

The Societal Impact of Investing for Retirement:

Do differential returns and attributes of mutual funds and exchange-traded funds compared to hedge funds have the potential to shift societal dependence on Social Security in the United States into the right direction?

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Finance

To

The Honors College

Oakland University

In partial fulfillment of the
requirement to graduate from

The Honors College

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April 30, 2020

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Abstract

Do differential returns and attributes of mutual funds and exchange-traded funds compared to hedge funds result in an environment conducive to lesser dependence on government social insurance programs? Using samples of data pulled from Bloomberg and extensive research, the returns and attributes of mutual funds, exchange-traded funds, and hedge funds are analyzed. Comparing the three investment structures, it is found that hedge funds have significantly underperformed the other two investment structures over year-to-date, 3-year, and 5-year time horizons. Higher returns and operational characteristics of mutual funds and exchange-traded funds alludes to the fact that the average American can invest money over time in these lower-cost investments and receive relatively higher returns. This is particularly important where a country experiences a societal dependence on Social Security among recipients. With the future of Social Security threatened, or at least questioned, now is a particularly advantageous time to invest in the elicited investment structures mentioned in anticipation of differential returns, easing the pressure of dependence on Social Security.

Introduction

Social Security benefits have been an integral part of income for American retirees since the beginning of the program in 1935. Due to the demographics challenging the Social Security system, the Social Security Trust Fund is currently estimated to exhaust its reserves by 2036. For those planning to retire within the next 10-20 years, they cannot necessarily rely on receiving sufficient Social Security income to cover post-retirement expenses. For those early in their career, it is particularly appropriate to lessen expectations concerning program viability and hence, receiving Social Security income barring dramatic reform which will necessitate a political movement. In an attempt to provide insight into a possible contributory solution to Social Security dependence, the differential costs and returns of mutual funds, exchange-traded funds, and hedge funds will be analyzed.

Investment Attributes

The act of investment pooling is a commonality between mutual funds, exchange-traded funds, and hedge funds. In the simplest of terms, individuals invest funds with financial intermediaries in portfolios of securities such as stocks, bonds, and other asset classifications (Bodie, 85). When an individual invests in a fund structure, there is a proportionate share ownership of the fund and hence assets that comprise that fund. Valuation is derived by calculating the total value of the fund's securities and dividing that total by the number of shares outstanding ("What Are Mutual Funds?"). Though the operational structure of these three investment funds are similar, basic attributes differentiate them from one another resulting in differential costs and returns. Therefore, it is crucial that these operational differences are understood in order to conduct a proper investment analysis for the desired outcome.

Mutual Funds

Mutual funds have a specific investment policy as defined in its prospectus, which by law is available to all investors. Mutual funds are subject to the Securities Act of 1933 and the Investment Company Act of 1940, mandating transparency and consistency that the investor can rely upon in terms of the operation of the money manager (Bodie, 662). These investment funds are also highly liquid (ability to sell without loss of value), enabling mutual fund investors to sell at their discretion (Bodie, 663). The type of mutual fund depends on the securities held within its portfolio; examples include equity funds, bond funds, index funds, balanced funds, and money market funds. Management companies will operate a family of mutual funds and thus allow investors to allocate monies across market sectors while conducting business with a single financial intermediary (Bodie, 88). Both Fidelity Investments and Vanguard are well-known management companies based within the United States; the minimum initial required investment varies between firms, but typically does not exceed \$3,000. However, minimum initial investment requirements can be as low as \$100, or even no minimum investment with a systematic investment plan. Mutual funds collectively operate on the basis of forward pricing which means pricing differences appear only at the end of a trading day, and hence the calculation of net asset value (NAV) is derived. The percentage investment return on a mutual fund is the change in net asset value plus any income distributions (dividends, short-term capital gains, long-term capital gains), divided by the initial investment (Bodie, 85). The return on mutual funds will be further explained later in this analysis. However, other considerations such as taxes, fees, and expenses and loads also need to be considered as an input into an appropriate investment strategy.

Taxes. Under the U.S. tax code, returns on investments in mutual funds are granted “pass-through status” (Bodie, 94) which means taxes are passed through to the investor if certain requirements are met. Investors need to prepare to pay taxes on dividends, short-term capital gains, and long-term capital gains unless said investment is in a tax-deferred account such as an Individual Retirement Account (IRA) or 401-K plan. As required by the Securities and Exchange Commission (SEC), the hypothetical tax impact on a portfolio is to be disclosed as a component of the fund’s prospectus. After-tax one, three, five, and ten year returns are included as well as year-to-date and since inception results (Bodie, 95). Note that certain types of mutual funds, particularly those with Treasury and Municipal securities, have their own tax exemptions (Maverick).

Cost Structure and Fees. An investor will incur investment costs when investing in shares of a mutual fund. A front-end load (Class A Share) is a charge paid by the investor at the initiation of an investment which is used to pay brokers and other distribution expenses, typically lower than 5.75% (Bodie, 91). Front-end loads are deducted from the initial investment; however, many mutual funds are “no-load funds” and hence do not charge an upfront fee. In 2017, approaching half of all mutual funds were no-load (Bodie, 91). Investors should still be aware that no-load funds can and do charge specified fees, for such things as operational expenses, trading costs, management fees, and miscellaneous expenses (“Mutual Funds and ETFs, A Guide for Investors,” 27). Back-end loaded funds incur sales charges on a contingent basis (contingent deferred sales charge – CDSC) depending on the term of the investment on a declining scale. These charges are typically around 4% and are reduced proportionately for each year the funds remain invested (Bodie, 91).

