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Behavioral Funds vs. Traditional Funds: Does Behavioral Finance Actually Work in Fund Management?

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Introduction

One of the hottest trends in the investment community, behavioral finance, has captured the attention of both investors and academics alike. Whether it is a popular investing-oriented book, podcast, or television program from the past decade, principles from behavioral finance always seem to be among the most salient points mentioned. This surge in popularity begs the question: Does applying behavioral finance principles to investment management actually achieve superior returns for investors?

Human behavior and the degree to which it can be predicted and exploited has become a subject of increased scrutiny across a variety of fields, especially economics and finance. Offering a rationale for why traditional economic theory does not hold in practice, behavioral economics seeks to understand human psychology to better explain real-world economic behavior. Behavioral economic principles have more recently been applied to finance to equip those in the field with a tool to capitalize on possible market inefficiencies. Behavioral economists argue that humans display foreseeable patterns of non-rational behavior when it comes to investing, so well-equipped practitioners should, in theory, be able to capitalize on this to achieve greater excess returns in the stock market.

Behavioral mutual funds – funds whose managers incorporate principles from behavioral finance – have become increasingly ubiquitous over the past decade. Despite the prevalence of behavioral mutual funds, the question remains as to whether or not they outperform traditional mutual funds. This study analyzes the performance of 20 behavioral mutual funds with respect to a matched set of traditionally managed mutual funds in an effort to explore this question further.

Fund Management Overview

Research to suggest fund management cannot beat the market dates back over 50 years. Treynor & Mazuy (1966) developed a statistical test to measure fund managers' success in predicting major market turns. They found no evidence to support that mutual fund managers can outguess the market. Jensen (1968) derived a risk-adjusted measure of portfolio performance which measures how much a manager's forecasting ability contributes to the fund's returns that is still an integral metric in portfolio theory today.

More recently, Fama & French (1993) found a significant link between stock and bond performance and three distinct factors that appear to contribute to returns. These factors – the market effect, the small firm effect (size), and the book-to-market effect (value) – remain integral in fund managers' understanding of security performance and portfolio construction. Carhart (1997) revealed that the only meaningful, persisting trend in mutual fund management was

that there were funds that consistently underperformed the market. His findings do not support the existence of particularly skilled or superior fund managers. Berk & Green (2004) also assessed the skill level of mutual fund managers and argue that their performance does not justify the premium that they demand.

Hirschlifer (2001) argues that securities' returns are not only determined by risk, but also by misevaluation. This paradigm shift in security analysis was a critical part of the rise of human psychology and biases becoming prominent factors in finance. Schwert (2002) expands upon Hirschlifer's notion further. However, he finds that theoretical behavioral anomalies are difficult to identify in practice. This is because if anomalies were consistently present as described by financial economists, then, in theory, investors should be able to systematically and reliably exploit such anomalies and earn abnormal returns.

Overall to date, the data on the performance of behavioral mutual funds relative to traditional mutual funds has been mixed. Wright et al. (2006) find that behavioral funds are not as useful of a tool for earning excess returns as their managers tout. Rather, they assert that these funds serve better as marketing instruments than they do as investment vehicles. Philippas (2013) analyzes the performance of behavioral funds during the 2008 financial crisis and finds that these funds did not appear to exploit the market inefficiencies that were ubiquitous throughout that time. In contrast, Reinhart & Brennan (2007) find that recognizing behavioral inefficiencies can improve the performance of portfolios.

Mutual Fund Data

For our analysis, we used matched mutual funds – 20 behavioral mutual funds and 20 traditional mutual funds – that included a range of small cap, mid cap, and large cap[1] focused funds. As there are relatively few behavioral funds under management in comparison to the number of traditional funds offered to investors, 20 behavioral funds were first selected for analysis, with the composition of funds varying by focus. These funds were selected from Morningstar's database of behavioral funds. To be included in the sample, funds were required to be currently active and have at least 5 years of year-end returns data available. Return data from the first quarter of 2011 through the first quarter of 2016 is used.[2] A listing of all of the funds used can be found in the Appendix.

[1] Small cap mutual funds refer to fund whose individual holdings typically have market values of between $3 million and $2 billion. Mid cap mutual funds' holdings range from $2 billion to $10 billion in market value. Large cap funds hold stocks with market values greater than $10 billion.

