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Active vs. Passively Managed Funds: Do Investment Managers Add Value

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of the requirements for the degree of

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by

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Abstract

With developments in free to use electronic trading platforms, the divide of readily available institutional research between investment professionals and normal market participants has narrowed significantly. This has caused the market to become more efficient in correcting pricing errors; therefore, limiting the total market opportunities investment managers can capitalize on to provide alpha for their clients. This study examines the returns of forty different actively managed funds in four different market categories: US large-cap, US small-cap, international, and emerging market. After looking at different characteristics that led to the high performance or underperformance of a fund, it was found that the average US large-cap and US small-cap fund does not provide any value. The international and emerging market funds do provide value to their customers; however, the average investor would be better off investing their money in the S&P and avoiding the hassles of active management.

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Introduction

The stock market is designed to be efficient. Investment managers are only able to outperform the market[1] if they can discover pricing errors[2] before the market inevitably corrects itself. Once traders find pricing errors, they take the appropriate position that allows them to profit from said error. This is done by either buying or selling the stock which forces the stock either up or down to its correct price; thus, correcting the pricing error. This process is also known as price discovery. Investment managers of the 1970s had numerous opportunities for price discovery as they had a significant advantage over the everyday investor. Utilizing the opportunities available, they sold mutual funds that were consistently evaluated, rebalanced, and recomposed, which is otherwise known as an actively managed mutual fund. Their goal was to beat passively managed funds (index-based funds), funds that track the return of the market without any influence from investment managers (Ellis, 2014). During the 1970s, a majority of actively managed funds returned a superior alpha, which is the additional return above the index a fund earns from the manager's stock-picking abilities and superior information (Cochrane, 2013). For example, if the market was to grow by 10%, and an actively managed fund was able to return 13%, the fund would have an alpha of 3%. The job of an investment manager, therefore, became a lucrative position as they were able to charge high fees to their customers who hoped to earn a portion of the fund's alpha. All investors can earn the

[1] Outperforming the market means to earn a return greater than the market. I.e. If the market grows by 5%, an investor would outperform the market if their investment grows by more than 5%.
[2] Pricing errors are incorrectly priced stocks. I.e. a stock that is either priced above or below its true value. This occurs naturally as all investors have their own idea of the true value of a stock.

return of the market by investing in the index, but only a select few can earn a return that beats the market. A fund with a negative alpha would mean that the investor would have profited more if they invested in an index-based fund and avoided the fees of actively managed funds. The significant amount of investment manager's earning a superior alpha led to pension funds investing in actively managed funds. The influx of money allowed the investment managers to charge higher fees due to the demand. As time went on, technology such as Bloomberg machines[3] made price discovery more efficient leading to a decline in the performance of actively managed funds as the opportunities to profit in the market fell. Bloomberg machines made the market more efficient by allowing investment managers and other investors to quickly locate pricing errors which led to the market returning to equilibrium. Nevertheless, the fees charged by investment managers continued to rise while alpha fell. The fees of actively managed funds are structured in a way to seem minuscule. For example, fees are incremental "as a percentage of incremental returns after adjusting for risk," meaning that a fund with a fee charging 1.25% of assets coupled with a 12b-1 fee[4] of .25% and earning an alpha of .5%, would mean an actual fee of 75% (Ellis, 2014, p. 17). Therefore, as alpha decreases, the fees increase as the return of the fund decreases.

Currently, actively managed funds create an odd phenomenon where they consistently, on average, perform, after fees, worse than passive index-based funds, yet the majority of investors invest in actively managed funds rather than index-based funds

[3] A Bloomberg terminal is a computer that "gives investors direct access to the Bloomberg data service, which provides real-time financial data and facilities trades" ("Bloomberg Terminal," n.d.). Simplified, it is a highly advanced trading terminal that provides traders with an extremely vast amount of market data.
[4] A 12b-1 fee is the annual fee a mutual fund charges in order to pay for distribution costs ("Independent Investment Research," n.d.).

(Del Guercio, & Reuter, 2014). For example, the performance of US Equity Mutual Funds for years 2007-2011 indicates that active management is a zero-sum game[5] before costs while after costs only 3% of managers have the skill to earn an alpha that justifies their fees (Cochrane, 2013). This falls in line with the long-run equilibrium theory of Berk and Green which suggests that the competition between active managers leads the returns of actively managed funds into a zero-sum game (Barras, Scaillet, & Wermers, 2010). This peculiarity has led many financial scholars to take different routes to attempt to answer the question: why do actively managed funds receive this investment if the smart thing to do would be to invest in index-based funds?

In this investigative thesis, I will explore the construction of index-based funds and actively traded mutual funds, compare and contrast the mindsets surrounding passive and active trading strategies, and investigate the returns of both investment vehicles in four different categories in order to determine the value added by actively managed mutual funds.

In my thesis, I will look at the history of actively managed funds and how they came to be such a dominating force in the market. In my literature review section, I will look at the previous literature justifying why actively managed funds do or do not add value to their clients. I will use data gathered from Morningstar, a global investment research and investment management firm that sells market data, to find 10 actively managed funds in four different fund specializations: large-cap,[6] small-cap,[7]

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[5] A zero-sum game is "a situation in which one person or group can win something only by causing another person or group to lose it" ("Zero-Sum Game," n.d.).

[6] Refers to companies with a market capitalization (market value of a publicly traded firm) greater than $10 billion (S. Faircloth, lecture, spring, 2017).