In addition to up-front sales charges, investors pay annual expenses to cover operational costs. These fees collectively are used to calculate the fund's expense ratio, which is the total expense divided by total assets of the fund. The expense ratio is defined in the fund's prospectus and is broken down into three parts: management fees, 12b-1 distribution fees, and other expenses ("ETF Versus Mutual Fund Fees."). Management fees are for administrative and advisory fees which usually come between 0.2% and 1.5% (Bodie, 91). The cost of the fees mentioned are deducted from the assets of the fund, not paid separately by the investor. There are also distribution fees (12b-1 charges) which cover advertising, marketing (e.g. annual reports), and broker commissions ("Mutual Funds and ETFS, A Guide for Investors," 31). These fees, sanctioned by the SEC (Bodie, 92), the regulatory authority for mutual funds, are limited to 1% of the average annual net assets of the respective fund for Class B shares. A front-end loaded mutual fund structure typically charges 0.25% of net assets ("ETF Versus Mutual Fund Fees.").

Costs and fees differ according to the share class of the fund. For example, Class A shares typically charge a higher front-end sales load with reduced 12b-1 fees and lower operating expenses while distributing a relatively higher dividend payout. Class B shares lack an upfront sales charge and instead charge a CDSC with a 12b-1 fee and operating expenses higher than that established by Class A share mutual funds ("Mutual Funds and ETFS, A Guide for Investors," 33). Of special note, competitive and regulatory pressure has resulted in significant downward pressure on fund fees and expenses which will be discussed in more detail later in this thesis.

Exchange-Traded Funds

Exchange-traded funds (ETFs) will also be utilized in this analysis for further comparison with hedge funds. ETFs were approved and introduced in 1993 as a direct competitor to mutual funds. Specifically, ETFs allow investment in index or sector portfolios comparatively the same

way as mutual funds (Bodie, 95). However, as a differentiator ETFs trade like shares of stock in a continuously moving market, as compared with mutual funds which utilize forward pricing. There are no minimum initial investment requirements for ETFs – another competitive feature compared with mutual funds. A predominance of ETFs are passively managed which means the portfolio only changes when there is an underlying structural change in the composition of the ETF, such as when a company files for bankruptcy or is taken over with M&A activity (Maverick). The three largest ETFs are the Spider (SPDR), Diamonds (DIA), and the NASDAQ 100 (QQQ). Spider is an ETF that holds a portfolio that matches the S&P 500 Index. Similarly, Diamonds follow the Dow Jones Industrial Average and QQQ follow the NASDAQ 100 Index. In addition, the entire ETF landscape has rapidly grown since 1998 and today, there are industry, sector, commodity, bond, and international ETFs. One of the ETF market leaders is BlackRock Financial. After merging with Barclay's Global Investors, BlackRock has adopted the product name "iShares" and sponsors ETFs for several dozen equity indices (Bodie, 95).

Taxes. Despite similar operating characteristics with mutual funds, ETFs have a tax advantage, resulting in a more tax efficient operating structure. ETFs have their own operational process for buying and selling securities in which creation units are utilized, which allow investors to invest and liquidate shares of the ETF collectively (Maverick). As a consequence, when an investor desires to redeem their ETF shares they are able to liquidate their shares directly to other investors without the fund having to liquidate components of the underlying portfolio. Hence, constructive receipt is not realized and no taxable event is triggered (Bodie, 98). Another competitive advantage is the predominantly passive management strategy of ETFs resulting in relatively less turnover, reduced transaction expenses, and lesser tax obligations over time for the ETF structure (Maverick).

Cost Structure and Fees. The cost of investing in an ETF is generally lower than that of a mutual fund. ETFs do not charge a sales load; rather, the investor is charged brokerage commissions for the transactions of shares. These charges vary across firms, but are not usually higher than \$20 (“ETF Versus Mutual Fund Fees.”). Unless the investor frequently makes small investments into the ETF, brokerage commissions should not be a large expense. Some ETFs are even commission-free and do not charge brokerage fees (“Mutual Funds and ETFS, A Guide for Investors,” 28). Similarly to mutual fund sales loads, brokerage fees reduce the amount of money invested. Unlike mutual funds, ETFs do not charge 12b-1 fees. Overall, fees are also reduced because investors purchase shares solely through brokers. Hence, the average expense ratios for ETFs are lower than mutual funds. In 2016, Morningstar reported that the average ETF expense ratio was only 0.23%. For comparison, the average expense ratio was 0.73% for index mutual funds and 1.45% for actively managed mutual funds (“ETF Versus Mutual Fund Fees.”).

There are also two potential hidden costs when investing in an ETF: the bid-ask spread and the price deviation from net asset value. Like other securities, ETFs have a bid price and an ask price on the market. The bid price is the lowest price an investor would sell a share of the ETF and the ask price is the price at which an investor would buy the share of the ETF (“Mutual Funds and ETFS, A Guide for Investors,” 28). The spread is the difference between the two prices, with the ask price being higher than the bid price. If an investor invests in shares of an ETF for the ask price and sells them immediately at the lower bid price, the investor will incur a loss. In this case, the spread is a hidden cost that reduces returns (“Mutual Funds and ETFS, A Guide for Investors,” 29). For reasons including market uncertainty (risk), the price of an ETF can deviate from net asset value (Bodie, 98) and will trade at a discount or premium. If the ETF trades at a premium, the investor will invest in the shares of the ETF at a market price that is

higher than the net asset value. If the ETF trades at a discount, the investor will invest in the shares at a market price that is lower than the net asset value (“Mutual Funds and ETFS, A Guide for Investors,” 29).