[2] It should be noted that since the 2008 financial crisis, global central banks have fostered an environment wherein indexing has been

To match the behavioral funds into pairs with traditional funds, we selected a traditional fund that matched the capitalization focus of each behavioral fund. For each classification of fund, Morningstar's list of funds was used. A fund was randomly chosen from Morningstar's small cap, mid cap, and large cap lists.[3] All of the net asset value data was imported into Excel via Yahoo! Finance. Daily, weekly, and monthly returns were subsequently calculated from this data.

To validate the sample as a whole, a comparison of all funds' average monthly returns and standard deviations of those returns was made on a capitalization basis. As illustrated in Table 1, small cap funds returned the most, but also were the riskiest; mid cap funds returned less than small cap funds but also were less risky; large cap funds returned the least but also carried the least amount of risk. This check shows that the sample of funds is a reasonable estimate of the true population of funds given that this breakdown is consistent with expectations.

Table 1: Funds by Market Capitalization
(Data from 1/3/11 through 2/1/16)

	Small	Mid	Large
Avg. Monthly Return	0.86%	0.81%	0.77%
Avg. Std. Dev. of Monthly Returns	0.054	0.040	0.035
Number of Funds	12	8	20

Empirical Analysis & Results

We calculated average monthly returns for both the behavioral fund sample and the traditional fund sample. Comparisons were also made looking at the daily and weekly average returns. Figures 1-3 plot the average monthly, weekly, and daily returns for the behavioral and traditional funds in the sample. The returns of both groups closely mirrored each other over a 5-year period with traditional funds returning slightly more on a monthly basis, albeit with a higher standard deviation of returns.

disproportionately rewarded. During this time, there has been a general underperformance of long/short strategies, factor-based models, and emerging markets strategies.

[3] Behavioral and traditional funds were randomly matched using the RANDBETWEEN Excel function. (RANDBETWEEN is a function in Microsoft Excel that returns a random integer between two specified numbers.) The RANDBETWEEN function was used to generate a random number between 1 and 20 for each behavioral fund. The number was used to pair the behavioral fund with a traditional fund based on its respective rank on the corresponding Morningstar's top 20 mutual funds list for each capitalization focus.

Figure 1: Behavioral versus Traditional Monthly Returns
(Data from 1/3/11 through 2/1/16)

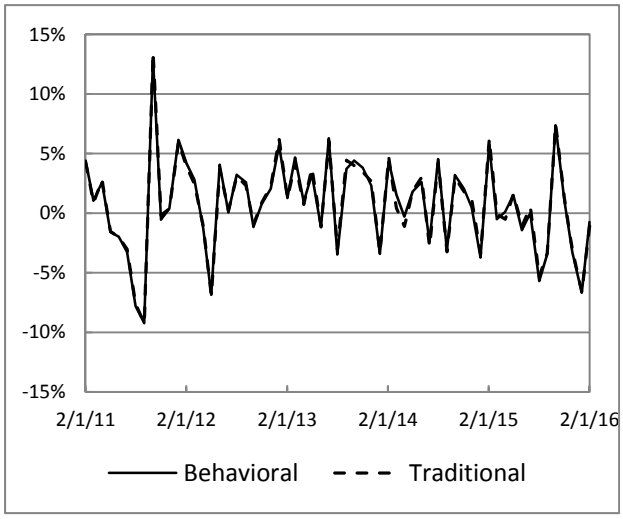


Figure 2: Behavioral versus Traditional Weekly Returns
(Data from 1/3/11 through 2/22/16)

