

Active vs. Passive Portfolio Management

The Honors Program
Senior Capstone Project
Student's Name: Timothy Greenhill
Faculty Sponsor: Chester Piascik
April 2014

Table of Contents

| | |
|---|----|
| ABSTRACT..... | 3 |
| INTRODUCTION | 4 |
| LITERATURE REVIEW | 5 |
| The Efficient Market Hypothesis..... | 5 |
| How costs kill investment returns..... | 5 |
| The Effects of Style Drift..... | 8 |
| Tax Considerations..... | 9 |
| The Building Blocks of Active Management..... | 10 |
| Building the Case for Active Management..... | 12 |
| Success of Active Managers | 13 |
| The Advantage of Passive Management..... | 14 |
| Initial Analysis Conclusion..... | 16 |
| METHODOLOGY..... | 16 |
| Data Collection | 16 |
| Data Analysis | 17 |
| RESULTS | 17 |
| One Year Returns..... | 17 |
| Three Year Returns | 18 |
| Five Year Returns | 18 |
| Effects of Market Capitalization | 19 |
| Gross and Net Costs..... | 20 |
| CONCLUSION..... | 21 |
| CONCERNS | 22 |
| POTENTIAL NEXT STEPS | 23 |
| APPENDICES | 24 |
| Appendix A – Passive Fund Data | 24 |
| Appendix B – Active Fund Data..... | 25 |
| Appendix C – Scatter Plot for Gross Costs..... | 26 |
| Appendix D – Scatter Plot for Net Costs | 26 |
| Appendix E – Cost Comparison..... | 27 |
| Appendix F – Turnover Ratio | 27 |
| Appendix G – 1 Year Return Output | 28 |
| Appendix H – 3 Year Return Output | 28 |
| Appendix I – 5 Year Return Output..... | 29 |
| Appendix J – Market Capitalization | 29 |
| Appendix K – Gross Costs on 5 Year Returns..... | 30 |
| Appendix L – Net Costs on 5 Year Returns..... | 30 |
| REFERENCES..... | 31 |

ABSTRACT

In the finance community there is a huge debate about whether or not active portfolio managers can provide better returns than passive managers. While active managers often provide excess returns, the costs of running an active fund offset whatever gains were made in the market. The objective of this report is to figure out whether or not active funds provide larger returns than passive funds on a cost adjusted basis. This report will identify which type of fund is a more cost effective investment, as well as identify different properties of funds and how they operate. The goal of doing this research is to provide information to the average investor, rather than a multi-millionaire, about what kind of fund may be more appropriate for them to invest in. To successfully complete this project I collected quantitative fund data from fidelity, and qualitative information from various finance and business journals. After running a multivariate analysis of variance on my data I found that passive funds in the 1 year period provided significantly greater returns than active funds on a cost adjusted basis. Next, over the 3 year period, there was no significant difference between the returns of active and passive stock funds. However, during the 5 year period return active funds proved to be a more cost effective investment strategy. From my results I have concluded that active portfolio management is not a more cost effective investment tool than passive management.

INTRODUCTION

In the financial markets the case for active portfolio management is often a difficult one to make. While many individuals opt to put their money in index funds, others trust their money with active managers who are on a search for positive alphas and undervalued securities. The question is whether or not there is any value in putting your money into an actively managed equity fund. Although active managers swear they can create better returns, it is often the costs of investing that make their funds not as attractive or profitable. Management fees and high turnover ratios often cause these active managers to miss their benchmarks. Passive (Index) funds on the other hand are much less expensive because they try to imitate an index and trade with much less frequency (Seawright 2012).

In order for active managers to outlast passive funds they must be able to produce large enough returns that will offset the fees incurred from trading and managing the fund (Ambachtsheer 1979). The job of an active portfolio manager is to select securities, find positive alphas, and create return (Waring 2003). It sounds simple enough, but creating value in a very efficient market is difficult. Passive funds nowadays are very attractive due to their reduction in cost, increased tax efficiency, and ability to avoid spending an increasing amount of time researching companies (Carosa 2005). While many fund managers believe they have the ability to outperform the market, Jarrow claims that “the existence and persistence of positive alphas is more a fantasy than a fact (Guofu 2008).”

The rest of this research project is done as follows. In the next section there is a literature review which exemplifies ample research about active and passive management. Next I will cover the methodology for my research. This will be followed by my personal research results, as well as the implications of my research. I will then conclude my research with suggestions on ways it can be furthered and strengthened in the future.

LITERATURE REVIEW

The Efficient Market Hypothesis

As specified in the previous paragraph, it is very difficult for actively managed funds to produce excess returns in a very efficient market. The efficient market hypothesis states that it is not possible to beat the stock market because all relevant information is taken into account with the pricing of the security (Investopedia). The hypothesis is saying that stocks always trade at market value, and that higher returns only come with greater risks.

Another way of looking at this is by thinking about a large dart board with names of stocks on it. Now close your eyes and throw a dart at the dart board. The stock you “chose” has just as good of a chance as making a profit as any one of those other companies on the board. No matter how much research you do you will not be able to choose a company that will provide a better return with the information you find.

Regardless of this theory, there are still managers who beat the stock market on a regular basis. Many individuals also claim that there are plenty of inefficiencies in the market that can be exploited to make a return. Overall, well run actively managed funds have performed above their benchmark and the market in the long term because they have 5-star managers (Loth). Even Warren Buffett, the most well-known investor of our time stated “I’d be a bum on the street with a tin cup if markets were efficient.” (Warren Buffett)

How costs kill investment returns

Ravi Shukla also has a convincing analysis on how active portfolio managers fall short of obtaining excess returns. In his report his goal was to compare the returns of funds with and without interim revisions to the portfolio (Shukla 2004). He identifies how portfolio managers claim to have superior skills to invest money and can create a more positive return by “monitoring and revising their portfolios continuously in response to the market conditions.” (Shukla 2004) Shukla’s sample is made up of 458 different mutual funds with 1117 snapshots taken of the funds over a 7 year period. Below is the chart (Figure 5) of when the snapshots were taken (date form yyyyymm).

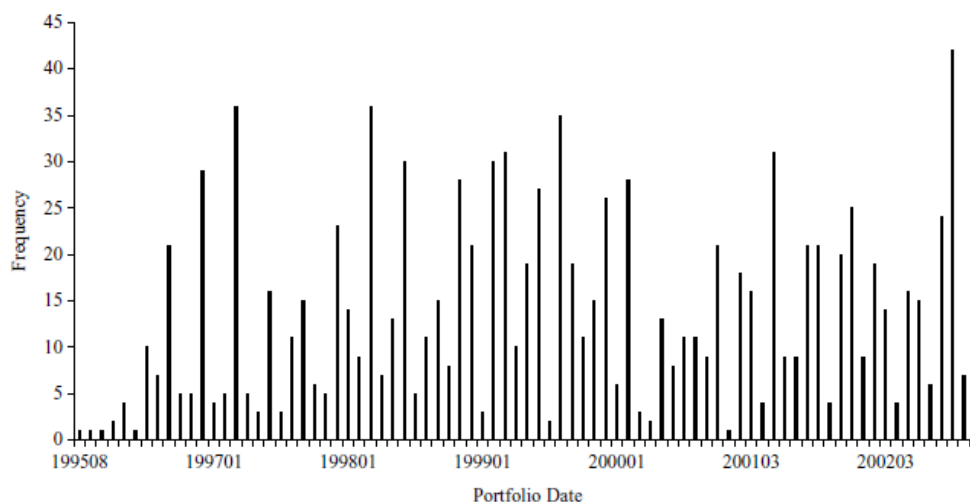


Figure 5 – Snapshots of Funds

Shukla also collects much more quantitative information about each fund. Figure 6 below shows some simple statistics about different aspects of the funds he was sampling. TMV stands for market value, NSec is the number of securities in the fund, SumWt is the % of the portfolio invested in stocks, Top10Wt is the % of investment in the 10 largest holdings of the fund, Exp is expense ratio, and Turnover is the turnover ratio of the fund.

| | TMV | NSec | SumWt | Top10Wt | Exp. | Turnover |
|----------|---------|-------|---------|---------|-------|----------|
| <i>N</i> | 1117 | 1117 | 1117 | 1117 | 1117 | 994 |
| Maximum | 8108.12 | 254 | 100.00% | 98.10% | 7.34% | 3243.00% |
| Minimum | 0.09 | 10 | 34.70% | 10.20% | 0.10% | 0.00% |
| Median | 57.67 | 38.00 | 96.00% | 39.50% | 1.30% | 49.00% |
| Average | 187.65 | 41.51 | 93.53% | 41.80% | 1.35% | 89.63% |
| S.D. | 489.06 | 21.01 | 8.44% | 13.63% | 0.48% | 208.46% |

Figure 6 – Fund Statistics

As you can see the sampled funds have a wide range of fees, weightings, and turnover ratios. Two important pieces of this chart I would like to point out are the expense ratios and turnover ratios. An expense ratio of 7.34% is extremely high for a fund. It means management takes over 7% from your investment for managing your money, every year. Also, a turnover ratio of 3243% means that the fund is constantly trading. For example, pretend you have 10 stocks in your current portfolio. Since you are an active manager you want to trade your stocks for better

opportunities. If you trade all ten of your stocks for new ones this means your current turnover ratio is 100%. If you trade them all again it becomes 200%. A turnover ratio of 3243% means you have turned your portfolio over more than 32 times. The repercussion of this is significantly more transaction costs, especially when you have a large amount of stocks in your fund.