Mutual Fund and Exchange-Traded Fund Returns. Although mutual funds and ETFs have differing cost structures, fees, and taxes, the two investment fund platforms provide returns to investors through similar mechanisms. The three main components of a mutual fund investment return are dividends, capital gains distributions, and increases in net asset value per share, or market price (“Mutual Funds and ETFS, A Guide for Investors”). The components of an ETF investment return are dividends and increases in net asset value per share, or market price. Mutual funds and ETFs may earn income through dividends, depending on the fund’s underlying securities, which are then passed through to the investor. Capital gains refers to the profits or losses a mutual fund receives after selling an underlying security that has increased in price. Most mutual funds will distribute capital gains to shareholders at the end of the year. Mutual funds give investors the option to receive income in the form of a cash payment or they can reinvest in more shares of the mutual fund (“Mutual Funds and ETFS, A Guide for Investors”). When the market value of a mutual fund or ETF increases, the net asset value of the fund increases dollar for dollar, proportionally. As a result, the market price of the fund’s shares will increase and the investor’s position increases in value.

Hedge Funds

As mentioned, hedge funds function similarly to mutual funds and ETFs with respect to investment pooling. The net asset value of shares of a hedge fund also represents the value of the investor’s position, as with the other two investment platforms. However, nearly every other facet of hedge funds differ from that of mutual funds and ETFs. Hedge funds are privately-

owned companies set up as limited partnerships or limited liability corporations (LLCs) (Amadeo). The goal of a hedge fund is generally spoken to outperform the market under any economic or financial condition. Some of the largest hedge fund companies today: Millennium Management, Citadel, and Surveyor Capital (Amadeo). There is significantly less transparency between the manager of a hedge fund and its investors due to regulatory structure. Hedge fund contracts provide comparatively little information about the strategy and composition of the portfolio (Bodie, 662) versus that of mutual funds and ETFs. There are no limits to what the manager can invest in (Amadeo). As a result, hedge fund managers have the freedom to invest in higher-risk financial vehicles in an effort to deliver significantly higher returns. The wide range of investments that hedge funds use in their strategies often include such things as derivatives, margin trading, short selling, alternative investments, which are relatively riskier because of market timing (Amadeo).

Due to the nature of hedge funds, they attract investors motivated by higher risk in the pursuit of higher returns. However, due to the risk of potential hedge fund fraud, hedge fund investors risk loss of investment despite performance. Due to less regulation of hedge funds, the chance of fraudulent activity within the fund is greater. Hedge fund scandals will be discussed later in this thesis. Since hedge funds many times are organized as LLCs, hedge fund investors could also lose all or a portion of their investment if the fund becomes insolvent, regardless of the individual investor's performance (Amadeo). Hedge funds typically have a lock-up period in which investments cannot be withdrawn from the fund (Bodie, 663). Lock-up periods can last for up to ten years, during which investments are far less liquid than those in mutual funds and ETFs. Not only do investors need to be willing to take on a relatively greater degree of risk, but there are additional requirements investors have to meet to qualify for investment into hedge

funds. The minimum required investment can be anywhere from \$250,000 to \$1 million (Bodie, 662) and to qualify as an accredited investor, annual income of \$200,000 and a net worth of \$1 million are required (Amadeo).

Cost Structure and Fees. The standard fee arrangement for hedge funds is “2/20.” 2% refers to the annual management fee and 20% refers to the performance fee charged for any gains exceeding the hurdle rate or high watermark (Picardo). Regardless of how the fund performs, 2% of assets under management are paid annually at the beginning of each year. To incentivize fund managers, a 20% performance fee is assessed for any profits exceeding the hurdle rate. The hurdle rate is a dollar benchmark that acts as a target for performance (Picardo). Some hedge funds may use a high watermark in place of a hurdle rate, which is what the fund’s net value must exceed in order for the manager to be paid the performance fee (Picardo).

Summary of Investment Fund Characteristics

To simplify the attribute comparisons between mutual funds, exchange-traded funds, and hedge funds, *Table 1* displays the advantages and disadvantages for investors with respect to the three investment fund platforms.

Table 1: Mutual Fund, ETF, & Hedge Fund Characteristics

	Mutual Funds	ETFs	Hedge Funds
Advantages	<ul style="list-style-type: none"> • High degree of transparency • High liquidity • Lower fees relative to hedge funds • Low barriers to entry 	<ul style="list-style-type: none"> • High degree of transparency • High liquidity • Lowest fees • Tax efficient • Low barriers to entry 	<ul style="list-style-type: none"> • Wide range of investments • Potential to outperform market
Disadvantages	<ul style="list-style-type: none"> • Investment options regulation • Potential underperformance – economic downturns • Potentially higher capital gains taxes 	<ul style="list-style-type: none"> • Regulation restricts managers' investment options • Potential underperformance – economic downturns • Price can depart from NAV 	<ul style="list-style-type: none"> • Lack of transparency • Liquidity issues • Lack of regulation increasing risks • Relatively high fees • High barriers to entry

Downward Pressure on Fees

The traditional cost structure of mutual funds, exchange-traded funds, and hedge funds have been explained. However, there has been a significant shift in the industry that has put downward pressure on investment fund fee structures making them more competitive through lower sales charges and expense ratios. According to “Trends in the Expenses and Fees of Funds, 2018,” a report published by the Investment Company Institute (ICI), the competitive reasons for the reduction in fees are a shift in investor interest toward lower-cost fund platforms, an increase in competition within the industry, and increasing scale economies (Croce). In 2018, average equity mutual fund expense ratios were 0.55%, versus 0.99% in 1997, and average hybrid mutual fund expense ratios were 0.66% in 2018 versus 0.92% in 1997 (Croce). For

example, Fidelity (leading mutual fund firm) cut fee structures to zero for four of their index mutual funds (Sommer). In early 2019, Vanguard instituted an expense ratio of a comparatively small 0.05% for their small-cap exchange-traded funds (Sommer).