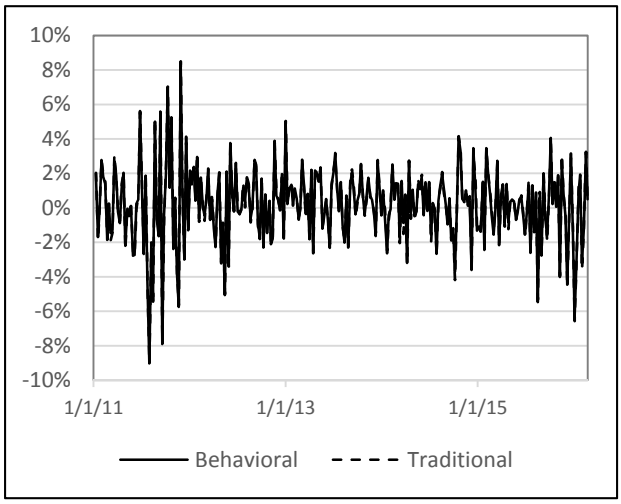
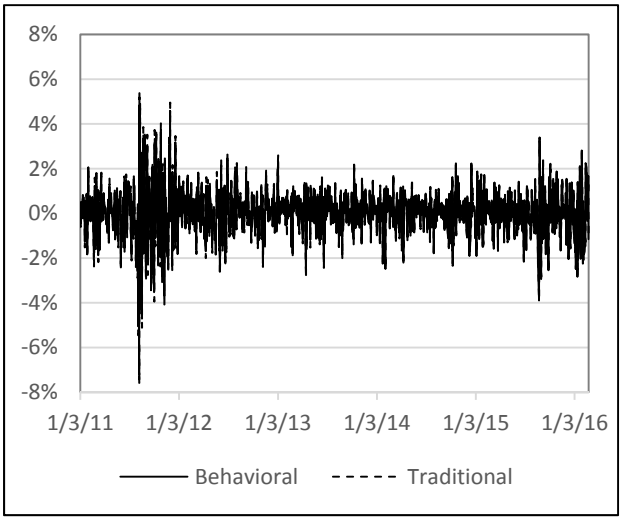


Figure 3: Behavioral versus Traditional Daily Returns
(Data from 1/3/11 through 2/23/16)



The average sample period returns for the two groups of funds (behavioral and traditional) are shown in Table 2. While the traditional funds earned greater average returns on a daily, weekly, and monthly basis, this excess return was accompanied by extra risk in each case. Any advantages that the traditional funds may appear to have on an average returns basis were offset by the groups' riskiness — as measured by standard deviation. Further, t-tests indicates that there is no statistically significant difference between the average returns of the two types of funds (See Table 3).

Table 2: Summary Statistics by Fund Type

(Data from Q12011 through Q12016)

Behavioral Funds	Return	Std. Dev.
Average Daily Return	0.04%	1.12%
Average Weekly Return	0.18%	2.28%
Average Monthly Return	0.77%	4.11%
Traditional Funds	**Return**	**Std. Dev.**
Average Daily Return	0.04%	1.13%
Average Weekly Return	0.19%	2.31%
Average Monthly Return	0.80%	4.12%

Table 3: Return Comparison T-Tests

Return	P-Value	Significantly Different
Monthly	0.4740	No
Weekly	0.4395	No
Daily	0.6508	No

Breaking down the pool of funds by their general classification as behavioral or traditional did not uncover meaningful differences in fund performance. Therefore, the set was further broken down into groups based on capitalization: small, mid, and large. Table 4 shows the funds' average monthly returns and standard deviations. As would be expected, small cap funds offered the highest returns with the greatest risk and vice-versa for large cap funds. Figures 4-6 display these returns over time.

Table 4: Average Monthly Returns by Fund Type and Capitalization

(Data from 1/3/11 through 2/1/16)

	Behavioral		Traditional	
	Return	Std. Dev.	Return	Std. Dev.
Small	0.69%	0.047	0.75%	0.045
Mid	0.71%	0.031	0.54%	0.024
Large	0.77%	0.037	0.87%	0.037

Figure 4: Capitalization versus Monthly Returns (Data from 1/3/11 through 2/1/16)

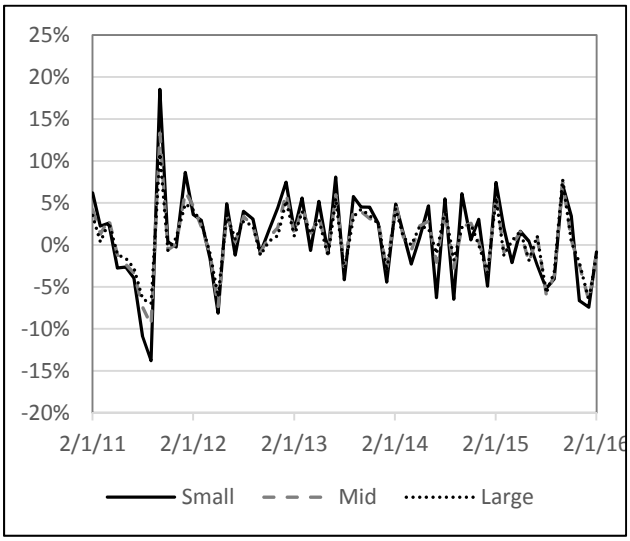


Figure 5: Capitalization versus Weekly Returns (Data from 1/3/11 through 2/22/16)