The results of Shukla's tests are similar to that of many individuals who support the passively managed funds.

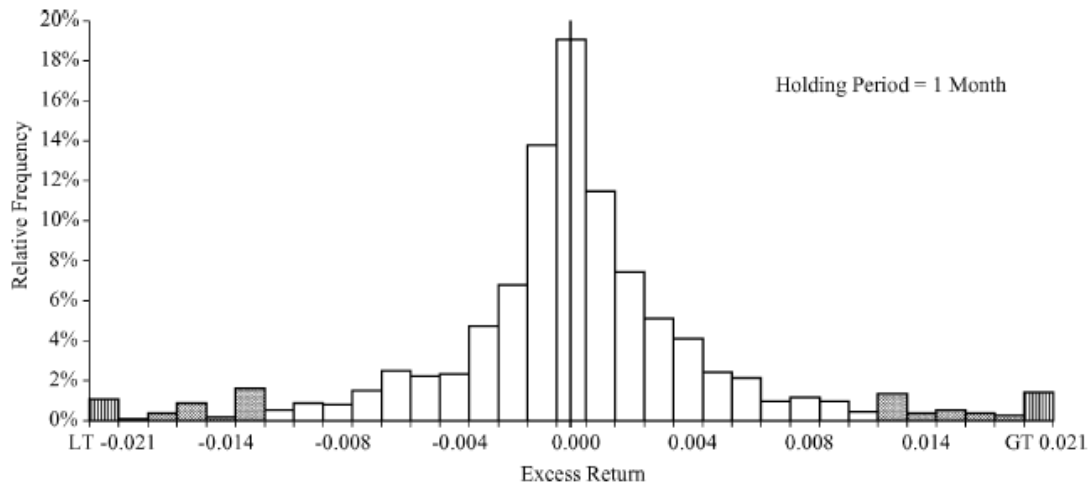


Figure 7 – Excess Fund Returns

As you can see there from figure 7, there is a normal distribution of excess returns on stock funds. Overall the data shows 49.76% of funds having positive excess returns. When performing a t-test on the average excess returns, Shukla failed to reject the null hypothesis that there is an average excess return of 0. Although the results of the test suggest that excess returns are possible, Shukla states that “all of it is wiped out by the incremental trading costs...and on an average, would not be different if the managers had left their portfolios alone.” (Shukla 2005) In addition to this it was found that there is a direct relationship between returns and expense ratios, but not between returns and turnover ratio. This means that a more expensive manager is more likely to create a higher return (before costs). On the other hand, funds with smaller turnover ratios were found more likely to do better. Having a lower turnover ratio is an aspect of passive, not actively managed funds. Overall the results suggest that active management does not provide the best possible return for the shareholders of the funds (Shukla 2005).

The Effects of Style Drift

Style drift is “The divergence of a mutual fund from its stated investment style or objective.” (Investopedia) In the investment world, managers normally stick to one investment strategy relating to the types of stocks they invest in. There are 9 “style boxes” that can show a funds general investment objective. Below is the basic style box that shows the different strategies.

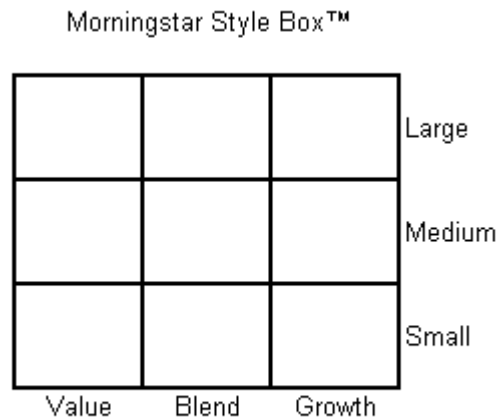


Figure 9 – Style Box

In figure 9 the Small, Medium, and Large pertain to the size of the market capitalization of the companies. Generally speaking, a small cap fund is one with a market capitalization under \$2 billion, mid-cap is between 2 and 10 billion dollars, and large cap is over \$10 billion. The other three labels pertain to Value, Blend, and Growth companies. Value investing focuses on buying stocks worth \$1 for 50 cents because it is believed that they are undervalued. This is otherwise known as trading at a discount (Strong 2009). Growth investors are the opposite. The focus of growth investors is to favor stocks that have been advancing in the market due to momentum (Strong 2009). Therefore they are willing to pay more money for a stock that may be overvalued because they think the price is going to continue to rise. A blend strategy focuses on the purchase of both growth and value securities.

Being an active manager gives you the flexibility to choose the style of your investment strategy. You can also change the style of your investment based on what you feel will give you the better return. As an investor you may be nervous about a change in investment style. You may ask the

question: Does the manager of my mutual fund have the ability to trade effectively outside of his field of expertise? Faff and Holmes believe style drift is a positive for actively managed funds. In their studies they found with significance ($r = 0.170$, $p = 0.016$) that "...superior selectivity (of stocks) is related to greater levels of style drift." (Holmes 2007) This means that fund managers who choose stocks out of their style can improve their returns. It also proves that style drift can be positive for active managers because it is positively related to stock selectivity. These results show a direct case of how giving a manager more freedom (which is an attribute of active management) can lead to increased returns.

Tax Considerations

One topic that cannot be forgotten is the taxation of capital gains in the stock market. As you have heard before, "nothing is certain but death and taxes." (Fpanet 2007) Mutual funds get taxed when their capital gains are greater than their capital losses (meaning they made a profit in the market). For long-term holdings (greater than one year) there is a 15% tax for all individuals in the >25% tax bracket, and a 5% tax for individuals in the 10-15% tax bracket. Short term tax rates are even higher (Morningstar).

In order to avoid getting taxed at a high rate you should look for funds that are more "tax friendly." One example of how a fund can be more tax friendly is with tax-loss carry-forwards. This is when a fund has unrealized losses from previous years that can be used to offset gains and reduce taxation in future (Fpanet 2007, Morningstar). Also, if funds can actively match their gains and losses properly they will have the ability cut costs by being tax efficient (Fpanet 2007).

Another way to avoid taxation is to invest in funds that do less buying and selling (less than 10% turnover is considered tax-efficient), which means less realization of capital gains and losses (Morningstar). Unfortunately, for actively management funds turnover is normally much higher than passive funds, which means more taxes from realized gains.

Overall, the ability of a fund manager to consider taxes in his investment strategy can have a major impact on a fund. Because active managers are more prone to high taxes due to higher trading volume and turnover, it is important that they focus on having some tax-efficiency.

| Name | Ticker | 1yr Total Return | 1yr Loss to Taxes | After-tax 1yr Return |
|------------------------------|--------|------------------|-------------------|----------------------|
| DGHM V2000 Small Cap Value | DGIVX | 15.07 | 14.53 | 0.53 |
| Dreman High Opportunity | DRLVX | 6.41 | 8.58 | -2.17 |
| Fairfax Global Trends | DOIGX | 0.20 | 6.72 | -6.53 |
| MFS New Discovery | MNDAX | 8.47 | 6.58 | 1.89 |
| JHFunds2 Small Cap Growth | | 10.17 | 6.54 | 3.63 |
| RBC Mid Cap Value | RBMVX | 13.48 | 6.11 | 7.37 |
| John Hancock3 Small Cap Opps | JCPAX | 1.65 | 5.81 | -4.15 |
| JHFunds2 Heritage | JHVTX | 12.36 | 5.23 | 7.14 |
| Frost Small Cap Equity | FIHSX | 7.72 | 5.22 | 2.50 |
| ISM Dynamic Growth | FMGRX | 10.63 | 5.03 | 5.60 |

Figure 10 – The Effects of Taxation

Above (in figure 10) is a study by morningstar that shows some of the most tax inefficient funds in the market and how much of an impact they can have on returns (Cendrowski 2012). As you can see, even managers who are able to make returns over 10% can end up with under 1% gain after taxes. The cases above are of course extreme, but they show the importance of tax consideration in all kinds of mutual funds.

Feng, Kraft, and Weiss conducted a study to see whether or not fund managers do an effective job at planning for the costs incurred from the capital gains taxes. The conclusion of their report is that both open-end and close-end funds change their investment strategies based on the changes of the tax rates in years to come (Feng 2011). For example, in years where taxes are expected to decrease in the following year, managers realize less returns in order to increase tax efficiency. For the opposite, in years where taxes are expected to increase the following year, managers realize more returns in the present year to avoid higher taxes in the future (Feng 2011). While this shows taxes are taken into consideration by portfolio managers, it is still important for the investor to research funds and ensure they are tax efficient before investing. This applies to both active and passive funds.

