portfolio Management

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Abstract

Our research will look into whether money managers actually are able to beat their respective benchmarks and create value for their investors. If that is not the case, then why should any investor choose to place capital under costly active management? To get a better understanding of this, we will look at the role active management plays in today's market. Further we will investigate the market under different market states to see if that influences the abnormal return active managers are able to generate. To support our research, we will use the five-factor model by Fama and French to obtain comparative risk-adjusted returns.

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1.0 Introduction and motivation

From the middle of the 20th century, the Efficient Market Hypothesis (EMH) has dominated the economic view of most scholars. During the last decades however, many scholars have started to believe that stock markets are partially predictable. Nonetheless, active portfolio management has not been able to outperform a passive alternative on an aggregate level.

In January 2017 the Financial Times published an article asking the question; "are we coming to the end of active management?" Over the past years we have seen that actively managed portfolios struggle to beat passively managed index portfolios. With active funds charging high fees and yielding low returns, this is a valid question to ask when making an investment. If this truly is the case, then why would any investor be interested in placing capital under these conditions?

Since 2007, the US actively managed mutual fund industry has seen a steady outflow of capital. Currently, 28.5 % of assets under management is held in some passive alternative (roughly $ 6 trillion) (Moody's, 2017). According to Moody's projections, passive alternatives will overtake the active market share somewhere between 2021-2024. The high fees charged by money managers, combined with their low returns, seems to be the key drivers for this change in investment behaviour. Even the "oracle of Omaha", Mr. Warren Buffet, does not hold active management in high regards. In 2007, he wagered US$ 500,000 that a selection of hedge funds would not over an extended period, match the performance of an unmanaged SP500 index fund. The results were overwhelming. Buffet's index fund had an average annual return of 7.1 %, while the respective hedge funds only had an average return of 2.2 % (BerkshireHathawayInc, 2016).

Generally, economic theory supports that there is no added value by utilizing active management. William Sharpe claims that "before costs, the return on the average actively managed dollar will equal the return on the average passively managed dollar" (Sharpe, 1991). For this reason, active management will yield lower returns due to higher fees, after costs. However, there may exists superior money managers that are able to beat the market, equally offset by inferior managers not able to do the same. In contrast to the Efficient Market Hypothesis, by Fama and Malkiel (1970), the Grossman-Stiglitz paradox says that market

prices can't ever be perfectly efficient, then investors would lack an incentive to do the work necessary to make prices efficient (Grossman & Stiglitz, 1980).

All actors in the actively managed investment world would to some extent utilize the same publicly available information, at the same time. They all have talented teams of financial experts with a drive to outperform one another and their respective benchmarks. The competition among professional investors acts as one of the price setting drivers in the market. Malkiel (2003) claims that there will always exist irrational behaviour and mistakes will be made, which in turn will lead to pricing irregularities. These irregularities and pricing errors, implying that inefficiencies exist, might be the only way to obtain excess return. With the economic theory in mind, it seems that it is difficult, if not impossible to create abnormal returns on an aggregate level. So, is there still a place for active management in today's market? Can the two vehicles coexist or is active management a thing of the past?

There is not much economic theory published on the actual role active management plays in the market and we therefore find this to be an intriguing angle into the active versus passive management debate. In order for a market to exist, there must be someone setting the prices. If you are to follow the definition of passive investments put forward by Sharpe (1991), then investors choosing passive alternatives do not contribute to price setting. Hence, if everyone chose a passive strategy, there would be no market. This simple analogy leads us to believe that there is a place in the market for active management. Our aim is to explain this role. We will also intend to further develop our insights into what the possible advantages are for an investor choosing to invest in active management.

Going forward, when researching the role of active management in today's market we will try to answer the following questions; Is the role of active management justified in the market? Furthermore, which strategic advantages could be gained by investors utilizing active portfolio management? The data to be used will contain mutual funds data from the United States in the period 2000-2016, preferably without survivorship bias.

2.0 Literature review

In 1992, Fama and French published their first scientific article introducing the three-factor model. By doing this they disregarded the assumptions long held in the financial scientific community, that the average stock returns are positively correlated to the market "beta". This simple prediction were introduced by the work of Sharpe (1964), Lintner (1965) and Black (1972), in which their combined research shaped the well-known "Capital Asset Pricing Model" (CAPM). The essence of the CAPM is based on the market portfolio being mean-variance efficient as explained by Markowitz (1952).

The CAPM was further extended by Jensen (1968) when he introduced Jensen's alpha, a measure of the abnormal return of a portfolio. The model tries to evaluate if a fund manager is able to "beat the market" and gain excess return adjusted for risk, over its theoretical expected return. The measure has been used by several scholars in the decades following the publication, although criticised by many. The article by Jensen, concludes that active management does not consistently outperform their respective benchmarks.