[7] Refers to companies with a market capitalization less than $1 billion (S. Faircloth, lecture, spring, 2017).

international,[8] and emerging market[9]. I will compare the funds in each asset class to their respective benchmarks and attempt to prove using their returns that although the average actively managed fund fails to provide value, actively managed funds still add value to their clients and are necessary components in the market. I will collect data on the fund's performance using Morningstar because it is easily accessible and offers net of fees return data for all funds.

From my results, I expect to find actively managed funds that outperform the market and actively managed funds that underperform the market. I expect to find that a majority of actively managed funds outperform the market during recessionary periods and periods of high growth. My research will add to the existing scholarship by providing potential investors with practical knowledge of specific mutual funds and the stock market. Furthermore, I will provide investors with reasons to invest or not invest in actively managed funds as a whole or the specific funds examined in my paper based on the value added I find in my research.

[8] Refers to large-cap and mid-cap (companies with a market capitalization between $2 and $10 billion) companies outside of the United States and Canada (S. Faircloth, lecture, spring, 2017).
[9] Refers to companies located in emerging markets such as China, South Korea, Taiwan, India, Brazil, etc. (S. Faircloth, lecture, spring, 2017).

Literature Review:

One approach to answer the aforementioned question as to why actively managed funds receive a majority of investment if on average index-based funds perform better, is to justify an investors decision based on the ability of investors to choose superior active managers (SAMs), managers that are able to produce a superior alpha (Jones & Wermers, 2011). Jones and Wermers (2011) argue in defense of four factors that can be used to identify a SAM from an inferior active manager (IAM): past performance, macroeconomic forecasting, fund/manager characteristics, and analysis of fund holdings.

Past Performance

Past performance indicates that at least one point in time the active manager must have had superior information in order to beat the market, and therefore, if the superior information persists, they should be able to beat the market again (Jones, & Wermers, 2011). However, a superior alpha in the past might not be an accurate predictor of a SAM and could be a result of other factors such as luck. Barras, Scaillet, and Wermers (2010), knowing how influential luck is on alpha, attempt in their study to separate skill and luck in order to reliably choose a SAM. They separated funds into three categories: 1) unskilled (return a negative alpha after fees 2) zero-alpha and 3) skilled (return a positive alpha after fees). Their study excelled in its simplicity (the study does not enforce prior assumptions on the funds), accuracy, and robustness. Barras, Scaillet, and Wermers (2010) used the p-values of individual fund alphas in order to conduct their hypothesis and found that after adjusting for luck approximately 24% fall into the category of unskilled, 75.4% fall into the category of zero-alpha, while the remaining .6% fall into the category of skilled. The results indicate that while controlling for luck does help to

find a SAM, only .6% of funds generate an alpha worthy of their fees. This only further begs the question as to why investors invest in actively managed funds when only .6% of the funds can attribute their alpha to skill rather than luck. Is it because they are unaware of other opportunities of investment or they believe they have the skill to choose a fund of the .6% (Barras, Scaillet, & Wermers, 2010)?

Macroeconomic Forecasting

The second factor considered by Jones and Wermers (2011) is macroeconomic forecasting. Macroeconomic forecasting takes into consideration market factors that might influence the amount of opportunities managers have to beat the market. For example, the average active manager is more likely to beat the market during a period of recession which implies that the superior information held by active managers might be more valuable in recessionary periods (Jones & Wermers, 2011). Kosowski (2006) and Moskowitz (2000) during their research also found that actively managed funds outperform during periods of recession. Their findings suggest that investors are able to use macroeconomic conditions to choose a manager that in times might be considered an IAM, but under the right conditions can be considered a SAM.

Fund/Manager Characteristics

The third factor examined by Jones and Wermers (2011) is the fund/manager characteristics. Fund/manager characteristics examine whether or not a more active strategy toward fund management leads to superior alpha. Scholars such as Amihud and Goyenko (2013), and Petajisto (2013) take different approaches to answer whether or not the fund characteristics can help you determine a fund that will provide superior alpha in the future. Amihud and Goyenko (2013) look at the R^2 of a fund in order to predict the

performance. The R^2 of a fund is "estimated by regressing its returns on returns of a multifactor benchmark model" which can be simplified into R^2 explaining just how selective a fund is when choosing stocks with selectivity being defined as 1 - R^2 (Amihud, & Goyenko, 2013, p. 667). Amihud and Goyenko (2013) hypothesize that funds with a lower R^2 will perform on average better than funds with a higher R^2. The results indicate that the funds with the lowest R^2 attain alphas of 3.8% or more (Amihud, & Goyenko, 2013). Similarly, Petajisto (2013) hypothesized that the reason the average actively managed fund underperforms the index is because an average includes closet indexers. Closet indexing, as defined by Petajisto, is "the practice of staying close to the benchmark index while claiming to be an active manager and usually also charging management fees similar to those of truly active managers" (Petajisto, 2013, p. 78). As the definition implies, closet indexers cannot produce a positive alpha because their alpha, while following an index, is zero, which means after fees, the alpha is negative by the amount of fees. To test his hypothesis, Petajisto (2013) separated active managers into two categories based on active share and tracking error. Active share measures a fund's active positions compared to passive positions in an actively managed fund. For example, most actively managed funds follow an index which is included when you purchase the fund; however, actively managed funds also take active positions by increasing or decreasing the weight of certain securities in their respective index. Therefore, a manager's ability to produce superior alpha is dependent on their ability to choose stocks that will outperform or underperform and adjust accordingly. Tracking