According to Morningstar, the reason why investment funds are able to significantly reduce fee structures to zero, or approximating zero, is because most mutual funds and ETFs can lend securities and charge an interest rate for such services to hedge fund managers and short-sellers (Sommer). For instance, Fidelity spokeswoman Nicole Goodnow reported that the Fidelity Small-Cap Index Fund with an expense ratio of 0.025% generated a revenue rate of over 0.20% solely from securities-lending in 2018 (Sommer). This lending ultimately allows fund managers to reduce overall investor costs in funds and increase the assets invested for each investment.

The asset management industry has undergone a significant shift from active to passive investing creating a completely new paradigm pressuring hedge funds to cut their relatively high fee structure. Investors have shifted trillions of dollars from active investment strategies in favor of passive indexing strategies over the course of the past 15 years (McCabe). In the United States, assets in passive mutual funds and ETFs have increased from \$220 billion to approximately \$7 trillion over the past 20 years (McCabe). This trend also appears to be occurring in other investment fund platforms, which pose a competitive threat to actively managed hedge funds. In 2019, it was reported that 22% of investors avoided hedge funds because of their high fee structures (Amadeo). Larger investors, such as pension funds and institutional investors, have recently been paying a lower and more competitive hedge fund fee structure. For example, management fees of 1.4% and performance fees of 17% versus the standard 2/20 fee structure (Amadeo). According to the article, “Re-defining Hedge Fund Fees”

by IPE International Publishers Limited, hedge funds are not immune to this downward pressure and the average management fee has already dropped to 1.35% as of February 2017 (Natarajan). Therefore, it is reasonable to expect a decline in fee structures across all investment fund types.

Hedge Fund Scrutiny

Although hedge funds attempt to outperform the market and provide comparatively higher returns to investors, they have been under scrutiny with regard to whether the overall cost of investing is comparatively worthwhile for the average investor in hedge funds. It is important to note that there have been highly successful hedge funds in the past; an example of which is Renaissance Technologies founded by Jim Simons, which launched its Medallion fund in 1988. This fund went on to realize an average annual return of approximately 40% over the next 30 years, and an average rate of return approximating 71.8% between 1994 and 2014 (Picardo). Renaissance uses sophisticated quantitative models in its overall strategy which allowed Simons to become one of the highest-paid hedge fund managers over the corresponding time period (Picardo). However, this is an unusual example as many hedge funds recurrently fail to approach these returns. Since 2009, the Standard & Poor's 500 Index (S&P 500) increased by 137%. In the same time frame, hedge funds generally increased by a mere 50% on a comparative basis (Amadeo). Although hedge funds are designed to outperform other fund platforms under any market condition, there are hedge fund investors to this day that are still attempting to recover losses incurred during the Great Recession and Financial Crisis of 2008 (Amadeo). In his February 2017 shareholder letter, Warren Buffet "estimated that the search by the financial "elite"...for superior investment advice has caused [them] to waste more than \$100 billion in aggregate over the past decade" (Picardo).

In addition to criticism concerning hedge fund performance, the integrity of hedge funds has also been brought into question in light of high-profile financial scandals. As mentioned earlier, hedge funds are less regulated than other investment fund platforms. Hedge fund managers have a considerably greater degree of freedom, which fosters an environment allowing for possible unethical management behavior. Although most hedge funds do not partake in such behavior, there have been high-profile scandals that reflected poorly on the hedge fund industry. Arguably the worst scandal involved Bernie Madoff and his fund, Bernard L. Madoff Investment Securities, LLC. The well-respected Madoff managed his fund on the basis of promising relatively high and consistent returns that he ultimately was unable to deliver (Edwards). Operationally, he used current investor funding to pay existing investors promised rates of return (Ponzi Scheme). This process created an illusion that investors were receiving above market returns. Madoff revealed the truth in 2009 to his sons who worked at the firm and as a result has been prosecuted, found guilty of financial fraud, and subsequently sentenced to 150 years in prison! The estimated fraud approximated \$64 billion (Edwards). Although many parties brought concerns to the SEC over a period of years, it was dismissed with little investigation which calls into question the efficacy of regulatory oversight. Another scandal involved Steven Cohen of SAC Capital, in which eight former traders at the fund were charged with and convicted of insider trading and fraudulent financial activities (Edwards). A civil suit was filed against the fund in 2013 and SAC Capital agreed to pay a \$1.2 billion fine and disbarment from managing outside investment assets (Edwards).

Activist Hedge Funds

Another aspect of hedge funds is their ability to behave in an activist sense. Activist hedge funds will invest in between 1% and 5% of a publicly held company and will pressure

existing management for operational changes: the goal being to restructure and hence create a more profitable enterprise which ultimately will result in incremental investment returns. Current SEC rules allow activist investors to accumulate 5% of the outstanding shares of a publicly held firm before needing to provide public disclosure to the financial markets (Lipton). There are currently over one hundred activist oriented hedge funds in operation today, all of which collectively have more than \$100 billion in assets under management (Lipton). Some activist managers create the environment to force a takeover or sale of the target company while others apply pressure to and demand structural changes and board representation. Use of such a strategy entails criticizing current governance and management practices of the target company and providing recommendations for immediate change. Activist investors may also spread rumors and gossip about a company (true or not) and publicly call for a sale (Lipton). There are many other methods activists use, all of which are done aggressively and with a goal of seeking substantial immediate change.