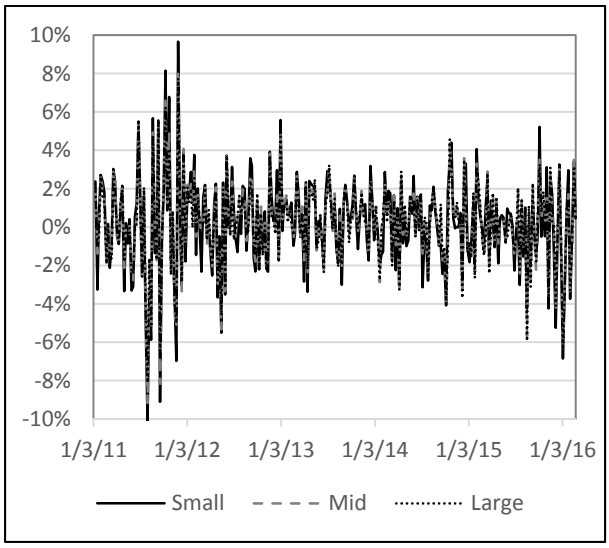
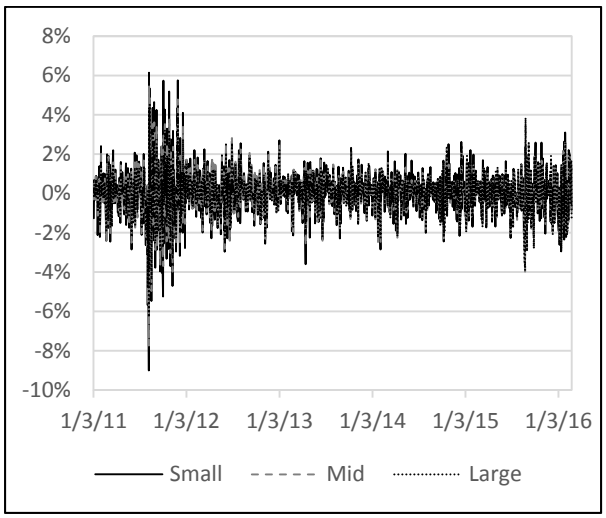


Figure 6: Capitalization versus Daily Returns (Data from 1/3/11 through 2/23/16)



As indicated by the table and figures above, segmenting the data set by the sizes of the fund's holdings appears to affirm the principle that excess return can only be had through taking on more risk. Statistically speaking, there was little difference in the size of the fund's holdings and the fund's average returns.

As breaking down the funds by single factors such as capitalization focus or behavioral versus traditional did not yield any significant results, we analyzed the data through the lens of a combination of factors. Figure 7 shows the average returns by fund type and capitalization. These returns data were then all t-tested against one another. Table 5 gives the resulting p-values from the series of tests. While none of the values are significant at the 10% significance level, there are a few results that are weakly significant. Most notably, the mid cap behavioral funds outperformed mid cap traditional funds, and the large cap traditional funds outperformed the mid cap behavioral and large cap behavioral funds. This shows that, while no one criterion was significant on its own, certain combinations of criteria revealed stronger statistical implications when assessing the average returns.

Figure 7: Average Monthly Returns by Fund Type and Capitalization (Data from 1/3/11 through 2/1/16)

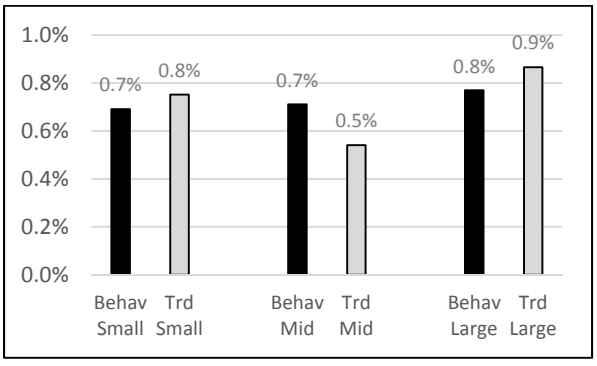


Table 5: T-Tests for Monthly Returns by Fund Type and Capitalization
(Data from 1/3/11 through 2/1/16)

	Small Traditional	Mid/Multi Traditional	Large Traditional
Small Behavioral	0.468	0.651	0.450
Mid/Multi Behavioral	0.866	0.107	0.121
Large Behavioral	0.942	0.207	0.117

Conclusion

The study found no statistically significant differences in the returns of behavioral mutual funds versus those of traditional mutual funds. There was also no significant difference in the returns of the funds when they were analyzed based on their capitalization focus, irrespective of whether or not they were behavioral funds. Further, when assessed based on both fund type and capitalization, there was no statistically significant difference in the fund performance across any combination of fund classifications.