error is a measure of systematic risk[10] (Petajisto, 2013). Accounting for tracking error allowed Petajisto (2013) to account for the movement of the fund (risk) that is not attributable to the movement of the market (index). Petajisto (2013) found that actively managed funds, not including closet indexers, beat the market by, on average 1.26% a year, after fees and expenses which signals a high level of skill inherent in the more active investment managers (Petajisto, 2013). Additionally, Kacperczyk, Sialm, and Zheng (2005) found that, for the time period of 1984-1999, an investment managers industry knowledge also contributes to a fund returning a superior alpha. Kacperczyk, Sialm, and Zheng (2005) results are contrary to the typical approach to risk management which is to diversify a fund's holdings into multiple industries to avoid idiosyncratic risk[11]. This finding would support the fact that the specialization of an investment managers research would lead to them having superior information over the common investment manager and allows them to return a superior alpha (Kacperczyk, Sialm, & Zheng, 2005).

On the other hand, Fulkerson (2013), challenges the previous literature, especially the findings of Kacperczyk, Sialm, and Zheng (2005), claiming that stock selection skill accounts for the majority of superior alpha. To conduct his test, Fulkerson (2013) separated skill into two performance measures: a trading component and a selection component. The trading component measures the return either gained or lost through changing the composition of the portfolio and is focused on the short-term. For example,

[10] Systematic risk, otherwise known as market risk, is unavoidable as it is risk inherent in the market ("What is Systematic Risk," n.d.).

[11] Idiosyncratic risk is risk that can be avoided by the diversification of assets. For example, Apple and Microsoft would have high levels of idiosyncratic risk because they are similar companies, therefore, market conditions or new regulations would be expected to affect both companies.

selling stock and purchasing a different stock or purchasing additional shares of an individual stock while not purchasing additional shares of others. The selection component measures how the stocks in the fund perform over a longer period of time. For example, the managers ability to choose stocks that outperform or underperform over a certain period of time (Fulkerson, 2013). The performance measures allowed Fulkerson to isolate trading skill in three areas: 1) individual stocks (whether an individual stock, for example, Apple would outperform or underperform the market) 2) industries (whether the industry the manager decides to invest in, for example, tech, outperforms or underperforms the market) and 3) characteristic styles (how often does a manager trade and/or change the composition of the fund). Fulkerson (2013) conducted his study over two time periods 1980-1994 and 1995-2007. For the years 1980-1994, he found similar results to Kacperczyk, Sialm, and Zheng (2005) in that industry expertise regarding stock selectivity helps investment managers earn more alpha. However, as a whole he found that contrary to the results of Petajisto (2013), Amihud and Goyenko (2013), and Kacperczyk, Sialm & Zheng (2005) the selection skill of investment managers does not generate any excess return which reinforces the question: why do actively managed funds receive a majority of fund investment if the smart thing to do would be to invest in index-based funds? Furthermore, this result implies that as time goes on, investment managers are continuing to lose their competitive advantage and are finding it increasingly difficult to earn an alpha worthy of the fees they charge.

Fund Holdings

The fourth characteristic examined by Jones and Wermers (2011) looks at what assets the fund is holding compared to other funds. Kacperczyk, Sialm, and Zheng (2008)

attempted to find whether or not a fund can increase its performance by observing the actions of its peers. Mutual funds are required by law to disclose what securities comprise the fund. Kacperczyk, Sialm, and Zheng (2005) use a return gap, which is defined as the "difference between the reported fund return and the return on a portfolio that invests in the previously disclosed fund holding," in order to test their hypothesis (Kacperczyk, Sialm, & Zheng, 2008, p. 2379). In simpler terms, they created two hypothetical portfolios: one which purchased the security that was disclosed by the portfolio's competitors, and one which did not, and then compared the returns. As to be expected, Kacperczyk, Sialm, and Zheng (2008) found that if an investment manager was to observe all the actions of their peers, some of the actions would create value, while others would destroy value. Nevertheless, the return gap is a statistically significant predictor of a fund's performance. Therefore, a fund with a high return gap, a fund in which the managers observed more of the disclosed actions of its peers, would be expected to perform better than a fund with a low return gap, a fund that did not actively observe the actions of its competitors (Kacperczyk, Sialm, & Zheng, 2008). Jones and Wermer (2011), after their research regarding the four characteristics to identify a SAM, concluded that an analysis of fund holdings is the best characteristic to examine (Jones, & Wermer, 2011). Overall Jones and Wermer (2011) find that investment managers do add value through actively managed funds, which is what I hope to prove through my research.