Nearly 300 companies were targeted by activist investors in 2018, a record never before reached (Lipton). Perhaps the most aggressive activist hedge fund was Elliot Management. According to the *Wall Street Journal*, Elliot targeted 24 companies in 2018 alone (Lipton). One company, AT&T was criticized by Elliot for investing in entertainment and advertising rather than investing in its wireless network as compared to Verizon (Krouse). In September 2019, Elliot called on AT&T through a letter to AT&T's board to follow Verizon's lead and cut costs from its operations (Krouse). This is only one of numerous attacks that took place throughout the year. Although activist hedge funds can arguably serve as a force for positive change, many argue they "have failed to become a meaningful force for improving

operations. . .because they have no comparative advantage in generating ideas for meaningful change beyond a sale” (Idzelis).

Investment Trends

Assets under management in hedge funds have grown over the past two decades at a substantial rate. In 2014, there were over 8,000 operating hedge funds that collectively managed \$2.8 trillion in assets. This is triple the assets under management (AUM) as compared to 2004 (Amadeo). By the start of 2019, that figure increased to \$3.1 trillion AUM. This growth is even more impressive with a jump to a record \$3.25 trillion AUM by June of that year, according to data tracker hedge fund research reports (Uhlfelder). Due to this growth rate in AUM, one could surmise that hedge funds outperform the general overall market. However, the exact opposite is true: according to an article published by the *Wall Street Journal* in October 2019, “Hedge-Fund Performance Goes From Bad To Less Bad,” hedge funds continue to trail well behind the stock market in terms of overall performance as they have since 2009 (Uhlfelder). In the first half of 2019, hedge funds reported a comparatively small net return of 7.2% according to the industry tracker, BarclayHedge as opposed to the S&P 500 Index return of approximately 18.5%, over double that of hedge funds (Uhlfelder).

After experiencing relative underperformance for several years, the statistics merit the question: Do hedge funds provide enough value to their investors to justify their high costs? In comparison to both mutual funds and ETFs, hedge funds pose a greater level of risk for investors and they charge higher management and performance fees. This brings into question: Would investors experience incremental risk-adjusted returns investing in mutual funds and ETFs as opposed to that of hedge fund investing overall, not to mention the potentially higher

returns, more transparency, and a greater sense of trust associated with the investing practices of mutual funds and ETFs?

Methodology

In order to compare the returns of the three investment platforms, data was pulled from the Bloomberg terminal at Oakland University. However, information was limited with respect to specific hedge fund data due to the private nature of hedge funds structures. The following research data was retrieved: 3-year returns for samples of mutual funds and hedge funds; 5-year returns for samples of mutual funds and hedge funds; and year-to-date returns for samples of exchange-traded funds and hedge funds. The sample size concentrated on 1,000 mutual funds, 690 hedge funds, and 1,559 exchange-traded funds.

Data was collected and organized; any missing fund return data was replaced by a 0.1% return marker value for continuity reasons. The first step was to calculate an average, median, standard deviation, and variance for each sample. Next, a two sample Z-test for the data was conducted between 3-year average returns for mutual funds and hedge funds, and between 5-year average returns for the same mutual funds and hedge funds, both within the confines of the sample. A Z-test is a statistical hypothesis that confirms whether or not the means between two populations are different to a statistically significant degree. It can only be conducted when the variances within each data set are known and the sample size equals or exceeds 30 data points (Chen). A normal distribution is assumed in this analysis because minimum sample sizes used in the analysis exceed 30. The null hypothesis states that the mean returns (3-year and 5-year respectively) between mutual funds and hedge funds are materially the same and do not deviate to any significant degree between the data sets. The alternative hypothesis stipulates that

the mean returns between mutual funds and hedge funds are statistically different to a significant degree within the analysis. An alpha measure of 0.05 was utilized as a marker for statistical significance. If Z-values fall in between the critical values created by the analysis, we would accept the null hypothesis. If Z-values fall outside the range of critical values, we would reject the null hypothesis of equal mean returns to each category of data. This test was replicated to analyze the YTD returns for ETFs and hedge funds.

Results

First, analysis of comparative 3-year returns between mutual funds and hedge funds was conducted; the data being retrieved on July 23, 2019. With a sample of 1,000 mutual funds, the average 3-year return came to 9.06%. Outlying data points ultimately reduced the sample size to 964. This adjustment resulted in 3-year average and median returns of 12.02%, and 12.28%, respectively for the mutual fund data set. Within the confines of the hedge fund data, a sample size of 690 data points was utilized in the analysis. The average and median 3-year returns for hedge funds came to 4.43% and 3.58%, respectively. The variance for the mutual fund and hedge fund data sets was found to be 37.30 and 60.07, respectively. As previously described, the Z-test was conducted with a 0.05 significance level and thus, a rejection region of $Z \leq -Z_{2.5}$ and $Z \geq Z_{2.5}$ which corresponds to -1.96 and 1.96 standard deviations within the analysis. The test resulted in a Z-value of -13.11 which obviously is less than -1.96 to a statistically significant degree – therefore, we reject the null hypothesis within the analysis. Another statistical method utilized in the analysis was to examine the p-values of the data sets. An extreme p-value of close to zero stood in stark contrast with the 0.05 significance level. This corroboration of evidence confirmed the same conclusion that we should reject the null hypothesis of no difference in aggregate returns of the fund structures in question. Therefore, we can accept the alternative hypothesis and

conclude that the difference between the mean values for 3-year mutual fund and hedge fund returns is statistically significant. The histograms corresponding to mutual fund returns (Figure A) and hedge fund returns (Figure B) are available in the Appendix.