The Building Blocks of Active Management

Ambachtsheer and Farrell talk about five basic building blocks all actively managed funds must have in order to be successful (Ambachtsheer 1979).

- 1) Ability to judge securities that are over or under valued

- 2) Assessment of correlation between their judgments and equity returns
- 3) Conversion of judgments into unbiased predicted returns
- 4) A well put together investment objective
- 5) The ability to carry out transactions of securities.

Valuation of securities to define whether they are over or under valued is the pinnacle of active investment strategies. The goal of valuation is to find a “cheap” stock that should be trading at a higher price (buy low and sell high). There are many different fundamental approaches analysts can use to evaluate a security. The Solomon Brothers (a company that no longer exists) for example used ROE, dividend yield, quality ranking, and regulatory environment ranking in their evaluation (Sorensen 2009). Other evaluation methods include the free cash flow model, price ratio models, and EV/EBITDA.

Based on the valuations companies make such as the ones above, managers assess how their work compares to the return of the actual companies. An individual or fund that has an accurate assessment of the growth of stocks can be very successful in choosing “winners” in the market.

The fund managers must now predict returns of companies without using bias. Behavioral problems and biases are both very important topics when talking about investing. While there is an advantage to doing in depth analysis and being able to innovate, as humans we have a limited capacity for analyzing securities, and often show behavioral biases which must be eliminated from our studies (Sorensen 2009). Falling in love with a stock is not an appropriate way to invest. Doing so could lead to a severe loss of funds. Managers and analysts must make reasonable and realistic predictions to be successful.

It is also very important for investment firms to have a goal/objective and stick to their plan. Funds set benchmarks to beat a certain indexes. In doing so they also set restraints on their turnover ratios, fees, and types of companies to invest in. Without an objective, funds will be inconsistent, lose focus, and decrease their chances of beating their benchmark.

The final building block for an actively managed fund is having the ability to carry out a transaction. For management this simply means buying and selling securities based on your

evaluations. After this step is complete the fund will hopefully have success with their investment choices.

Building the Case for Active Management

Bruce Jacobs and Kenneth Levy believe that having an active portfolio is more effective due to the ability to have active security weights, as well as the ability to sell short, instead of simply taking the long position. Their goal was to identify different opportunities for return from investing in different ways (Jacobs 2006). In their report, Jacobs and Levy compare enhanced active equity approaches with combinations of long and short, as well as active and passive approaches to investing. They also evaluate the exposure to the stock market, as well as the risk associated with different strategies.

| | Indexed Equity | Enhanced Indexed Equity | Active Equity | Enhanced Active Equity | Market-Neutral Long-Short Equity |
|------------------------|----------------|-------------------------|---------------------|------------------------|----------------------------------|
| Expected Active Return | No | Yes | Yes | Yes | Yes |
| Expected Residual Risk | No | <2% | No Rigid Constraint | No Rigid Constraint | No Rigid Constraint |
| Short-Selling | No | No | No | Yes | Yes |
| Market Exposure | Yes | Yes | Yes | Yes | No |

Figure 1- Portfolios from least risky to most risky (left to right)

In the indexed equity portfolio, no security is under- or over-weighted. On the other hand, the active equity portfolio has 65% of its capital dedicated to more attractive opportunities. In the enhanced portfolio there are more aggressive weights. For example, 20% of the investment is in shorted opportunities. The enhanced portfolio also takes advantage of 20% leverage on both short and long opportunities, putting the risk at \$140 (potential downside) for every \$100 invested. Jacobs and Levy also talk to the importance of trading costs, which is always accounted for in active investment strategies. In their example, the enhanced active equity report is the most expensive to manage, while the index equity fund is the least expensive. Although passive funds are the least expensive, being able to short stocks and weight them actively gives you a higher return on your investment.

The conclusion that was drawn from their research was that “the progressive relaxation of portfolio constraints as one moves from indexed equity to enhance indexed to active equity to enhanced active equity can be expected to produce progressive improvement in portfolio performance.”(Jacobs 2006) While this is true, the test was done in the most optimal environment. It assumes that active managers have done their evaluations accurately and that the market reflects their predictions. Still, their research sets a basic groundwork that shows how actively managed funds have more opportunity than passive funds to make larger returns despite more transaction costs and management fees.

Success of Active Managers

Vanguard claims their actively managed funds can outperform passively managed funds on a regular basis. Over a 15-year period their funds have produced excess returns of .5% above their benchmarks (Steinert-Threlkeld 2013). This means that overall they are outperforming the market. The key in the active management world is to find the right managers who implement a strategy that will give them above average returns. At Vanguard, 40% of their active funds outperform passively managed funds (Steinert-Threlkeld 2013).

Although not any random fund or manager is going to give you the best returns, choosing the proper one can give you great returns in the bull markets, and preserve your capital in times of economic distress (Carosa 2005). To state it simply, there are periods of time where the active managed funds can succeed. In an experiment done by Carosa, he is able to identify that “U.S. equity funds have historically beat the S&P 500 roughly two-thirds of the time.” (Carosa 2005) Figure 8 below shows the percent of funds outperforming the S&P. As you can see, equity funds are outperforming the market, and the actively managed funds with the higher fees are outperforming even more (these fees are very low compared to the average active fund). This data was taken for every possible 12 month holding period between the years 1975 and 2004.

| TABLE 1 | | |
|---|-----------------|--------|
| Percentage of 12-Month Periods Where the Asset-Weighted Return of U.S. Equity Mutual Funds Outperformed the S&P 500 in the Similar Period | | |
| Index | No Fee | 64.33% |
| Expense | 20 Basis Points | 66.37% |
| Ratio | 50 Basis Points | 68.13% |

Figure 8 – Funds Outperforming the S&P 500

The Advantage of Passive Management

The main challenge an active manager faces is their costs (Blake 2009). Active management fees have been going up steadily for some time. With the costs going up, the difficulty for active managers to beat their benchmark is even greater (Ennis 2005).

Figure 2. Average Equity Fund Expense Ratio (Equal Weighted), 1980–2004

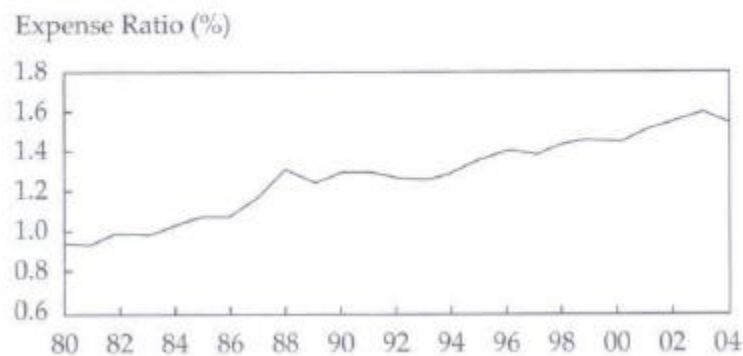


Figure 2 – Expense Ratios Increasing Over Time

Richard Ennis has provided an extensive study on how the success of active managers has decreased due to their fees. The point of his study was to understand what it means for active management fees to be too high. In order to do this, Ennis did an analysis of the probability of success of managers at different management fee levels.

Table 1. Likelihood of Success under Various Fee Rates

| Fee | Manager Skill Required for Investor to Have at Least a 50/50 Chance of Earning a Positive Alpha | Investor's Probability of Earning a Positive Alpha When Manager Skill Is 0.80 |
|------|---|---|
| 0.5% | 0.62 | 0.70 |
| 1.5 | 0.83 | 0.46 |
| 3.0 | 0.97 | 0.15 |

Figure 3 – Success Rates

Figure 3. Plausibility: Probability of Investor Success for Various Fee Levels
 (active risk = 5 percent; time horizon = 10 years)

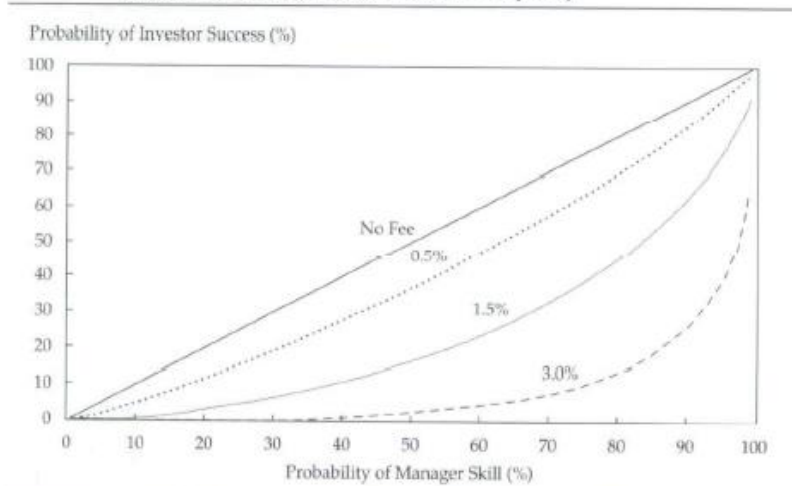


Figure 4 – Success Rates 2

The first column on the left (of figure 3) shows the amount of fees that were charged to the account. The second column represents the amount of management skill required for investors to have a 50% chance of making returning a positive alpha. As you can see, at the 3% fee level you would need a manager with nearly perfect predictive analysis skill to have at least a 50% chance of obtaining positive alpha. In the third column Ennis shows the probability of earning a positive alpha when the manager skill level is 80%. As expected, the chance of making a positive return as fees increase is much lower than a fund with low fee levels. Figure 4 shows you another representation of how management fees greatly decrease the probability of creating a positive return. The Y axis represents the probability of success, while the X axis represents the skill level of managers.