Grinblatt and Titman (1989) suggested a new model to test for the existence of abnormal performance. Using the Jensen measure and accounting for survivorship bias, they concluded that abnormal return in fact do exist, particularly among growth funds and funds categorized as small asset value funds. However, the consistency and skill seemed to deteriorate with fees and expenses. They wrote a new article in 1992, suggesting somewhat positive persistence in mutual funds' performance, meaning that past performance to some extent could be used when evaluating performance (Grinblatt & Titman, 1992).

Kraus and Litzenberger (1976) reviewed the assumptions of inconsistency in the CAPM. Prior to this, scholars argued that the intercept in the model was too high, in addition to the slope of the CAPM predicted to be too steep. Using a three-moment valuation model, incorporating the effect of systematic skewness to the model, they concluded that the initial criticism of the CAPM were not justifiable.

Malkiel (1995) found that funds consistently were able to outperform the market, however, his findings were conflicting when survivorship bias was considered. He

then concluded that an investor would be better off investing in an index fund, as the actively managed portfolios tended to underperform.

Carhart (1997) confirmed the conclusions of Malkiel (1995) and built further on the three-factor model by Fama and French (1992) and the research of Jegadeesh and Titman (1993). By adding the momentum factor to the three-factor model, it became a central model for future studies. Testing for persistence in the funds' returns made it possible to check whether previous winners were able to proceed with high returns and losers continue to underperform. Wermers (1997) showed to some extent that investment strategies based on momentum could affect the persistence in performance among funds. Accounting for survivorship bias, the author showed that the funds with superior performance one year, also the next year had good performance among their peers, not unlike the momentum effect in stocks introduced by Jegadeesh and Titman (1993). Wermers also implied that fund managers demonstrated stock picking abilities in bull markets, and timing abilities in bear markets.

Berk and Green (2004) concludes that active portfolio management does not have superior performance over passive benchmarks, and makes a prediction that all active managers have zero abnormal return (α) net of all costs. Their model concludes that the funds expected returns to investors are competitive, and assumes that the funds are in a decreasing return to scale environment. Their conclusion entails that new capital will flow to funds, because rational investors will seek information about past performance, although, this new flow of capital would act as a disadvantage, rather than an improvement for the funds following years' performance. The authors disregard the effect of persistence, but will not conclude that the gathering of information about performance or chasing performance is wasteful, as they find the distribution of skill among portfolio managers to show a significant skill level.

Fama and French (2010) further expanded their previous three-factor model from 1993, also including Carhart (1997) four-factor model in their research. Based on the concept of *equilibrium accounting*, they challenge the results of Berk and Green (2004), and state that the aggregate investors have an α close to zero, and in fact, a negative α after expenses. Instead of focusing on the rational investor,

Fama and French (2010) highlights this *zero sum game*, or rather *negative sum game*, as one of the main drivers for their results.

Fama and French (2015) took a step back, reviewed their own work on the three-factor model over the past decades, and came up with a new and improved five-factor model. They argue the new model's ability to outperform their previous three-factor model in capturing the size, value, profitability and investment patterns in average stock returns. Furthermore, the article concludes that the long afflicting tests of the CAPM now can be solved with the relation between the market β and the average return, something other models were not were not able to catch.

Sun, Wang, and Zheng (2009) takes a different approach when testing for abnormal return among funds. Instead of categorizing all active managed funds in one homogeneous group, they differentiate active funds by degrees of activity. In down markets, the most active funds have superior performance compared to the least active funds after adjusting for risk. However, this *counter-cyclical* performance is not found in bull markets. When concluding that the most active funds also charge higher fees, offsetting the superior abnormal return, Sun et al is suggesting that investors are willing to pay a premium to hedge against a possible future downturn in the economy.

Gruber (1996) investigates the reasons why investors continue to place capital in actively managed portfolios, given the negative abnormal return historically seen compared to their appropriate benchmarks. The research highlights customer services, low transaction costs, diversification and professional management as explanatory factors. However, Gruber admits that the three first, respectively, are provided by passive investments as well. Furthermore, he argues that future fund performance to some extent could be predicted by using past performance. Seemingly, some investors have realized that it is possible to benefit from this, as the flow of new capital into funds follows the predictions of the funds future performance. The reasons for this are explained by the fact that funds are priced at net asset value, not reflected by possible superior management.