An identical test was conducted for 5-year return data between mutual funds and hedge funds. Of the same 1,000 mutual funds, the average 5-year return came to 6.63%, with a variance of 37.07. After the dataset was refined due to outlying data, the resulting mutual fund average and median returns were 7.99% and 8.55%, respectively. Outlying data points reduced the sample size of hedge funds to 492. The average and median 5-year returns for the resulting 492 hedge fund data points came to 4.14% and 3.14%, respectively with a variance of 43.74. Using the same level of significance and critical Z-value figure of -1.96, the resulting Z-value of -7.01 leads us to reject the null hypothesis of no difference in 5-year return results across our mutual fund and hedge fund data sets. The p-value of the analysis approaches zero, which is clearly less than our critical alpha value of 0.05. This supports our conclusion that we should reject the null hypothesis and confirms that the difference in mean 5-year return values between mutual funds and hedge funds is statistically significant.

The same test was conducted to analyze the year-to-date (YTD) returns for exchange-traded funds (ETFs) and hedge funds. YTD returns were the only data found on Bloomberg pertaining to ETFs and were gathered on August 13, 2019 with a sample size of 1,559. The YTD returns for hedge funds came from the same sample previously described, as of July 23, 2019. A sample size of 869 was used. We will generalize in this analysis that YTD refers to 8-month returns for 2019. The average and median YTD returns for ETFs came to 10.33% and 8.44%, respectively. The average and median YTD returns for hedge funds came to 4.99%, and 3.81%, respectively. A corresponding Z-test was conducted with a chosen alpha level of 0.05. The test

results show a Z-value of 11.11 which is significantly greater than the critical value of 1.96. The p-value closely approximates zero, which is clearly less than 0.05, lending support to our rejection of the null hypothesis of equal return means between ETFs and hedge funds respectively. As a result, all three tests determined that within the given time frames, mutual funds and exchange-traded fund returns outperformed hedge fund returns, *ceteris paribus*.

Social Security in the U.S.

In the United States, employees pay a percentage of their income in taxes into the Social Security Trust Fund (SSTF) for which an equal measure is contributed by employers. The United States Treasury manages this fund and pays benefits to those qualified to receive social security (Daugherty). There are several eligibility requirements, including the attainment of certain ages dependent on birth year and having earned 40 Social Security credits throughout a lifetime of work, which equates to roughly 10 working years of paying Social Security taxes into the SSTF (Fontinelle). This program consists of two independent trust funds: the Old-Age and Survivors Insurance Trust Fund (OASI) and the Disability Insurance Trust Fund (DI) (Daugherty). We are interested in various parameters surrounding the OASI which is the fund used to pay benefits to retired individuals and their families (Daugherty). When payroll taxes are collected, the funds are first used to pay current benefits to social security recipients. Any excess funding is then invested in U.S. government bonds. These bonds are not publicly traded and work as a form of indebtedness that will be refunded by future Federal Insurance Contribution Act (FICA) taxes (Daugherty). These debt obligations facilitate federal government borrowing from the Social Security Trust Fund for other budgetary purposes – generally accepted as political in nature.

The Social Security system in the United States was created when President Roosevelt signed the Social Security Act in 1935 in an effort to financially assist retired citizens over the age of 65 in poverty-ridden old age (“Social Security.” *Social Security History*). Since then, Social Security has been considered one of the foundational structures of economic security for millions of workers (“What Is Social Security?”). A predominance of individual years since Social Security has been in operation, tax receipts have typically exceeded benefits paid to current beneficiaries. However, in 2010, benefit payments exceeded tax receipts – indicating the beginning of a potentially significant problem (Ahmed). In 2018, total expenditures for current Social Security beneficiaries amounted to \$1 trillion while tax income receipts into the system came to \$1.003 trillion (Daugherty). With aging population demographics, fund outflows are expected to exceed fund inflows, resulting in the need to liquidate SSTF reserves in order to fund current benefits payable in the system. Without reform, the OASDI trust fund is currently expected to be depleted by 2035 (Daugherty), though there is a possibility it could happen earlier (2027-2028) based on known input variables that affect the system, such as a future economic recession of varying degrees.

Many reforms have been proposed to improve Social Security’s budgetary outlook for the future. Such measures include increasing tax revenues and raising the full retirement age to better reflect upward trends in life expectancy (Ahmed). The full retirement age has recently increased and financial projections have yet to improve. Originally, full retirement age was established for beneficiaries attaining the age of 65, but retirees were eligible to begin receiving benefits at the age of 62, although with an apportioned reduction in benefits. For those born in 1960 or later, full retirement age is now 67. Retirees can still begin receiving benefits as early as age 62, but current benefit reductions will be even greater (“Social Security.” *Benefits Planner*:

Retirement). Without further effective reform, it seems that the probability that workers currently in their 20s, 30s, and 40s, and into their 50s will be able to collect full Social Security benefits based on the current system is particularly unlikely.