The conclusion of this experiment is that active management fees are too high despite the ability of managers to create positive alphas. As fees increase the chance of investor success is driven way down (Ennis 2005). Ennis also predicts that as markets become more efficient and costs become higher, there will be a move towards plausible pricing which gives investors a better chance for a real return (Ennis 2005). If this prediction is correct it would make it even harder for active managers to create excess return because securities would already represent their fair market value.

Initial Analysis Conclusion

After collecting and analyzing secondary research I have come to the initial conclusion that passively managed funds are more effective at producing returns than actively managed funds on a cost adjusted basis. Although actively managed funds seem to have more opportunity to beat their benchmarks than passive funds, they are unable to capitalize. Much of this due to the high fees they charge for their constant attention to the fund. In addition to this, although most managers are very tax efficient, passive managers are even more efficient due to their incredibly low turnover ratios. With this said, there is still opportunity to make great returns from an active fund even after costs. There are funds out there that can beat their benchmarks, they are just difficult to find. This is why it is can be more advantageous for the average investor to invest in a passively managed fund.

METHODOLOGY

Data Collection

To collect data about active and passive funds I used Fidelity's investment website. The site provided me with all the information I needed about hundreds of different funds offered to the public. My collected data included 36 active, and 36 passive funds. I collected information about returns over 1, 3, and 5 year periods. Along with this I collected information about names of the funds, what style box they fit into, expenses (gross and net), and turnover ratios. The difference between net and gross expenses is reimbursement for fee waivers. Some funds have waivers for their fees that allow them to receive reimbursements and reduce their net expenses. In order to choose the funds I sorted the database by active management and used a random numbers table to choose which funds I would be collecting data on. There were 2,855 different

active funds to choose from. I then chose passive funds using the same method from a sample of 395.

Data Analysis

For my project several different tests were run in SAS 9.3 to obtain results. To compare the difference in returns between active and passive funds I ran a multivariate analysis of variance (MANOVA) with the help of my faculty sponsor Chester Piascik. MANOVA is useful because it compares the population means of different groups. In my experiment this pertains to comparing the means of 1, 3, and 5 year returns. I also decided I wanted to see if the market capitalization of the fund had a significant impact on returns. In order to do this an overall test was run to compare the means of the returns of all funds in the 5 year period. To further this I compared the difference between small and midcap, small and large cap, and midcap and large cap funds. The next tests that were run are about the effect of gross and net fees on the returns of funds. Regression models were run for both types of fees to see if there is a relationship between the amount of fees charged by a fund and their returns. These tests were also run with the data for active and passive funds combined for the five year period, and tested at the .05 level of significance.

RESULTS

One Year Returns

The first comparison that was made is between the returns of active and passive funds over a one year period.

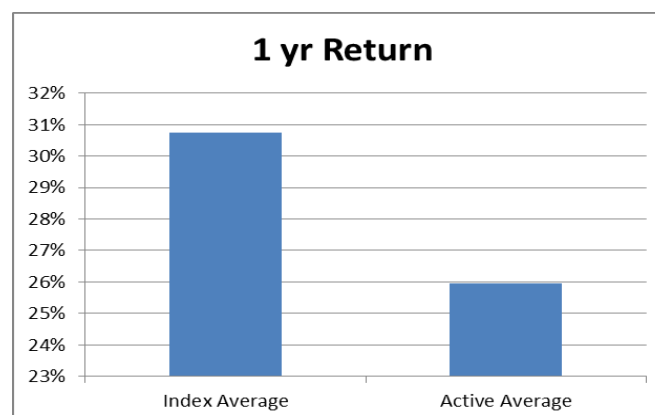


Figure 11 – 1 Year Return Averages

As you can see in figure 11, the average return of index funds in the past year was close to 31%, while active funds returned only about 26%. The null hypothesis for the test is that the return of active funds equals the returns of passive funds, while the alternative hypothesis is unequal returns. After running the test I found with significance ($F=7.66$, $P=.0072$) that the returns of the funds are different. This means I rejected the null hypothesis at a .05 level of significance, and in the previous year passively managed funds have outperformed active funds.

Three Year Returns

My next test compares the difference in fund returns over a 3 year period. Figure 12 below shows the average per year return of index and active funds.

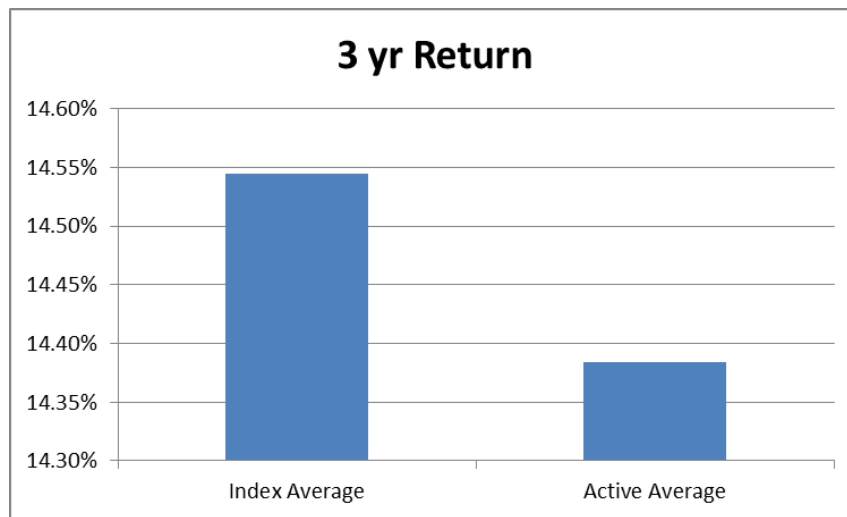


Figure 12 – 3 Year Return Average

As you can see the average index fund return about 14.55% per year, while active funds average just under 14.40%. Just like with the 1 year returns, the null hypothesis for the test is that the return of active funds equals the returns of passive funds, while the alternative hypothesis is unequal returns. After running the test I found that I could not reject the null hypothesis with significance at the .05 level, and found there was no significant difference ($F=.06$, $P=.8141$) between the returns of active and passive funds over a 3 year period.

Five Year Returns

The final test on fund returns was done on the average returns over a 5 year period.

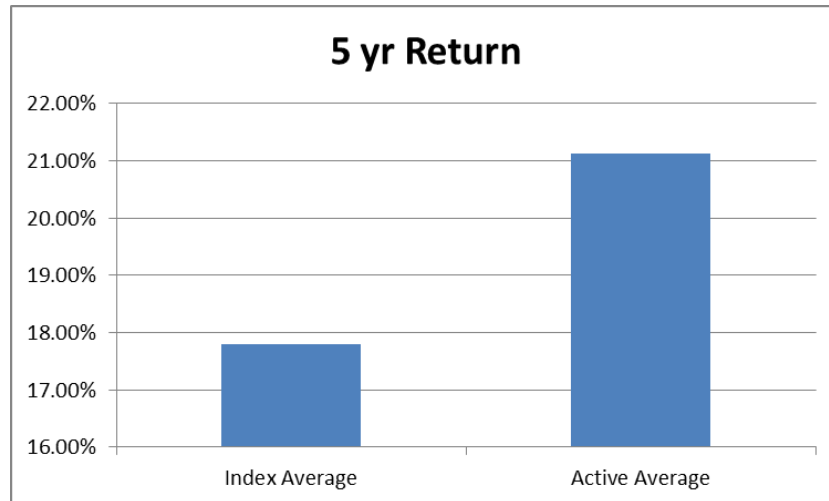


Figure 13 – 5 Year Return Average

As you can see, figure 13 shows active funds having a higher return with just over 21%, while index funds have returned just under 18%. Just like with the 1 and 3 year returns, the null hypothesis for the test is that the return of active funds equals the returns of passive funds, while the alternative hypothesis is unequal returns. After running the test I found that there was a difference between the returns of index and active funds at the .05 level of significance ($F=14.49$, $P=.0003$). This shows that over the longer period of time active funds have higher returns than passive funds even after costs.