3.0 Theory

In light of the literature review presented in this paper, the vast majority of scholars find that active management on an aggregate level does not beat the passive alternative. This is in line with the view of William Sharp's central article on active management "The Arithmetic of Active Management", where he claims that "before costs, the return on the average actively managed dollar will equal the return on the average passively managed dollar" (Sharpe, 1991). Consequentially, after costs, active management will yield lower returns due to higher fees. This entails that active management is a *zero-sum game*, or in fact a *negative-sum game* as claimed by Fama and French (2010). This will hold for any time period and is the standard argument for passive management. However, if the claim that the average active manager will equal the market, then there may exists money managers that are able to actually beat the market. Furthermore, Sharpe's claims are based on strict definitions of passive and active management where an passive investor holds every asset represented in the market (Sharpe, 1991). For Sharp's claims to be correct a passive investor is not able to conduct any trades in the current time period. Additionally, there can't be any trading between the two segments. However, these restrictions do not hold in the real world. Even index funds have restricted their investments from the investment universe as a whole and consequently they do not hold all possible assets in the market. According to Sharpe's theory, this implies that not even index funds are truly passive investments, hence there are opportunities to create abnormal return for active funds that trade with index funds. For instance, index funds must conduct trades to rebalance their portfolios, which in turn will create possibilities for active management to conduct "smart" trades for their investors. In such trades money managers can take advantage of inefficiencies in the market and the subsequent pricing irregularities.

The foundation of the CAPM was built on the Modern Portfolio Management theories (MPT), first introduced by Markowitz (1952). The theory assumes that all investors are risk averse, aiming to minimize portfolio return variance in combination with maximizing expected return. By doing this, an investor could achieve a portfolio considered mean-variance efficient, a portfolio found on the efficient frontier. This portfolio contains a set of assets that would yield the highest possible return, given the risk level one is willing to accept. Differently

said, a portfolio with the lowest volatility possible, given the expected return one is seeking to obtain. It is important to realize that there is no superior point on the efficient frontier, only different levels of risk aversion. Points found below the efficient frontier are sub-optimal and do not yield a sufficient return, as one could find a portfolio yielding a greater return for the same amount of risk. Choosing one of these points would be irrational investment behaviour. Even though Malkiel supports the efficient market hypothesis, he notes that there will always exist irrational behaviour and that mistakes will be made, which in turn will lead to pricing irregularities (Malkiel, 2003).

Figure 1: Efficient Frontier, retrieved from (http://nerds.fundbase.com/2016/10/31/efficient-frontier/)

The Efficient Market Hypothesis (EPH) was developed by Eugene Fama in 1970. Fama claims that asset prices fully reflect all available information, which implies that it is impossible to beat the market since only new information changes the asset prices (Fama, 1970). He introduced three stages of market efficiency; weak form, semi-strong form and strong form, distinguished by the amount and type of information available in the market. First, the weak form efficiency assumes that prices reflect all historical prices and trading volume. Second, the semi-strong efficiency assumes that prices reflect all publicly available information, including historical trading data. Lastly, the strong-form efficiency assumes that prices

reflect all information possible, including insider information not commonly available to the average investor in the real world. In the weak form efficiency, it would be difficult, if not impossible, to add more value and beat the market since all investors have the same limited information already incorporated in to the prices. Similarly, in the strong form efficiency, no advantages would be gained even by trading on insider information as this also should be reflected in the prices. Of the three forms it seems more likely that it is the semi-strong form of efficiency that describes the real-world conditions in the best way, although elements from all three probably are present. The theory is that new information spreads instantaneously and becomes integrated in the prices immediately. Therefore, price anomalies are quickly found, and prices are corrected. This implies neither studying past prices to predict future prices or looking for undervalued stocks would help to create abnormal returns, unless one takes advantage of inside information (Malkiel, 2003).

In 1980 the Grossman-Stiglitz paradox introduced the idea that market prices cannot ever be perfectly efficient, then investors would lack an incentive to do the work necessary to make prices efficient (Grossman & Stiglitz, 1980). Prices in the market only partially reflect the information of informed investors, so those who conduct additional research and possess additional information does in fact receive compensation for their effort. Their view contradicts the efficient market hypothesis by Fama, however it is supported by Malkiel. He notes that the dominance of EMH has lost much of its power among economic theory with the entry of research fields like behavioural economics (Malkiel, 2003). With this view in mind, psychological elements will affect asset prices and money managers might take advantage of hypothesis like the existences of seasonal anomalies such as the “January effect”, as first observed by Wachtel (1942).

3.1 Hypothesis

Going forward, this paper will further analyse a dataset of mutual funds. Two hypotheses have been identified as central in our research questions:

1. Active portfolio management gives a monetary advantage over passive management.
2. Active portfolio management gives a greater risk-adjusted return over passive management.