Dependence on Social Security

It is generally accepted that there are three primary sources of retirement income in the United States: employer-provided retirement accounts or pensions, personal assets and savings, and Social Security benefits (Dushi). Of these, Social Security encumbers the greatest degree of expectation of anything closely approximating a guarantee of retirement income benefits. According to data from the Current Population Survey, about 84% of people over the age of 65 received benefits in 2014. Amongst the bottom 40% of these people, Social Security income accounted for 84% of their total income on average (Dushi). The situation has worsened since then. A multitude of studies confirm that an alarming portion of baby boomers have very little saved for retirement and are depending on Social Security income to cover their expenses post-retirement (“Squared Away Blog.”). This could partially be due to misconceptions about Social Security. In a USA Today article published in May 2019, it was stated that “44% of older Americans who are retired or plan to retire within 10 years see Social Security as their main source of retirement income” (Davidson) based on a survey conducted by the Nationwide Retirement Institute in February 2019. To make matters worse, 26% of these expected future Social Security recipients think they will be able to live “comfortably” from Social Security benefits (Davidson). Those who plan to retire within the next 10 years are expecting approximately \$1,805 per month, while current retirees are only collecting an average of \$1,408 per month (Davidson), which is projected to decrease. Overall, there is an alarming degree of current and future expected retirees that likely will be surprised by and disappointed with the

level of Social Security benefits realized from the system. This, in all reasonable likelihood, could result in financial distress for an unacceptable portion of society who built these expectations into their big picture retirement plans.

Conclusion

After a thorough analysis of the three investment fund platforms, the advantages and disadvantages of mutual funds, exchange-traded funds, and hedge funds are apparent. Although hedge funds have the potential to provide abnormal returns due to the freedom of hedge fund managers to operate with a significant degree of risk, the downside to such a strategy entails a high fee structure, outsized volatility, ethical concerns due to past scandals, and most importantly, our research provides evidence of significantly persisting underperformance covering many years. Looking at the average returns for the past three and five years, the sample of hedge funds used in this study underperformed mutual funds significantly. Throughout the first eight months of 2019, hedge funds also underperformed exchange-traded funds, on average. Mutual funds and exchange-traded funds both have declining scale fee structures dropping to near zero levels, low barriers, tax advantages, and they have outperformed risky alternative investments such as the hedge fund industry that we highlight. Therefore, a takeaway from this research is that individuals do not have to be millionaires to invest their money and have a well performing portfolio. The average American worker is capable of investing in a fund structure such as mutual funds and ETFs that have low fees and minimal investment requirements.

This leads to the second conclusion, which is that workers in the United States *need* to appropriately plan for, budget, and save/invest to maximize the probability of realizing retirement income goals and reducing dependence on government retirement income programs.

The high likelihood that the SSTF will exhaust its reserves will leave many current and future beneficiaries realizing lesser than expected retirement income with its associated problems and concerns going forward. It can be inferred that the Social Security safety net has given Americans the mindset and expectation of a lesser need to save for retirement in whatever sense that entails. The future value of an investment in a mutual fund or ETF can grow to a significant total sum over the course of an individual's working life, and small investments made over 20, 30, and 40 years can amount to a considerable financial asset that can be targeted for retirement purposes. From a cultural perspective, the United States has always addressed and solved significant issues and challenges, but typically after crises are experienced firsthand. Should a general cultural consensus develop in the United States regarding the potential problems so generalized in this thesis, it can be surmised that the long-term dependence on Social Security may decrease.

Works Cited

- Ahmed, Javed, et al. "Made Poorer by Choice: Worker Outcomes in Social Security vs. Private Retirement Accounts." *SSRN Electronic Journal*, 2012, doi:10.2139/ssrn.2154628.
- Amadeo, Kimberly. "Should You Invest in Hedge Funds?" *The Balance*, www.thebalance.com/what-are-hedge-funds-3306246.
- Bodie, Zvi J., et al. *Essentials of Investments*. 10th ed., McGraw-Hill Education, 2017.
- Chen, James. "Z-Test Definition." *Investopedia*, Investopedia, 29 Jan. 2020, www.investopedia.com/terms/z/z-test.asp.
- Croce, Brian. "Mutual Fund Expense Ratios Fall Significantly - ICI Report." *Pensions & Investments*, 21 Mar. 2019, www.pionline.com/article/20190321/ONLINE/190329976/mutual-fund-expense-ratios-fall-significantly-ici-report.
- Daugherty, Greg. "How Is the Social Security Trust Fund Invested?" *Investopedia*, Investopedia, 4 Mar. 2020, www.investopedia.com/ask/answers/110614/how-social-security-trust-fund-invested.asp.
- Davidson, Paul. "Older Americans Are Relying Too Much on Social Security as a Main Source of Income." *USA Today*, Gannett Satellite Information Network, 8 May 2019, www.usatoday.com/story/money/2019/05/08/social-security-many-rely-too-much-program-income/1134451001/.
- Dushi, Irena. "Social Security Administration." *Social Security Administration Research, Statistics, and Policy Analysis*, 1 May 2017, www.ssa.gov/policy/docs/ssb/v77n2/v77n2p1.html.
- Edwards, John. "The 3 Biggest Hedge Fund Scandals" [PDF file]. *Investopedia*.
- "ETF Versus Mutual Fund Fees." *Fidelity*, www.fidelity.com/learning-center/investment-products/etf/etfs-cost-comparison.
- Fontinelle, Amy. "8 Types of Americans Who Won't Get Social Security." *Investopedia*, Investopedia, 3 Mar. 2020, www.investopedia.com/retirement/8-types-americans-who-wont-get-social-security/.
- Idzelis, Christine. "Hedge Funds Are 'Impotent' as Activists." *Institutional Investor*, Institutional Investor, 29 Mar. 2019, www.institutionalinvestor.com/article/b1dqy0m9f453rz/Hedge-Funds-Are-Impotent-as-Activists.