Effects of Market Capitalization

As stated previously, the tests for the effect of market capitalization on return were done with the data for active and passive funds combined over the 5 year investment period. The first test completed was to see if market capitalization had a significant effect on return. The null hypothesis for this test was that market cap has no impact on returns, while the alternative hypothesis is that market capitalization does impact returns. After completing the test I was able to reject the null hypothesis at the .05 level of significance ($F=23.82$, $P<.0001$). This means there market capitalization has an impact on fund returns. Since there was significance I decided to see if there were significant differences in returns between small, medium, and large cap funds (returns are shown in figure 14).

| Level of C | N | Y3 | |
|------------|----|------------|------------|
| | | Mean | Std Dev |
| 1 | 20 | 22.7705000 | 3.14303989 |
| 2 | 9 | 22.1255556 | 1.31203193 |
| 3 | 43 | 17.3625581 | 3.39004431 |

Figure 14 – Mean 5 Year Returns by Market Capitalization

| Contrast | DF | Contrast SS | Mean Square | F Value | Pr > F |
|----------|----|-------------|-------------|---------|--------|
| C1 vs C2 | 1 | 2.5817793 | 2.5817793 | 0.26 | 0.6115 |
| C1 vs C3 | 1 | 399.2288610 | 399.2288610 | 40.26 | <.0001 |
| C2 vs C3 | 1 | 399.2288610 | 399.2288610 | 40.26 | <.0001 |

Figure 15 – Comparing Small, Medium, and Large Cap Returns

The results of the tests are shown above in figure 15. The labels C1, C2, and C3 stand for small, medium, and large capitalization respectively. As you can see there is no significant difference between small and medium cap funds at the .05 level of significance (F=.26, P=.6115). The other two examples, small versus large cap and medium versus large cap are both significant at the .05 level of significance (F=40.26, P<.0001). Overall this means that funds that focus on investing in large capitalization companies are more likely to have smaller returns than funds that focus on medium or small cap companies.

Gross and Net Costs

The next tests were both regression models to see if gross or net costs had a significant impact on the return of funds in the 5 year period. Gross costs include all costs associated with managing the fund before reimbursements. Net costs include all of the costs of managing the fund after reimbursements, which lowers the total costs. Just like the market capitalization tests, the tests relating to costs include the combined data of passive and active funds. Also, these tests were run separately due to multicollinearity (direct correlation between two or more independent variables).

First was the test of the relationship between gross costs and returns. The null hypothesis is that there is no relationship between gross costs and return, while the alternative is that there is a relationship. The statistical test concludes that there is no significant relationship at the .05 level between gross cost and return ($F=1.56$, $P=.2151$). This means you cannot reject the null hypothesis with 95% confidence.

The next test was for the relationship of net costs and returns. Similar to the gross costs the null hypothesis is that there is no relationship between net costs and return, while the alternative is that there is a relationship. After running the test I have concluded that I can reject the null hypothesis with at the .05 level ($F=4.03$, $P=.0485$), meaning there is a relationship between net costs and fund returns. This means that as net costs increase the return of the funds increase as well. To put it another way, managers who provide higher returns charge their customer more.

Overall these show how even a slight difference in costs can make a test insignificant. The average gross expense was 1.08% while the average net expense was .98%, meaning a difference of just .1% in costs make the model insignificant.

CONCLUSION

My hypothesis was that active management is better than passive management on a cost adjusted basis. Based on my results I have concluded that active management is not a more cost effective investment strategy than passive management. My primary research indicates no significant overall advantage to either passive or active funds which made my decision very difficult.

However, because my report is geared towards the average investor I believe it is more beneficial for those individuals to invest passively. This is due to the risks and higher costs associated with active funds as pointed out in my literature review. While there are more opportunities for active funds, it is not very often that managers are able to beat their benchmarks due to costs. In addition to this, higher opportunity comes from higher risks which are not desirable to the average person. Nonetheless there are some situations where it would be optimal to invest active. If you find a manager with a strategy you want, or if you want to take a chance at making a higher return, active management is a great option. As shown from my results, higher costs are directly related to higher returns, which suggests some managers can create positive alphas. In addition to this there are managers who can beat their benchmark, they are just difficult to find.

Regardless, for the average investor I still believe that a passive investment strategy is more effective than active investing.

CONCERNS

Regarding the collection of data, there are some concerns I would like to address. These concerns are as follows:

1. The drop out of active funds after the 2008/2009 market crash
2. Time since fund creation
3. Sample Size
4. Minimum Investment Requirement

The first concern pertains to the market crash in late 2008 and into 2009. My worry here is that many active funds closed shop and went under when the market crashed. This would mean a smaller population of funds to choose from, which could lead to different results. Upon researching this possibility I was unable to find information about the dropout of funds, but it seems funds closing down would be a very distinct possibility considering the steep decline in the market as well as loss of investor confidence.

My second concern is time since fund creation. This concern also came about when I was sampling my data randomly. I came across several funds that had only been around for 1-4 years. When this happened I skipped over the fund because it did not contain any data for the 3 and/or 5 year periods. Overall this may have changed some of my results because in the short term these funds may have had returns that were greater or less than the funds I collected data on.

My third concern pertains to sample size. To put it simply, I did have a sample size that is considered large, but collecting more data may have had an impact on the 3 year period in which I found no significant difference in fund returns.

The final concern I have regards the minimum investment requirement of funds. Since my research is geared towards the average investor I should have considered how much money an individual needs to invest in an active fund. Many funds have minimum investment amounts

which could price certain investors out of the market, leaving the funds for only wealthy individuals.

POTENTIAL NEXT STEPS

There are many steps I feel I can take in the future to further my research to gain a more in depth understanding of active and passive funds. These potential steps are as follows:

1. Fund Segmentation
2. Time Periods
3. Benchmark Comparisons

The first step I could take to further my research is to focus more on fund segmentation. In this analysis I only looked at market capitalization. Instead of just market cap I could look at each section of the style box and determine which area could lead to the highest returns. This would give investors information on which type of fund could be the most opportunistic to invest in.

Secondly, I could focus on a different variety of time periods. I could test any time period I wish, and could also see whether or not 2008 and 2009 had more of an impact on active or passive funds. I could also look at 2 and 4 year time periods which were “skipped over” in this report.

Another step I could take is to look at active and passive funds compared to their benchmarks. This analysis simply looked at the returns of active funds versus passive funds. If I compared funds to their direct benchmarks I could possibly obtain different results.

Overall these potential next steps are geared towards finding the best investment for the consumer. By segmenting funds more I would be able to see which area of the market is most likely to provide investors with the most return. I could also look at the effect of holding periods on returns, and compare the funds to their direct benchmarks to get another appropriate measure of their performance.