Ease of Purchase

On the other side of the spectrum, instead of trying to prove that investors are attempting to choose SAMs, other scholars attempt to prove that investor preferences

lead the average actively managed funds to a negative alpha because certain actively managed funds lack the incentive to generate alpha (Del Guercio & Reuter, 2014). To prove their hypothesis, they compared the sensitivity to risk-adjusted returns between direct-sold and broker-sold funds. Direct-sold funds are funds sold directly to investors and not through a broker whereas broker-sold funds are sold through a broker and lack the client and investment manager relationship found in direct-sold funds. Del Guercio and Reuter (2014) found that when separately examined, direct-sold funds were indistinguishable from index-funds, while broker-sold funds underperformed the index by 112-132 basis points.[12] Del Guercio and Reuter (2014) attribute the differences in performance to a lack of investor knowledge. For example, investors who invest in direct-sold funds would do research in order to choose a fund they deem worthy and go through a process such as calling the manager or contacting the fund managers company in order to invest in the fund. However, broker-sold funds are much more accessible to the average investor which leads to the reduced necessity to attract clients. On the contrary, direct-sold funds are competing for business with other direct-sold funds. Broker-sold funds, although in competition with each other, attract investors who do not do background research on the fund because they can easily invest through their broker. They receive business regardless of whether or not they are successful at outperforming the market, while direct-sold funds only attract customers if they are successfully outperforming the market. According to the findings of Del Guercio and Reuter (2014), it

[12] 1 basis point is equal to .01%

is this lack of an incentive for broker-sold funds to outperform the market outlined above that explains why the average actively managed fund underperforms the market.

Methodology and Data:

In order to investigate whether investment managers add value through crafting and actively managing a fund, or if a passively managed fund that follows an index adds more value to one's portfolio, I decided to look at the returns of actively managed funds under four different categories. The four categories are US large-cap, US small-cap, international, and emerging market. I chose these four fund specializations in order to separate the funds into categories that encompass the entire market while avoiding overlap. The indexes I compared the returns to are the SPY (SPDR S&P 500 Trust ETF), the IWM (iShares Russell 2000 Index Fund), the EFA (iShares MSCI EAFE ETF), and the EEM (MSCI Emerging Markets Index), respectively. As mentioned previously, on average, actively managed funds fail to outperform the index after fees. I separated the funds into four specializations to see if, for example, US large-cap funds typically outperform while emerging market funds tend to underperform.

I looked at the returns of the indexes and funds for the years 2008-2018. In order to help investors make an informed decision, I chose to use the most recent data available. The market was very different in the 1970s, so by using recent data available I attempted to capture the market conditions that would resemble the market in the recent future. Therefore, investors can use my research to choose a type of actively managed fund that would potentially return the highest alpha in 2019, or even more specifically, a fund that would potentially return the greatest alpha. I downloaded a Morningstar database that listed all actively managed funds available on the market. I then randomly choose 10 funds in each specialization. To randomize the funds chosen, I applied a

random number to the funds using a Microsoft Excel function and then chose the funds with the number closest to 1.

After separating the funds into their respective specialization, I downloaded the historical data of the forty funds I chose from Yahoo Finance. In addition, I also downloaded the historical data for the funds' respective indexes. Then I selected the adjusted closing price (adjusted close) from the data file. The adjusted close accounts for any adjustments that would affect the listed price of the fund, such as dividends; therefore, the data I have is uniform for the selected time period. I chose to download the return data from Yahoo Finance because Yahoo Finance is a free database available to the public. In order to find the return over the 10-year period net of fees, I used Morningstar.

I used the adjusted close to calculate daily returns for each fund in order to regress the change in the price of the fund against the change in the price of the index. This allowed me to see how much of the fund's price movement was because of the index, otherwise known as the funds R^2. For example, a fund with an R^2 of 85% signals to the investor that 85% of the variation between the fund and the index can be explained by the movement of the index. If the daily change in the price of a fund was exactly the same as the daily price change of the index, the R^2 would be 1, or 100%. Additionally, using the daily price change data, I used the correlation feature of Excel to see how closely correlated the funds are to their respective indexes. After calculating and comparing the return and R^2 of the fund's, I conducted a qualitative analysis using information such as fund holdings, fees, manager characteristics, and the fund's annual report all available on Morningstar.

US Large-Cap	Return
SLVAX	101.729%
DTMMX	103.591%
DHLAX	98.336%
FVDFX	71.820%
GTMEX	91.935%
GCVIX	84.895%
TPYAX	37.926%
QRVLX	80.664%
PEQIX	96.857%
RSGSX	92.523%
SPY	116.120%

Table 1: US Large-Cap Fund Returns

US Large-Cap	R^2
SLVAX	91.711%
DTMMX	93.117%
DHLAX	94.699%
FVDFX	93.129%
GTMEX	93.271%
GCVIX	95.464%
TPYAX	90.364%
QRVLX	93.190%
PEQIX	94.351%
RSGSX	93.171%
AVG	93.247%

Table 2: US Large-Cap R^2

US Small-Cap	Return
ADKSX	99.119%
ASVIX	**114.338%**
AVFIX	**110.436%**
ICMAX	90.590%
PVFIX	41.919%
NWUIX	94.809%
RYAVX	60.387%
SPSCX	**111.952%**
VISVX	**119.753%**
SCVIX	104.322%
IWM	105.819%

Table 3: US Small-Cap Fund Return

US Small-Cap	R^2
ADKSX	90.066%
ASVIX	91.252%
AVFIX	96.406%
ICMAX	73.220%
PVFIX	42.788%
NWUIX	96.006%
RYAVX	86.792%
SPSCX	92.825%
VISVX	95.777%
SCVIX	93.800%
AVG	85.893%

Table 4: US Small-Cap R^2

International	Return
SIDNX	**26.35%**
AAIEX	**5.460%**
ANJIX	-15.788%
DOMIX	**7.708%**
FIENX	**7.003%**
DELPX	1.131%
HFQAX	**21.758%**
NGRRX	-3.030%
WFFAX	-6.227%
TBGVX	**49.570%**
EFA	3.727%

