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Girls Just Wanna Have Funds

Caley Prunier

University of New Hampshire, Durham, pruniercaley@gmail.com

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Girls Just Wanna Have Funds

Caley Prunier
Stephan Shipe, Faculty Advisor

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Table of Contents

<i>I. Introduction</i>	3
<i>II. Literature Review</i>	4
<i>III. Research Questions and Predictions</i>	9
<i>IV. Data Collection and Methodology</i>	9
<i>V. Results</i>	11
<i>VI. Implications for Future Research</i>	13
<i>VII. Conclusion</i>	14
<i>VIII. Tables and Graphs</i>	15
<i>IX. References</i>	19

Introduction

In the United States, only 10% of mutual fund managers are women (Sargis, M., & Lutton, L. P., 2016). Finance, as an industry, is notoriously a man's world, but the disparity in gender representation among mutual fund management is alarming. Why is this the case? Do women not achieve high enough returns? Are men simply better investors than women? In response to these questions, I researched whether male or female mutual fund managers realize higher returns on their funds.

As a young female about to enter the workforce with goals of becoming a fund manager, I was curious as to why there was unequal representation among the genders. This is interesting research, especially in this decade, as women have shifted from the house to the workforce. Many professions have seen an increase in female representation, with exception to the mutual fund industry; law and medical professions have higher female representation than the mutual fund industry (Newlands, 2015). This can be a discouraging realization. It is important to look at returns by gender for many reasons, but chiefly, highlighting differences in returns, or lack thereof, could encourage more women to become fund managers. If it is shown that women have rival or higher returns than their male associates, gender discrimination may become less of an intimidation factor to females.

The results of the study proved to be interesting. Statistically little difference existed between the funds with female managers on management teams and funds with purely male managers. However, when considering these are monetary returns, there is a significant economic impact. Even a small increase or decrease in basis points can make up large financial value. Moreover, the results show a substantial difference between male and female funds' expense and turnover ratios. Women spend much less managing their funds than men and

turnover their investments at much lower rates. Considering the results together, by having a female on the management team, investors get more bang for their buck. They see equal or higher performance on their investments while paying less than they would pay for funds with exclusively male management.

I hope to have proved that finance doesn't have to be a male-dominated field and the economy benefits from increased female representation in finance. I want to expose return differences by gender to encourage more women to become fund managers with the confidence they need to succeed.

Literature Review

Men are often characterized as overconfident, a theory not exclusive to the financial industry. This trait can severely affect financial performance, as highlighted by Barber and Odean (2001), who suggest men are more overconfident than women. Overconfident investors tend to trade more and in accordance with this notion, men trade 45% more than women (Barber, B. M., & Odean, T., 2001). Single men trade at even higher rates, 67% more than single women, and this excessive trading has a negative impact on returns (Barber, B. M., & Odean, T., 2001). Men's net returns are reduced by 2.65 percentage points a year, compared to 1.72 percentage points for women (Barber, B. M., & Odean, T., 2001). Active traders tend to have higher portfolio turnover. They manage a 250% portfolio turnover and have a return of 11.4% (Barber, B. M., & Odean, T., 2000). Individual investors have portfolio turnover of only 75% and returns of 16.4% (Barber, B. M., & Odean, T., 2000). Contrary to men, women tend to take a passive approach, so they realize results in line with individual investors. Men's overconfidence leads them to believe they can beat market returns and trade often to achieve this. Women hold positions longer and are less active. As a result, women's net returns decrease less than men's.

Based on this psychological and analytical research, it should hold that women's mutual fund performance should be superior to men's.

Popular theory suggests that women tend to be more risk-averse compared to men. While higher risk produces higher rewards, it also can result in an immense loss. Women are less likely to view investing as a gamble (Basch, L., & Zehner, J., 2009). Men, on the other hand, tend to make riskier choices, especially when under pressure. They try to assert their dominance over rivals and peers and often ignore less risky investments that would have the same financial outcomes (Basch, L., & Zehner, J., 2009). Dwyer, Gilkeson, and List (2002) present a study in which they found that women take less risk than men in their mutual fund investments. Barber and Odean (2001) state that on a risk-adjusted basis, female investors should outperform males. In keeping with this trend, women make more premeditated decisions before investing; they do more front-end work. According to a National Council for Research on Women report, "...women do 60 percent more work than men before making a decision" (Basch, L., & Zehner, J., 2009). Not only do they do more work, they also make decisions that are oriented to the future, spotting trends and market rises that males don't (Basch, L., & Zehner, J., 2009). Women process the information they collect more comprehensively than men do (Basch, L., & Zehner, J., 2009). Females are detail-oriented compared to men, who often simplify data or focus on information that supports their decisions, without acknowledging counterarguments (Basch, L., & Zehner, J., 2009). Because women tend to be more informed at the beginning of an investment life cycle, their outcomes tend to stay consistent, even as the situation becomes more complex (Basch, L., & Zehner, J., 2009). Since female investors are risk-averse and collect more holistic information, their mutual fund returns should be less volatile compared to men, and therefore should be higher over time.