Though behavioral finance has garnered significant attention in recent years, its implications for fund management have not proven to be superior to traditional fund management. Behavioral finance can help explain many of the anomalies we see in individual investor decision-making as well as possible market inefficiencies, but it appears as though money managers have not developed a means to implement such principles within disciplined fund management so as to reliably outperform traditional mutual funds. With that said, there does appear to be some statistical significance associated with combining behavioral and traditional funds with various capitalization focuses. As an investment vehicle, however, behavioral funds are yet another great way to help investors achieve diversification benefits even if they do not provide superior returns to those of their traditional counterparts.

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Appendix – Funds Used in Analysis

Fund Ticker	Fund Name	Type	Classification
BBTGX	Sterling Capital Behavioral Large Cap Value Equity	Behavioral	Large Cap
BPAIX	Boston Partners All Cap Value	Traditional	Large Cap
DFFVX	DFA U.S. Targeted Value	Traditional	Small Cap
DGAAX	JPMorgan Dynamic Growth Fund	Traditional	Large Cap
DRISX	Dreman Contrarian Small Cap Value	Behavioral	Small Cap
DTSVX	DFA U.S. Small Cap Value	Traditional	Small Cap
EGOAX	Wells Fargo Large Cap Core	Traditional	Large Cap
EQTIX	Shelton Capital Management Core Value	Traditional	Large Cap
FCVAX	Fidelity Small Cap Value	Traditional	Small Cap
HOVLX	Homestead Funds Value	Traditional	Large Cap
HSCSX	Homestead Small Company Stock	Traditional	Small Cap
JIISX	JPMorgan Intrepid Advantage	Behavioral	Mid Cap
JIVAX	JPMorgan Intrepid Value A	Behavioral	Large Cap
JIVZX	JPMorgan Intrepid Value R2	Behavioral	Large Cap
JPGSX	JPMorgan Intrepid Growth	Behavioral	Large Cap
JPIAX	JPMorgan Intrepid America	Behavioral	Large Cap
JPIVX	JPMorgan Intrepid Value Select	Behavioral	Large Cap
JPSAX	JPMorgan U.S. Dynamic Plus Fund	Behavioral	Large Cap
JTUAX	JPMorgan U.S. Small Company Fund	Behavioral	Small Cap
KDHAX	Deutsche CROCI® Equity Dividend	Behavioral	Large Cap
KDSAX	Deutsche Small Cap Value	Behavioral	Small Cap
LMVTX	ClearBridge Value Trust	Behavioral	Large Cap
LSVEX	LSV Value Equity	Behavioral	Mid Cap
LSVVX	LSV Conservative Value	Behavioral	Mid Cap
MALRX	BlackRock Large Cap Core	Traditional	Large Cap
NLCIX	Nuveen Large Cap Core	Behavioral	Large Cap
NOLCX	Northern Large Cap Core	Traditional	Large Cap
NQVAX	Nuveen NWQ Multi Cap Value	Traditional	Mid Cap
OLVAX	JPMorgan Large Cap Value	Traditional	Large Cap
PNOPX	Putnam Multi-Cap Growth	Traditional	Mid Cap
PPVIX	Principal SmallCap Value	Traditional	Small Cap
PSOAX	JPMorgan Small Cap Value	Traditional	Small Cap
SBMAX	ClearBridge Mid Cap Fund	Traditional	Mid Cap
SPSAX	Sterling Capital Behavioral Small Cap Value Equity	Behavioral	Small Cap
TILGX	TIAA-CREF Large-Cap Growth	Traditional	Large Cap
TRULX	T. Rowe Price U.S. Large-Cap Core	Traditional	Large Cap
UBVAX	Undiscovered Managers Behavioral Value A	Behavioral	Small Cap
UBVLX	Undiscovered Managers Behavioral Value I	Behavioral	Small Cap
VPCCX	Vanguard PRIMECAP Core	Traditional	Mid Cap
WOOPX	JPMorgan Intrepid Mid Cap	Behavioral	Mid Cap