APPENDICES

Appendix A – Passive Fund Data

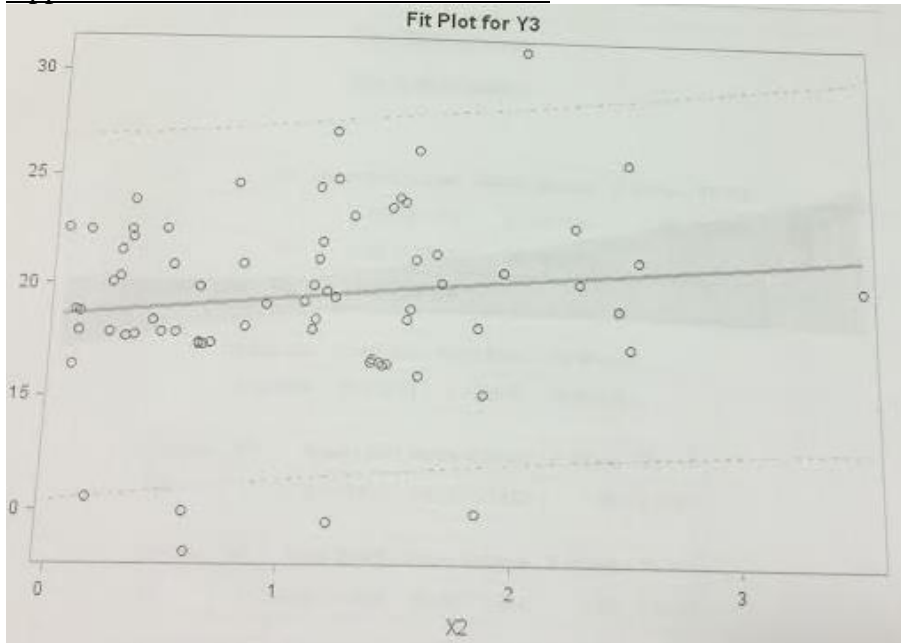
| Passive Funds | | | | | | | |
|----------------|------------------|---------------|---------------|---------------|--------------|---------------|----------------|
| Name of Fund | Category | 1 yr | 3 yr | 5 yr | Net Expense | Gross Expense | Turnover Ratio |
| OGE BX | Int. Large Blend | 19.72% | 5.95% | 9.90% | 1.12% | 1.84% | 51.00% |
| VISVX | Small Value | 36.41% | 15.73% | 20.32% | 0.24% | 0.24% | 25.00% |
| NMSAX | Small Blend | 40.60% | 17.92% | 20.88% | 0.48% | 0.48% | 17.00% |
| SWSSX | Small Blend | 38.69% | 16.29% | 22.13% | 0.25% | 0.29% | 11.00% |
| FCEIX | Large Blend | 30.55% | 14.61% | 16.41% | 1.37% | 1.44% | 2.00% |
| FSEVX | Mid-Blend | 38.23% | 16.22% | 22.51% | 0.07% | 0.00% | 9.00% |
| ASCIZ | Small Blend | 38.98% | 15.58% | 20.07% | 0.21% | 0.21% | 31.00% |
| NSIDX | Small Blend | 38.64% | 15.45% | 19.87% | 0.23% | 0.60% | 13.04% |
| WFSCX | Large | 4.93% | 5.08% | 8.22% | 0.33% | 0.60% | 35.00% |
| FISPX | Large Blend | 32.68% | 16.07% | 17.81% | 0.36% | 0.44% | 26.00% |
| PEXMX | Mid-Blend | 38.37% | 16.64% | 22.55% | 0.44% | 0.44% | 17.60% |
| AAFPX | Large Blend | 31.57% | 15.44% | 17.32% | 0.63% | 0.63% | 15.00% |
| SPIBX | Large Blend | 30.68% | 14.66% | 16.48% | 1.37% | 1.37% | 6.00% |
| DSPIX | Large Blend | 32.18% | 16.00% | 17.81% | 0.20% | 0.21% | 3.45% |
| FOHJX | Large Blend | 30.23% | 15.79% | 16.34% | 0.05% | 0.05% | 19.00% |
| PIIAX | Large Blend | 31.74% | 15.60% | 17.36% | 0.45% | 0.61% | 12.00% |
| FFSMX | Large Blend | 33.42% | 16.18% | 18.79% | 0.05% | 0.05% | 2.00% |
| FSEMX | Mid-Blend | 38.19% | 16.19% | 22.48% | 0.10% | 0.10% | 9.00% |
| USSPX | Large Blend | 32.03% | 15.88% | 17.67% | 0.25% | 0.32% | 4.00% |
| GEQZX | Large Blend | 31.95% | 16.21% | 17.81% | 0.39% | 0.50% | 3.00% |
| VTENX | Large | 9.10% | 7.49% | 10.55% | 0.16% | 0.16% | 38.00% |
| VMVIX | Mid-Value | 37.42% | 16.61% | 21.56% | 0.24% | 0.24% | 33.00% |
| PREIX | Large Blend | 32.02% | 15.87% | 17.65% | 0.28% | 0.28% | 7.50% |
| WFOBX | Large | 8.44% | 6.29% | 9.94% | 0.35% | 0.58% | 32.00% |
| RYCOX | Large Growth | 33.84% | 16.30% | 22.72% | 2.27% | 2.27% | 94.00% |
| PSICX | Large Blend | 30.84% | 14.92% | 16.61% | 1.16% | 1.38% | 3.00% |
| FSTVX | Large Blend | 33.39% | 16.17% | 18.78% | 0.06% | 0.07% | 2.00% |
| VEXMX | Mid-Blend | 38.19% | 16.32% | 22.47% | 0.28% | 0.28% | 12.00% |
| USNQX | Large Growth | 36.00% | 18.02% | 24.62% | 0.75% | 0.75% | 10.00% |
| TINRX | Large Blend | 33.07% | 15.84% | 18.36% | 0.40% | 0.40% | 8.00% |
| WFILX | Large Blend | 31.65% | 15.57% | 17.35% | 0.56% | 0.66% | 4.00% |
| GRMSX | Large Blend | 31.66% | 15.50% | 17.29% | 0.61% | 0.61% | 3.67% |
| WFINX | Large Blend | 30.67% | 14.71% | 16.47% | 1.31% | 1.41% | 4.00% |
| SXPBX | Large Blend | 30.50% | 14.58% | 16.36% | 1.42% | 1.42% | 4.00% |
| WFDTX | Large | 7.93% | 5.81% | 9.48% | 0.91% | 1.21% | 32.00% |
| FUSVX | Large Blend | 32.33% | 16.13% | 17.92% | 0.05% | 0.07% | 3.00% |
| Average | | 30.75% | 14.55% | 17.80% | 0.54% | 0.62% | 16.70% |

Active vs. Passive Portfolio Management
Senior Capstone Project for Timothy Greenhill

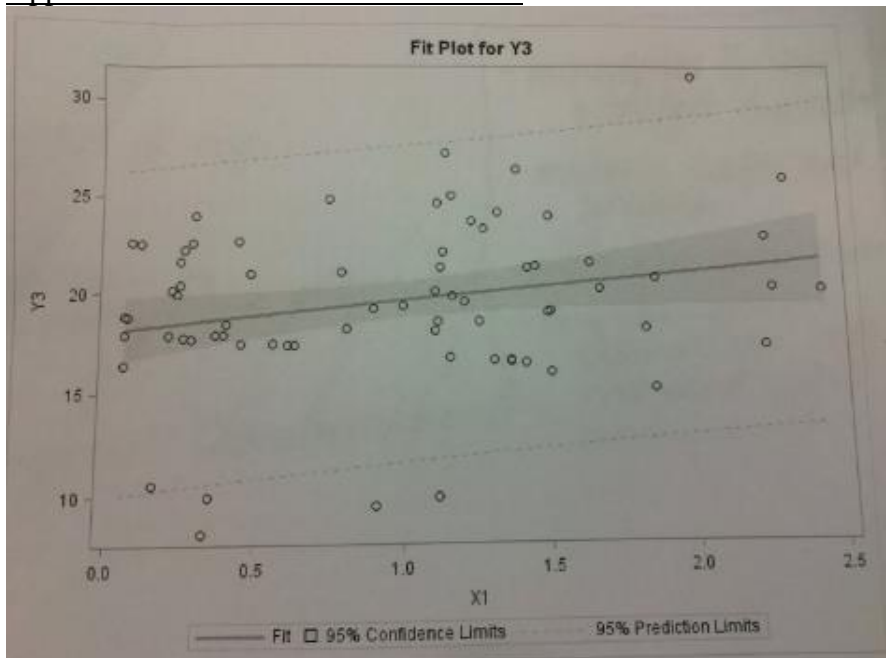
Appendix B – Active Fund Data

| Active Funds | | | | | | | |
|----------------|--------------|---------------|---------------|---------------|--------------|---------------|----------------|
| Name of Fund | Category | 1 yr | 3 yr | 5 yr | Net Expense | Gross Expense | Turnover Ratio |
| SWSCX | Small Blend | 29.44% | 17.90% | 24.45% | 1.12% | 1.12% | 84.00% |
| CENSX | Large Growth | 25.30% | 13.63% | 18.43% | 1.12% | 1.12% | 39.00% |
| VNVCX | Mid-Blend | 27.21% | 13.50% | 20.13% | 2.29% | 2.29% | 65.00% |
| VSEQX | Mid-Blend | 29.94% | 17.74% | 23.83% | 0.29% | 0.29% | 64.00% |
| ADVAX | Mid-Blend | 19.64% | 8.97% | 20.10% | 1.68% | 1.68% | 95.00% |
| TSOAX | Small Blend | 33.01% | 16.03% | 18.96% | 1.51% | 2.47% | 95.00% |
| QBLGX | Large Growth | 26.86% | 14.01% | 17.21% | 2.26% | 2.52% | 135.00% |
| OFSCX | Small Blend | 27.19% | 15.45% | 25.73% | 2.35% | 2.51% | 39.95% |
| VGIIX | Large Blend | 22.35% | 14.96% | 19.11% | 0.90% | 0.90% | 35.00% |
| QCSCX | Small Blend | 29.32% | 15.98% | 19.99% | 2.46% | 3.57% | 184.00% |
| RYSGX | Small Growth | 26.31% | 15.29% | 23.75% | 1.51% | 1.51% | 645.00% |
| CABDX | Large Value | 21.82% | 15.78% | 17.96% | 1.11% | 1.11% | 69.00% |
| JCSAX | Small Blend | 21.98% | 10.63% | 18.89% | 1.50% | 1.54% | 97.00% |
| TWUIX | Large Growth | 27.82% | 14.53% | 20.92% | 0.79% | 0.79% | 26.00% |
| RSPYX | Small Blend | 32.14% | 15.67% | 24.81% | 1.17% | 1.20% | 39.00% |
| AFEIX | Large Blend | 21.13% | 14.28% | 18.08% | 0.81% | 0.81% | 36.00% |
| SZCAX | Small Blend | 26.40% | 15.13% | 21.10% | 1.43% | 1.56% | 330.00% |
| KSMIX | Small Blend | 22.88% | 17.25% | 27.06% | 1.15% | 1.19% | 68.27% |
| EKJCX | Large Growth | 23.29% | 14.51% | 20.60% | 1.88% | 1.95% | 32.00% |
| IHSIX | Small Growth | 33.10% | 15.13% | 21.92% | 1.14% | 1.14% | 106.00% |
| EGWAX | Small Growth | 36.73% | 15.95% | 23.97% | 1.33% | 1.48% | 77.00% |
| QILGX | Large Growth | 28.13% | 15.16% | 18.39% | 1.26% | 1.53% | 135.00% |
| PSPBX | Large Blend | 20.84% | 14.23% | 21.42% | 1.65% | 1.65% | 321.00% |
| ICNAX | Large Growth | 18.13% | 10.45% | 15.88% | 1.51% | 1.58% | 32.68% |
| AVPAX | Small Value | 24.98% | 13.76% | 23.11% | 1.28% | 1.28% | 48.00% |
| JIGAX | Large Growth | 25.26% | 14.26% | 19.68% | 1.17% | 1.17% | 67.00% |
| KLKAX | Large Growth | 16.86% | 10.44% | 19.41% | 1.21% | 1.21% | 36.00% |
| QISCX | Small Blend | 30.66% | 17.13% | 21.20% | 1.46% | 2.56% | 184.00% |
| HWSCX | Small Value | 28.24% | 14.37% | 31.19% | 2.04% | 2.04% | 35.00% |
| WECDX | Large Growth | 27.34% | 13.56% | 19.20% | 1.00% | 1.07% | 97.00% |
| SCVAX | Small Value | 22.12% | 13.52% | 26.20% | 1.40% | 1.56% | 57.00% |
| PGWAX | Large Growth | 31.39% | 16.16% | 19.94% | 1.11% | 1.11% | 141.00% |
| PEQCX | Large Value | 19.04% | 13.69% | 18.09% | 1.84% | 1.84% | 34.00% |
| OSGIX | Mid-Growth | 32.05% | 14.69% | 23.50% | 1.24% | 1.45% | 70.00% |
| POGAX | Large Growth | 27.78% | 13.80% | 21.12% | 1.13% | 1.13% | 89.00% |
| CHTCX | Large Blend | 17.37% | 10.28% | 15.13% | 1.87% | 1.87% | 35.00% |
| Average | | 25.95% | 14.38% | 21.12% | 1.42% | 1.55% | 103.97% |