Table 5: International Fund Return

International	R^2
SIDNX	89.978%
AAIEX	91.478%
ANJIX	91.434%
DOMIX	82.018%
FIENX	95.913%
DELPX	87.476%
HFQAX	88.089%
NGRRX	84.242%
WFFAX	88.932%
TBGVX	54.164%
AVG	85.372%

Table 6: International Fund R^2

Emerging Market	Return
TWMIX	-9.784%
ABEMX	**46.140%**
BIEMX	-9.977%
LZEMX	**4.937%**
HIEMX	**26.621%**
MEMKX	**-2.940%**
EIEMX	-3.996%
HLEMX	**5.171%**
TEMUX	-12.610%
SAEMX	-3.738%
EEM	-3.278%

Table 7: Emerging Market Fund Return

Emerging Market	R^2
TWMIX	84.446%
ABEMX	86.082%
BIEMX	80.572%
LZEMX	84.328%
HIEMX	81.788%
MEMKX	83.737%
EIEMX	84.776%
HLEMX	86.727%
TEMUX	83.150%
SAEMX	59.645%
AVG	81.525%

Table 8: Emerging Market R^2

Analysis:

US Large-Cap Funds:

The average return of the 10 funds in the US large-cap sector was 86.03% after fees. The return of each individual fund and the index (SPY) for the time period January 2nd, 2008-December 31st, 2018 can be seen in Table 1. According to the data, not a single fund outperformed the index over the 10-year period. Additionally, the R^2 for each fund can be seen in Table 2. The average R^2 between the 10 funds was 93.247% which means on average 93.247% of the funds' return can be attributed to the return of the index. For example, an R^2 of 100% would mean that the fund's return is a result of the SPY and indicate that the fund had the exact same holdings and weight of the SPY. A lower R^2 indicates a high amount of stock selection selectivity because the return of the fund is not as dependent on the SPY. This indicates that the fund contains companies that are not found in the index. The fund return data suggests that investment managers of US large-cap funds do not add value to their clients. Using the average, only 6.753% of the funds' return is not attributable to the return of the index; however, within the 6.753% that investment managers lost, they lost on average 30.92% return. In order to explain the difference between the return of the SPY and the average return of the funds, I examined the specific holdings of the funds as Jones and Wermer (2011) deemed it to be the most explanatory characteristic of a fund's superior performance and fund characteristics. Instead of looking at all of the US large-cap funds, I decided to look at the returns of SLVAX and DTMMX for their performance closest to the return of the SPY, and TPYAX and FVDFX for their poor performance.

According to the holdings of SLVAX, their top 5 sectors are financials (22.44%), energy (13.95%), technology (12.25%), healthcare (11.16%) and basic materials (9.29%). In bear markets, markets where the majority of market participants are selling instead of buying, consumer staples do better than technology, which thrives under bull market conditions. A bull market is the opposite of a bear market and is a market in which there are more buyers than sellers which drives prices up. SLVAX is also a unique fund that only has around 35 stocks at any one time, significantly lower than most other funds. Their top 5 holdings constitute 19.83% of the portfolio which means the fund is riskier than its peers. Highly diversified funds top 5 holdings would typically constitute less than 5% of the total fund's assets. Overall, they were in a bad position to beat the market during the recession of 2008 due to their high composition of securities in the financial sector which was responsible for the crash. They did well to minimize their losses during the crash, but the fund managers were unable to choose stocks that outperformed the market. Although their strategy involves a high amount of risk due to holding a very little number of securities, it also allows them to dedicate all of their attention to their positions. This keeps the workload smaller than firms with 1000+ holdings and should allow the managers to spend the time to find securities that have the potential to outperform the market. Nevertheless, the fund managers were unable to do so over the 10-year period which does not fare well for the future performance of the fund.

DTMMX was another fund that even though it failed to return a positive alpha, it was almost able to compare to the return of the SPY. Unlike SLVAX, they have a stake in 1187 different companies, which indicates a high level of diversity. On the other hand, they are similar to SLVAX as their top 5 holdings constitute 17.83% of their total assets.

They are also heavily weighted in the financial sector which accounts for why they were also unable to outperform the SPY during the 2008 recession. Recessionary periods are when funds have, in the past, outperformed the index more reliably. They have been successful in terms of large-cap mutual funds and are ranked highly among large-cap actively managed funds. However, they changed managers in 2012 and acquired an additional manager in 2017 which can mean trouble for the future performance of the fund. New managers are typically seen as a bad sign for the future performance of the fund because the new managers are untested and unfamiliar with the fund's strategy. Overall, I think the fund failed to outperform the market due to the staff's inability to manage all of their investments. Looking forward, the uncertainty surrounding the performance of the fund's new management makes this fund inherently riskier than its peers. Overall, the fund had a worse return than the index in periods of recession and although they were able to compete with the index and outperform during the bull market that began after the 2008 crash, the fund was unable to compensate for their losses during the recession.

TPYAX is an outlier in terms of poor performance. They had a meager return of 37.926% over the 10-year period. Unlike the other two funds, they are heavily weighted in technology with 24.29% of the fund holdings in that sector. The difference in return; however, can be mainly attributed to the fact that unlike the other funds that are invested entirely in US stocks, around 25% of their holdings are non-US stocks. Their poor return is attributable to the fact that US stocks have seen significantly more growth than non-US stocks over the 10-year period. They used foreign stocks as a hedge against the performance of US stocks which lowered the inherent risk of the fund, but as evident by

the returns of the international index and emerging market index seen in tables 5 and 7, the foreign stocks did not compare to the growth that the US stocks have seen as a whole.