- Krouse, Sarah. "Activist Wants AT&T to Be More Like Verizon." *The Wall Street Journal Online*, 10 Sept. 2019.
- Lipton, Martin, et al. *Dealing with Activist Hedge Funds and Other Activist Investors*, 25 Jan. 2019, corpgov.law.harvard.edu/2019/01/25/dealing-with-activist-hedge-funds-and-other-activist-investors-2/.
- Maverick, J.B. "Tax Efficiency Differences: ETFs vs. Mutual Funds." *Investopedia*, Investopedia, 29 Jan. 2020, www.investopedia.com/articles/investing/090215/comparing-etfs-vs-mutual-funds-tax-efficiency.asp.
- McCabe, Patrick, and Board of Governors of the Federal Reserve System. *The Shift from Active to Passive Investing: Potential Risks to Financial Stability?*, 29 Nov. 2018, corpgov.law.harvard.edu/2018/11/29/the-shift-from-active-to-passive-investing-potential-risks-to-financial-stability/.
- "Mutual Funds and ETFS, A Guide for Investors" [PDF file]. *SEC Office of Investor Education and Advocacy*. Retrieved from <https://www.sec.gov/investor/pubs/sec-guide-to-mutual-funds.pdf>
- Natarajan, Niki. "Re-defining Hedge Fund Fees" [PDF file]. *IPE*. Feb. 2017.
- Picardo, Elvis. "Two and Twenty Definition." *Investopedia*, Investopedia, 25 Feb. 2020, www.investopedia.com/terms/t/two_and_twenty.asp.
- "Squared Away Blog." *img_header_squaredawayblog*, squaredawayblog.bc.edu/squared-away/dependence-on-social-security-is-striking/.
- "Social Security." *Benefits Planner: Retirement | If You Were Born in 1960 | Social Security Administration*, www.ssa.gov/planners/retire/1960.html.
- "Social Security." *Social Security History*, www.ssa.gov/history/briefhistory3.html.
- Sommer, Jeff. "A Price War Has Driven Fund Fees to Zero. They May Be Set to Drop Further." *The New York Times*, The New York Times, 5 Apr. 2019, www.nytimes.com/2019/04/05/business/price-war-fund-fees-zero-negative.html.
- Uhlfelder, Eric. "Hedge-Fund Performance Goes From Bad To Less Bad." *The Wall Street Journal*, 7 Oct. 2019, p. R11.
- "What Are Mutual Funds?" *Fidelity*, www.fidelity.com/learning-center/investment-products/mutual-funds/what-are-mutual-funds.
- "What Is Social Security?" *National Academy of Social Insurance*, www.nasi.org/learn/socialsecurity/overview.

Appendix

Figure A: Mutual Fund Histogram

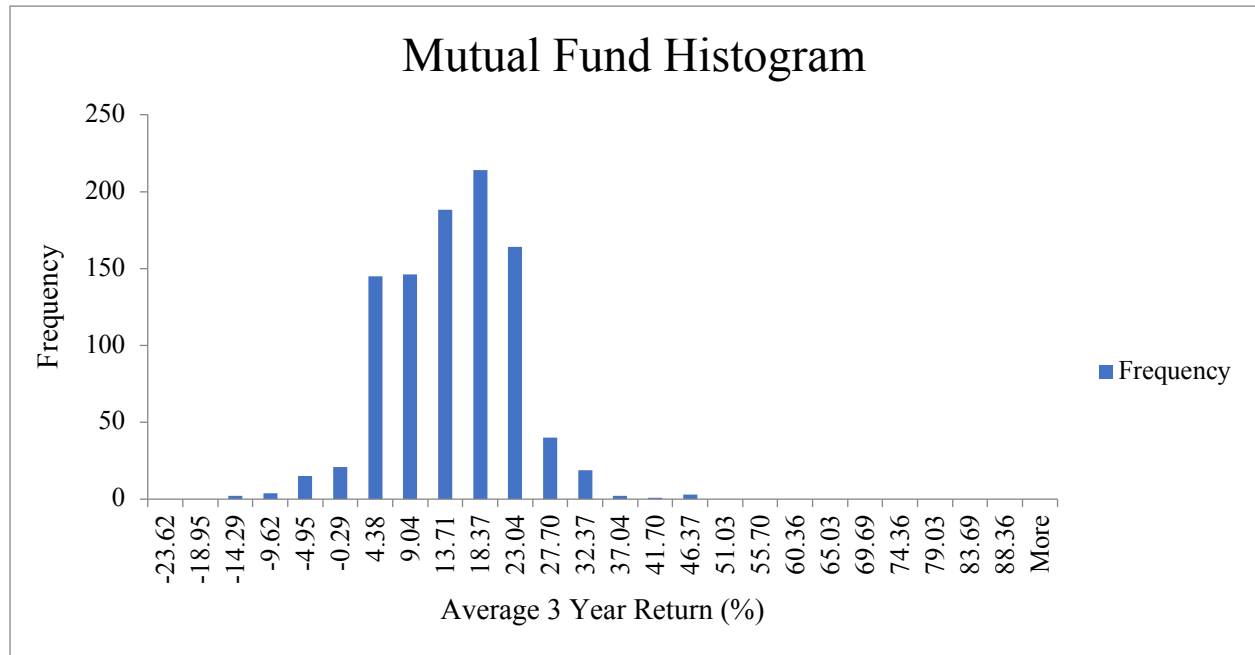


Figure B: Hedge Fund Histogram