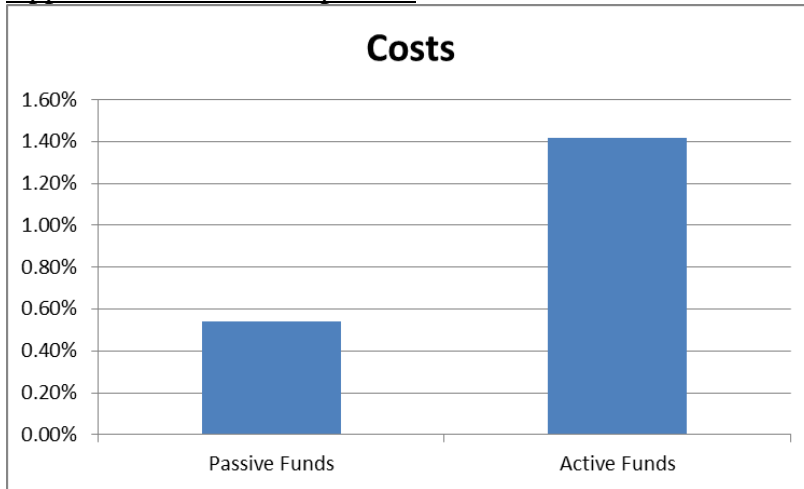
Appendix C – Scatter Plot for Gross Costs



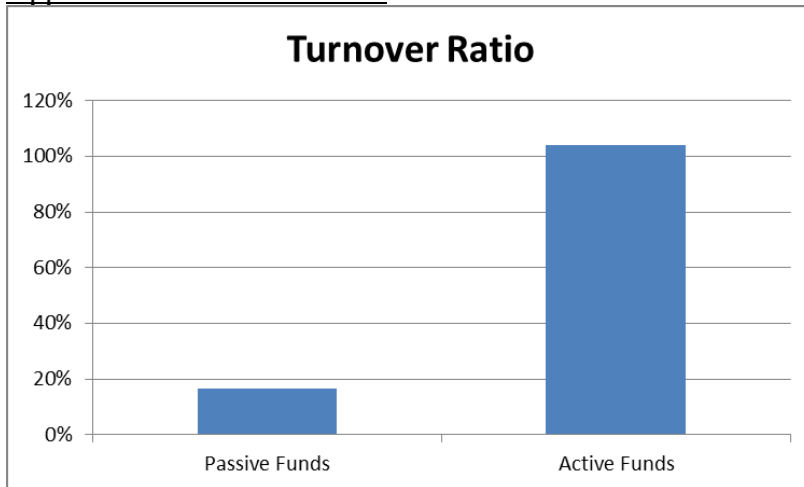
Appendix D – Scatter Plot for Net Costs



Appendix E – Cost Comparison



Appendix F – Turnover Ratio



Appendix G – 1 Year Return Output

The SAS System

The GLM Procedure

Dependent Variable: Y1

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model | 1 | 413.712612 | 413.712612 | 7.66 | 0.0072 |
| Error | 70 | 3782.084519 | 54.029779 | | |
| Corrected Total | 71 | 4195.797132 | | | |

| R-Square | Coeff Var | Root MSE | Y1 Mean |
|----------|-----------|----------|----------|
| 0.098602 | 25.92907 | 7.350495 | 28.34847 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| A | 1 | 413.7126125 | 413.7126125 | 7.66 | 0.0072 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| A | 1 | 413.7126125 | 413.7126125 | 7.66 | 0.0072 |

Appendix H – 3 Year Return Output

The SAS System

The GLM Procedure

Dependent Variable: Y2

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model | 1 | 0.4672222 | 0.4672222 | 0.06 | 0.8141 |
| Error | 70 | 587.1847556 | 8.3883537 | | |
| Corrected Total | 71 | 587.6519778 | | | |

| R-Square | Coeff Var | Root MSE | Y2 Mean |
|----------|-----------|----------|----------|
| 0.000795 | 20.02334 | 2.896265 | 14.46444 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|--------|----|-----------|-------------|---------|--------|
| A | 1 | 0.4672222 | 0.4672222 | 0.06 | 0.8141 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| A | 1 | 0.4672222 | 0.4672222 | 0.06 | 0.8141 |

Active vs. Passive Portfolio Management
 Senior Capstone Project for Timothy Greenhill

Appendix I – 5 Year Return Output

The SAS System
 The GLM Procedure

Dependent Variable: Y3

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model | 1 | 198.668889 | 198.668889 | 14.49 | 0.0003 |
| Error | 70 | 959.630156 | 13.709002 | | |
| Corrected Total | 71 | 1158.299044 | | | |

| R-Square | Coeff Var | Root MSE | Y3 Mean |
|----------|-----------|----------|----------|
| 0.171518 | 19.02384 | 3.702567 | 19.46278 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| A | 1 | 198.6688889 | 198.6688889 | 14.49 | 0.0003 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| A | 1 | 198.6688889 | 198.6688889 | 14.49 | 0.0003 |

Appendix J – Market Capitalization

The SAS System
 The GLM Procedure

Dependent Variable: Y3

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model | 2 | 472.303163 | 236.151581 | 23.82 | <.0001 |
| Error | 69 | 684.147536 | 9.915182 | | |
| Corrected Total | 71 | 1156.450699 | | | |

Cap Size Effect on 5 year yield

| R-Square | Coeff Var | Root MSE | Y3 Mean |
|----------|-----------|----------|----------|
| 0.408408 | 16.18096 | 3.148838 | 19.46014 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| C | 2 | 472.3031628 | 236.1515814 | 23.82 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| C | 2 | 472.3031628 | 236.1515814 | 23.82 | <.0001 |

| Parameter | Estimate | Standard Error | t Value | Pr > t |
|-----------|-------------|----------------|------------|--------------|
| Intercept | 17.36255814 | B | 0.48019332 | 36.16 <.0001 |
| C 1 | 5.40794186 | B | 0.85225859 | 6.35 <.0001 |
| C 2 | 4.76299742 | B | 1.15424108 | 4.13 0.0001 |
| C 3 | 0.00000000 | B | | |

Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.