FVDFX had the same problem as TPYAX, its portfolio was comprised of 10.7% non-US stock, 87.46% US stock, with the remaining 1.85% held in cash. The heavy weighting of non-US stock detracted from the return of the fund. Similar to other fund managers, Sean Gavin, the current manager of the fund, attempts to choose stocks that are priced unfairly by the market. One of the fund's holdings, Exelon, increased by 80%. Exelon comfortably outperformed most companies, but Bayor Ag, another position, lost 40%. This example further reinforces the fact that it is extremely difficult for a fund manager to only choose winners that outperform the market. Additionally, at any given time due to the number of assets some funds have under their control, there might not be enough opportunities available in the market without putting too much weight in an individual stock. The problem with heavily weighting a single asset, although the manager may believe that it is underpriced, is the risk involved with putting all your eggs in one basket.

US Small-Cap

The average return of the 10 US small-cap funds was 94.76% after fees. The return of each individual fund and the index (IWM) for the time period January 2nd, 2008-December 31st, 2018 can be seen in Table 3. As seen in Table 4, the average R^2 of the funds is 85.893%, which indicates that 14.107% of the fund's movement is not attributed to the index. It also indicates that fund managers of US small-cap stocks are more selective when it comes to choosing what securities to purchase than their large-cap counterparts. Unlike US large-cap, four of the funds: VISVX, ASVIX, SPSCX, and

AVFIX outperformed the index. Respectively, they provided an alpha of 13.934%, 8.52%, 6.134%, and 4.618%. I decided to examine VISVX and ASVIX to determine why their funds provided a significant alpha, and PVFIX and ICMAX to determine why their funds failed to succeed.

VISVX was the highest performing fund of the 10 selected with a return of 119.753%. A reason their return was higher than the other funds was because of their low fees. In 2018, they charged .19% in fees whereas the average fund in their category had an average fee of 1.23%. Compared to the US small-cap category, they are more heavily weighted in industrials, real estate, healthcare, and utilities with a strategy of purchasing riskier stocks with increased upside potential. In order to combat the risk, the fund remains extremely diversified. For example, the top 5 holdings only constitute 2.93% of the funds' assets. Overall, they have 862 different holdings in the fund. Compared to the large-cap funds examined above whose top five holdings constituted around 17% of total assets, VISVX's high diversification protected them from stocks that underperformed during the period. Overall, the low fees and diversification of the fund make it successful and help it provide alpha to its investors.

Similarly, ASVIX outperformed the index. Unlike VISVX, they charge above-average fees, 1.26%, but derive their value through superior stock picking strategies. The fund only has 90 different holdings, so the fund is less diversified than its peers, but simultaneously suffers from less volatility than its peers, which is a difficult feat to accomplish. Their strategy involves screening for stocks with less than a $4 billion

market capitalization[13] with a strong competitive presence. Their idea of a strong competitive presence is a company that has the qualities of a sustainable market presence, stable revenue streams, low expenditures, and minimal problems due to regulations. This strategy has worked well for the fund as evident by their alpha of 8.52% over the 10-year period.

PVFIX, compared to its peers is incredibly small. They only have $36.5 million in assets and the management of the fund is less than ideal. The fees are higher than their competitors, 1.33% in 2018, and the fund's strategy does not work as intended. The strategy is a "buy and hold" strategy focused on companies' management deemed to be valued below the value of the companies' assets and companies who have suffered and are believed to "turn around" soon. The fund is heavily invested in the industrial and energy sector, 37.65% and 22.23% respectively, which has not worked well for the fund. In 2018 alone the fund lost 40% of its net assets, or $24 million. Furthermore, instead of cutting his losses, the fund manager John Deysher holds onto positions with large unrealized losses and hopes that the position recovers, which is not a viable strategy for a professional fund manager with millions of dollars in assets. The only upside is that 36.61% of the fund's assets are held in cash and could be invested when the opportunity arises. Overall, this fund suffers from a strategy that does not work and a fund manager unwilling to make changes to the strategy even though past performance indicates that the strategy is unsuccessful.

[13] Market capitalization is the price per share multiplied by the number of outstanding shares and is the value the market assigns to the company.

I chose ICMAX, another one of the underperforming mutual funds in order to see why the fund had average results. The poor results of ICMAX can be attributed to the fund's inability to perform in a bull market. The strategy behind ICMAX is to purchase large amounts of companies in sectors that the manager, Mark Travis, deems to be undervalued as a whole. This has led the fund to invest heavily in the financial services sector. Whereas the category average percentage of holdings in the financial services sector is 26.35%, ICMAX has 51.18% of its assets in the financial services sector. As mentioned earlier, financial services were hit hard during the 2008 recession but had a strong recovery after. For example, the IWM, at its lowest point, in March of 2009 had lost 53.1865% of its value since January 1st, 2008. Comparably, ICMAX had only lost 25.9847% of its value. Therefore, ICMAX significantly outperformed the index during the recession which is impressive given the funds heavy weighting in financials; however, ICMAX was unable to continue that success during the bull market that followed. For example, when the recession ended in June 2009 and the markets recovered, ICMAX's strategy began to display its flaws. From June 2009 to December 2018, ICMAX experienced a 68.78% increase, whereas the index experienced an increase of 192.14%. Overall, ICMAX is superior at not losing money, but inferior when it comes to making money.