4.0 Methodology

The CAPM is a central economic model describing the theoretical required rate of return for an asset, however Fama and French argues that the model fails to explain the full risk-return relationship (Fama & French, 2004). Despite of its popularity, the CAPM has received severe criticism for not holding due to anomalies in asset pricing. Based on this, Fama and French published their paper on the three-factor model, where they studied several contradictions and claims made against the CAPM. Most notably they researched the size effect found by Banz (1981) and the findings of Stattman (1980) and Rosenberg, Reid, and Lanstein (1985), who found that returns on U.S. stocks are positively related to the ratio of a firm's book value to its market value. Fama and French confirmed their hypothesis and included the two additional factors into the CAPM. Including these two new factors, the model should better explain the anomalies that create variation in the cross-sectional returns that differ from the CAPM equilibrium, and the research showed that the *"size and book-to-market equity capture the cross-sectional variation in average stocks"* (Fama & French, 1992). To capture the return created by the two factors not explained by the CAPM they added the components SMB and HML.

The three-factor model is defined as:

$$R_{it} - R_{ft} = a_i + b_i(R_{Mt}-R_{ft}) + s_iSMB_t + h_iHML_t + e_{it}$$

- R_{it} is the return security of portfolio i at time t
- R_{ft} is the risk-free return
- RM_t is the return on the value-weighted market portfolio
- SMB_t is the return on a diversified portfolio of small minus big stocks
- HML_t is the difference between the returns on diversified portfolios of high and low B/M stocks
- e_{it} is a zero-mean residual

Even though the three-factor model is widely regarded as one of the most important economic models, it has received criticism. Most notably is the criticism for failing to capture much of the variation in average returns related to profitability and investment as shown by Novy-Marx (2013) and Titman, Wei,

and Xie (2004). This prompted Fama and French to further enhance their model into a five-factor model which includes the two factors profitability and investment. Their test of the model shows that it explains between 71%-94% of the cross-section variance of expected returns for the size, book-to-market, profitability and investments in the portfolios they examined (Fama & French, 2015).

The five-factor model is defined as:

$$R_{it} - R_{Ft} = a_i + b_i(R_{Mt}-R_{Ft}) + s_iSMB_t + h_iHML_t + r_iRMW_t + c_iCMA_t + e_{it}$$

- r_iRMW_t is the difference between the returns on diversified portfolios of stocks with robust and weak profitability
- c_iCMA_t is the difference between the returns on diversified portfolios of stocks of low and high investment firms.

As earlier mentioned in this study, Carhart (1997) added the momentum factor to the three-factor model and created a widely used four-factor model. Fama and French tested both the momentum factor and the liquidity factor of Pástor and Stambaugh (2003), though including these factors only gave minimal increase in model performance when testing the five-factor model (Fama & French, 2015). They also found that adding the profitability and investment factors makes the value factor redundant when you are interested in describing abnormal returns, *"a four-factor model that drops HML performs as well as a five-factor model"* (Fama & French, 2015). The model is still young and have not seen substantial testing, but the authors themselves have accentuated a recurring problem from the three-factor model. They argue that the model has problems with capturing low returns on small stocks whose returns perform similar to firms that have high investments despite low profitability (Fama & French, 2015).

However some concerns have been raised on the model. Blitz, Hanauer, Vidojevic, and van Vliet (2016) discusses five concerns they have with the five-factor approach. Among the concerns are points on the momentum factor and the robustness of the new factors. They are very critical to the fact that Fama and French omits the widely acknowledged momentum factor which has been

documented by several other studies. Regarding robustness, even though Fama and French themselves have stated that asset growth anomalies is less robust, in the new model they have defined the investment factor as an asset growth anomaly (Fama & French, 2008). Here they find evidence for using net share issuance instead. This would also fit better with the dividend discount model that Fama and French uses to explain the reasoning behind the five-factor model. In spite of their concerns, Blitz et al admits that the model has significantly improved explanatory power, which is in line with the findings of Chiah, Chai, Zhong, and Li (2016). They find that in Australian equities, the model is superior to other models and the value factor keeps its explanatory power when describing abnormal returns. While this shows that the model is not perfect, it seems to be the best suited model for us to measure performance of active management.

In our study, we will test both the possible monetary gain and the risk adjusted return over the appropriate benchmark. As earlier mentioned, we will research mutual funds data from the US in the period 2000-2016. When testing for monetary gain we will look at the simple return for the active funds, which are reported returns after management fees. Further we will look at the risk-adjusted return for the active funds, where we will use the Fama and French five-factor model. When researching for abnormal return we will utilize Jensen's alpha. He proposed a method to measure the performance of different equities based on the CAPM, but it has also been used together with other models like the three-factor model. The framework measures the difference between actual and predicted returns. A positive alpha means that the equity in question is able to create return beyond the benchmark.

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