Active vs. Passive Portfolio Management
 Senior Capstone Project for Timothy Greenhill

Appendix K – Gross Costs on 5 Year Returns

The SAS System
 The GLM Procedure
 Dependent Variable: Y3

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model | 1 | 25.327114 | 25.327114 | 1.56 | 0.2151 |
| Error | 70 | 1132.971930 | 16.185313 | | |
| Corrected Total | 71 | 1158.299044 | | | |

gross

| R-Square | Coeff Var | Root MSE | Y3 Mean |
|----------|-----------|----------|----------|
| 0.021866 | 20.67073 | 4.023097 | 19.46278 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| X2 | 1 | 25.32711423 | 25.32711423 | 1.56 | 0.2151 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| X2 | 1 | 25.32711423 | 25.32711423 | 1.56 | 0.2151 |

| Parameter | Estimate | Standard Error | t Value | Pr > t |
|-----------|-------------|----------------|---------|---------|
| Intercept | 18.60798834 | 0.83170192 | 22.37 | < .0001 |
| X2 | 0.78893526 | 0.63068001 | 1.25 | 0.2151 |

Appendix L – Net Costs on 5 Year Returns

The SAS System
 The GLM Procedure
 Dependent Variable: Y3

effect of expense on return

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model | 1 | 63.097293 | 63.097293 | 4.03 | 0.0485 |
| Error | 70 | 1095.201752 | 15.645739 | | |
| Corrected Total | 71 | 1158.299044 | | | |

| R-Square | Coeff Var | Root MSE | Y3 Mean |
|----------|-----------|----------|----------|
| 0.054474 | 20.32325 | 3.955470 | 19.46278 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| X1 | 1 | 63.09729266 | 63.09729266 | 4.03 | 0.0485 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|--------|----|-------------|-------------|---------|--------|
| X1 | 1 | 63.09729266 | 63.09729266 | 4.03 | 0.0485 |

| Parameter | Estimate | Standard Error | t Value | Pr > t |
|-----------|-------------|----------------|---------|---------|
| Intercept | 18.06563733 | 0.83745112 | 21.57 | < .0001 |
| X1 | 1.42950280 | 0.71183230 | 2.01 | 0.0485 |

REFERENCES

- "Capital Guardian Trust." *Capital Group Private Client Services*. Capital Group, n.d. Web. 28 Mar. 2014.
- "Efficient Market Hypothesis - EMH." *Investopedia*. Web. 28 Mar. 2014.
- "Focus on: Core-Satellite Investment - Balancing Portfolios - Combine Active and Passive for Optimum Performance." *Professional Wealth Management (2007): 1*. ProQuest. Web. 15 Sep. 2013.
- "Funds 100." *Morningstar*. N.p., n.d. Web. 07 Nov. 2013.
- "Mutual Fund Results." *Mutual Funds Research*. Fidelity, n.d. Web. 31 Jan. 2014
- "Style Drift." *Investopedia*. N.p., n.d. Web. 06 Nov. 2013.
- "Tax Planning In a Changing Tax World." *Fpanet*. Financial Planning Association, 10 Jan. 2007. Web. 7 Nov. 2013.
- Ainsworth, Andrew B., Kingsley Fong, and David R. Gallagher. "Style Drift And Portfolio Management For Active Australian Equity Funds." *Australian Journal Of Management (University Of New South Wales)* 32.3 (2008): 387-418. *Business Source Complete*. Web. 17 Apr. 2013.
- Ambachtsheer, Keith P., and Jr., James L. Farrell. "Can Active Management Add Value?." *Financial Analysts Journal* 35.6 (1979): 39-47. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- Blake, Nick. "The Case for Passive Management." *Professional Adviser* (2009): 33. ProQuest. Web. 15 Sep. 2013.
- Carosa, Christopher. "Passive Investing: The Emperor Exposed?" *Journal of Financial Planning* 18.10 (2005): 54,56,58,60,62. ProQuest. Web. 15 Sep. 2013.
- Cendrowski, Scott. "The Tax Bite of Top Mutual Funds." *CNNMoney*. Cable News Network, 20 Dec. 2012. Web. 07 Nov. 2013.

- Chance, Robin B., Susan Hirshman, and Fowler, Gordon B., Jr. "Is Tax-Loss Harvesting Worth it? Greater After-Tax Returns through Active Selection." *Journal of Financial Planning* 16.11 (2003): 74-84. *ProQuest*. Web. 15 Sep. 2013.
- El-Hassan, Nadima, and Paul Kofman. "Tracking Error And Active Portfolio Management." *Australian Journal Of Management (University Of New South Wales)* 28.2 (2003): 183-207. *Business Source Complete*. Web. 17 Apr. 2013.
- Ennis, Richard M. "Are Active Management Fees Too High?." *Financial Analysts Journal* 61.5 (2005): 44-51. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- Feng, Chen, Arthur Kraft, and Ira Weiss. "Tax Planning By Mutual Funds: Evidence From Changes In The Capital Gains Tax Rate." *National Tax Journal* 64.1 (2011): 105-134. *Business Source Alumni Edition*. Web. 7 Nov. 2013.
- Ferguson, Robert, and Dean Leistikow. "Valuing Active Managers, Fees, And Fund Discounts." *Financial Analysts Journal* 57.3 (2001): 52. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- FRENCH, KENNETH R. "Presidential Address: The Cost Of Active Investing." *Journal Of Finance* 63.4 (2008): 1537-1573. *Business Source Complete*. Web. 17 Apr. 2013.
- Gallagher, David R., and Peter Gardner. "The Implications Of Blending Specialist Active Equity Fund Management." *Journal Of Asset Management* 7.1 (2006): 31-48. *Business Source Complete*. Web. 17 Apr. 2013.
- Gootar, Selvin. "Active Vs. Passive Strategy." *Financial Executive* 4.1 (1988): 27. *Business Source Complete*. Web. 17 Apr. 2013.
- GUOFU, ZHOU. "On The Fundamental Law Of Active Portfolio Management: How To Make Conditional Investments Unconditionally Optimal." *Journal Of Portfolio Management* 35.1 (2008): 12-21. *Business Source Complete*. Web. 17 Apr. 2013.

- Haslem, John A., H. K. Baker, and David McNeil Smith. *Identification and Performance of Equity Mutual Funds with High Management Fees and Expense Ratios*. Rochester, 2012. *ProQuest*. Web. 15 Sep. 2013.
- Holmes, Kathryn A., and Robert W. Faff. "Style Drift, Fund Flow And Fund Performance: New Cross-Sectional Evidence." *Financial Services Review* 16.1 (2007): 55-71. *Business Source Alumni Edition*. Web. 7 Nov. 2013.
- Idzorek, Thomas M., and Fred Bertsch. "The Style Drift Score." *Journal Of Portfolio Management* 31.1 (2004): 76-83. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- Israelsen, Craig L. "Actively Passive Again." *Financial Planning* 34.8 (2004): 85-87. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- Jacobs, Bruce, and Kenneth Levy "Enhanced Active Equity Strategies." *Journal Of Portfolio Management* 32.3 (2006): 45-55. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- JARROW, ROBERT A. "Active Portfolio Management And Positive Alphas: Fact Or Fantasy?." *Journal Of Portfolio Management* 36.4 (2010): 17-22. *Business Source Complete*. Web. 17 Apr. 2013.
- Loth, Richard. "Passive Vs. Active Management." *Investopedia*. N.p., n.d. Web. 30 Oct. 2013.
- Matallin, J. C., and A. Fernandez-Izquierdo. "Passive Timing Effect In Portfolio Management." *Applied Economics* 35.17 (2003): 1829-1837. *EconLit*. Web. 17 Apr. 2013.
- Olijnyk, Zena. "Back On Track." *Canadian Business* 76.3 (2003): 20. *MasterFILE Premier*. Web. 17 Apr. 2013.
- Riepe, Mark W. "Style Drift For Actively Managed Value Funds." *Journal Of Financial Planning* 12.5 (1999): 38-39. *Business Source Alumni Edition*. Web. 17 Apr. 2013.
- Seawright, Bob. "The Best of both Worlds: Active and Passive Investing." *Investment Advisor* (2012)*ProQuest*. Web. 15 Sep. 2013.

Shankar, S. Gowri. "Active Versus Passive Index Management: A Performance Comparison Of The S&P And The Russell Indexes." *Journal Of Investing* 16.2 (2007): 85-95. *Business Source Alumni Edition*. Web. 17 Apr. 2013.

Shukla, Ravi. "The Value of Active Portfolio Management." *Journal of economics and business* 56.4 (2004): 331-46. *ProQuest*. Web. 15 Sep. 2013.

SORENSEN, ERIC H. "Active Equity Management For The Future." *Journal Of Portfolio Management* 36.1 (2009): 60-68. *Business Source Complete*. Web. 17 Apr. 2013.

Steinert-Threlkeld, Tom. "Vanguard: Active Funds can Outperform Passive." *Money Management Executive* 21.2 (2013): 1,n/a. *ProQuest*. Web. 15 Sep. 2013.

Strong, Robert A. *Portfolio Construction, Management, and Protection*. 5th ed. Vol. 1. Mason: South-Western Cengage Learning, 2009. Print.

Waring, M. Barton, and Laurence B. Siegel. "The Dimensions Of Active Management." *Journal Of Portfolio Management* 29.3 (2003): 35-51. *Business Source Complete*. Web. 15 Sept. 2013.