International

Unlike the US large-cap and US small-cap funds, the average return of the 10 funds I selected outperformed the index by 5.663%. Six of the ten funds, SIDNX, AAIEX, DOMIX, FIENX, HFWAX, and TBGVX, outperformed the index. Furthermore, the average R^2 of the funds was 85.372%, as seen in table 6, indicating that the fund

managers are more selective of their stock choices than their US large-cap counterparts. I decided to examine TBGVX and SIDNX for their superior return and ANJIX and WFFAX to determine why they had extremely poor results.

TBGVX provided an alpha of 45.843% over the 10-year period making this fund an extremely attractive investment. However, TBGVX's return can be attributed to the inverse of the reason why TPYAX and FVDFX did poorly. It has already been established that US stocks have outperformed their foreign counterparts. For example, the SPY outperformed the EFA by 112.393%. A part of TBGVX's return can be attributed to their large asset allocation of US stocks. Whereas the EFA has 97.63% of its assets in non-US stocks and 1.31% of its assets in US stocks, TBGVX only has 80.27% of its assets in non-US stocks with 10.64% of its assets in US stocks and the rest in cash. Although their superior return is partially a result of their US holdings, which they use to hedge against foreign-currency exposure, their results can also be attributed to superior management policies. The managers attempt to follow the investment strategies of Warren Buffet and Ben Graham and gain their edge by not limiting themselves to a certain market cap. They will purchase large-cap, mid cap, and small-cap stocks as long as they think it will prove profitable. Although this could indicate more risk, their holdings of US stocks successfully hedge against the risk and make the fund extremely safe (less-risk) compared to its peers. Overall, the fund has a competitive edge due to its US stock holdings, and coupled with sound management, has led to an extremely high alpha.

SIDNX is another fund that was extremely successful and returned an alpha of 22.623% over the 10-year period. Unlike, TBGVX, their alpha is entirely a result of

superior management and a solid strategy. 93.53% of their assets are held in non-US stock with the remaining assets held in cash. Their strategy is heavily quant-based. Justin Abercrombie, the current head manager of the fund, uses a stock screener of his design to filter for companies with high profitability, strong financials, and an attractive valuation. Then, the stocks that pass the screener go through models created by the other fund managers, David Philpotts, and Stephen Langford. This process has led to really strong returns over the years and as long as the fund retains the same management team, the fund should continue to outperform the index in the years to come. Another reason the fund performs well is the low fees, .86% which allows the fund to have higher turnover (how frequently the holdings of the fund are changed) without infringing on the profits of the investors.

On the other hand, ANJIX performed poorly and managed to lose 15.788% of its value over the 10-year period. The asset allocation of ANJIX is similar to the EFA with 96.44% of its assets in non-US stocks and 2.88% of its assets in US Stocks. Their poor results can be attributed to poor stock picking abilities. Unlike other funds, they do not use valuation models and discussions with company management in order to determine whether or not to invest in a company. Instead, they use sell-side research[14], probably due to their small staff, and momentum in order to determine which securities to purchase. Furthermore, the company will only purchase stocks that distribute dividends to its shareholders, if a company ceases to pay dividends, it will sell its share in that company

[14] sell-side research is research that comes from financial institutions that are intended to encourage institutions that purchase securities, such as a mutual fund to purchase the security. When a mutual fund conducts its own research, whether or not a security is a good choice for the portfolio and will provide a superior alpha, it is considered buy-side research.

immediately. Using momentum as a trading strategy can be quite risky because there is no guarantee that the momentum of the stock will continue or, if the momentum does continue, how long until the momentum reverses. At times the momentum approach benefits and at other times it detracts from the fund's performance. As a result, the fund's performance is less stable than its peers. Overall, I believe the fund could benefit from increased staff which would allow them to monitor their investments more closely and avoid decisions based on momentum that end up detracting from the fund's performance.

WFFAX was another fund who lost value over the 10-year period. The stated goal of the fund is long-term capital appreciation which the fund fails to accomplish since they are losing value. WFFAX has a very standard strategy, they invest in companies that they deem to be undervalued. The fund's strategy is not unique in any way and coupled with its above-average fees, 1.35%, the fund is very average. Overall, the firm suffers from a clear lack of a competitive strategy that could set it apart from the index. They follow the movement of the index very closely and when the index loses money, the fund follows suite on a larger scale. In order for the fund to succeed, the managers need to set the fund apart from its peers, such as limiting losses during periods of recession or performing better than usual in bull markets.

Emerging Market

Similar to the international market funds, the average return of the emerging market funds beat the index. As seen in table 7, the index had a return of negative 3.278% and the average return of the 10 funds was 3.98%. Five of the funds, ABEMX, LZEMX, HIEMX, MEMKX, and HLEMX outperformed the index. Similar to the funds in the US small-cap and international categories, the emerging market funds had an average R^2 of

81.525%, lower than US large-cap stocks and indicating a higher level of stock selectivity. I decided to look at the returns of ABEMX and HIEMX to determine where their superior return comes from, and the returns of TWMIX and BIEMX to determine why they failed to outperform the index.

ABEMX had the best return of the 10 emerging market funds selected, with a return of 46.140% over the 10-year period. They are almost entirely invested in non-US stocks, 98.33%, with 1.05% in cash and the remaining in US stock. The fund is primarily invested in the financial services sector and the technology sector with around 25% of its funds allocated to each sector. Their competitive advantage is their large team, around 65 analysts led by experienced managers, and their bottom-up valuation approach. The managers also limit the fund to around 40-70 securities at any given time which coupled with their large team, makes sure they can keep a watchful eye on the performance and outlook of all of their investments. A bottom-up approach is one in which an analyst looks closely at a company without examining the industry or overall economic conditions. Additionally, they hire analysts early on in their careers so they can teach them early to master the fund's investment strategy. They focus on the quality of the companies and the valuations of the companies and rank a single company separately based on quality and value. They mainly purchase large-cap stocks and focus on long term growth which leads to very low turnover, around 20%. This keeps their fees slightly below average which further bolsters their performance. Overall, their greatest strength is their people, without the current managers the outlook of the fund would be diminished.

HIEMX is another high performing fund with a return of 26.621% over the 10-year period. 98.96% of the fund's assets are held in non-US stocks and the remaining

assets are held in warrants. Similar to ABEMV, the fund is comprised of mostly large-cap stocks that are chosen for their growth potential. The fund's strategy is to purchase companies in industries where barriers of entry are higher and companies that demonstrate strong accounting practices. They look for companies with relatively little earnings fluctuations, which can be partially controlled by a company's accounting department so that the company's profitability can be easily predicted in upcoming years. Furthermore, they use a differentiation strategy in order to demonstrate the fund's value to its investors. For example, whereas the normal emerging market fund has a large portion of its assets allocated to Chinese companies, HIEMX allocates a large portion of its assets to Indian companies. HIEMX has triple the exposure to Indian companies than the index (23% compared to 7%). In addition, they are heavily focused in the consumer defensive sector (triple the weighting of the index) and avoid companies in industries with unpredictable returns which makes the overall risk of the fund extremely low. Overall, the fund uses differentiation to stand out and outperform its peers.

TWMIX was one of the 10 emerging market funds that I looked at that underperformed over the 10-year period. TWMIX had a return of -9.784%, underperforming the index by 6.505%. The reason TWMIX failed to beat the index is the amount of risk the fund is exposed to as a result of the fund's strategy. The fund managers employ a strategy where they attempt to outmaneuver the expectations of the market. They purchase companies with new products, restructuring, or other new business ideas on the horizon. They hope to buy securities before the market catches on; therefore, purchasing the security at a low price and selling while the market remains bullish on the company's outlook. This makes the fund very risky because instead of relying on

fundamentals, they are relying on the expectations of the market which is incredibly unreliable and volatile. For example, during the 2008 recession, the fund lost around 67% of its value while the index lost 59%. The difference may not seem severe, but the larger the dip the more recovery you need to get back to even. For example, if a fund loses 50% of its value, it needs a 100% increase to return to the previous levels. Overall, the fund failed to outperform due to the volatility inherent in the strategy the fund employs.

BIEMX's poor performance can be attributed to a larger loss, compared to the index, as a result of the 2008 recession. Whereas at the index and BIEMX's worst moment, November of 2008, BIEMX lost 68% and the index lost 59%. In comparison, they are heavily weighted in the technology sector, 33.72%, which does better during bull market periods. After the end of the recession in June 2009, they earned a return of 76.13% compared to the index's return of 44.62%. Furthermore, the fund's strategy involves looking for value in small-cap companies that are less secure as large-cap companies. This has worked very well for them during the bull market but hurts their performance during the bear market. Overall, I believe that this fund suffered heavily from the recession and has and is able to outperform the market during periods of high economic growth.

Discussion:

In conclusion, it is extremely difficult to choose a fund that will reliably outperform the index. Of the forty funds I examined only a single fund, VISVX, outperformed the SPY, the highest performing index, over the ten-year period. Furthermore, investment managers, on average, add value to their clients in the international and emerging market sector, but one would be better off investing in US large-cap or US small-cap funds due to the overall growth of the US large-cap and small-cap sector. For example, some of the worst performing US large-cap and small-cap funds had a higher return than the highest performing international and emerging market funds. I would recommend that a potential investor allocated their money into the SPY and avoided active management due to the risks involved and the difficulty of choosing an actively managed fund that will reliably provide alpha. However, if one is to invest in an actively managed fund, I recommend funds with low fees, solid management, a large and experienced staff, and a strategy that has worked in the past and is unique compared to its competitors.

In terms of scope limitations, the study could be improved with a larger sample size and an increase in the available information. Although Morningstar offers a sizable amount of information, it is hard to get a precise understanding of a manager's characteristics without speaking with the manager personally. In regard to sample size, there were a few funds in the forty that had a significantly worse/better performance than the others. The results would be more consistent for larger populations if the sample size was increased to negate some of the effects of the outliers.

For future research, although I purposefully included the effects of the 2008 market crash to accommodate for times of recession, it would be interesting to see how the results would change if the 2008 recession was not included. Although funds have been proven to outperform the market in the past during periods of recession, maybe that was not the case in the 2008 recession due to the severity of the market crash (Jones & Wermers, 2011). Another idea for future research would be to determine the effects of how long the management and employees have worked at the fund on the performance of the fund. For example, testing to see if regardless of market conditions and composition of fund holdings if managers who have worked at the same fund for longer than 10 years perform better than fund managers who have only worked at a fund for 2-5 years regardless of the funds' strategy.

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