Behavior traits obviously play a significant role in investment returns. However, disparities between male and female returns could also be explained by hormones. Men have higher testosterone levels, which makes them more competitive. Testosterone and oxytocin also contribute to the handling of stress. According to Irene van Staveren (2014), this could explain why male-dominated trading floors exhibit more market volatility. She goes on to say that, “female investors of hedge funds, wealth management and household portfolios earn higher returns on investment than their male counterparts” (Van Staveren, L., 2014). A study was conducted by researchers interested in the impact of testosterone on the stock market. The results of the experiment revealed that there are more price bubbles in markets where traders have higher levels of testosterone (Hays, B., 2017). Moreover, testosterone in traders leads to more aggressive investment strategies, which could produce more capital risk (Hays, B., 2017). Previous studies looking at similar variables and outcomes conclude that having more women on the trading floor could result in more rational markets (Hays, B., 2017). Amos Nadler, a researcher at the Ivey Business School at Western University, conducted a study he calls *The Bull of Wall Street*. In it, he suggests that “testosterone’s neurologic influence will cause traders to make suboptimal decisions unless systems prevent them from occurring” (Hays, B., 2017). Testosterone levels cause instability and impulsiveness. Women do not have the same levels of testosterone as males. The idea that hormones can influence market returns is fairly new, but it is obvious that the lower testosterone levels in women lead to more stability in returns, which over time, suggests that they will outpace men's returns. This can be translated into the mutual fund industry. Women should have higher returns on their mutual funds than men after taking into consideration how testosterone and oxytocin affect stressful decisions and market returns.

Finance is a male-dominated industry, so one could wonder why a woman would enter it in the first place. The only rational reason a female would enter this field is because they believe they can compete with the male population. This is the notion of self-selection. A typical career path for a mutual fund manager begins as an analyst. In a paper looking at gender roles in analyst positions, Kumar says that "only women with above average abilities would choose the analyst profession and, consequently, on average, female analysts are likely to be more skillful than male analysts" (Kumar, A., 2010). He also suggests that female forecasts are more accurate, even if the investor is less experienced (Kumar, A., 2010). Kumar continues, dictating how markets have a more promising attitude about the capabilities of female analysts and their returns (Kumar, A., 2010). This perception is echoed by Gregory, Jeanes, Tharyan, and Tonks (2013) who say that in the long term, the market acknowledges how female executives' trades are indicative of future corporate performance. They propose that "returns to female executive trades are in fact significantly greater than the returns to male executive trades" (Gregory, A., Jeanes, E., Tharyan, R., et al, 2013). Negative market reaction is a reflection of perceptions, not of any real differences in ability (Gregory, A., Jeanes, E., Tharyan, R., et al, 2013). Because of self-selection theory, female investment skills should be superior to males, which accordingly suggests that female mutual fund returns would be higher.

There are several other instances where a female presence leads to better business performance. Huang and Kisgen (2013) explore how male and female managed firms perform. Research shows that male executives take on more acquisitions and issue more debt. Furthermore, acquisitions made by firms with male executives have 2% lower returns than those managed by females (Huang, J., & Kisgen, D. J., 2013). There is also evidence that debt issuers have lower returns (Huang, J., & Kisgen, D. J., 2013). Female executives are more generous with

their earnings estimates bounds and are more likely to execute stock options early (Huang, J., & Kisgen, D. J., 2013). Men do not exercise these same bounds because they are more confident in their abilities, however, this can be detrimental to their returns, another example of how overconfidence can negatively affect returns. There have been studies that investigate company earnings based on the gender structure of their senior management. Krishnan and Parsons (2008) argue that "companies with more women in senior management are found to be more profitable and have higher stock returns after initial public offerings than those with fewer women in the management ranks." Additionally, earnings quality positively correlates with gender diversity when considering senior management (Krishnan, G. V., & Parsons, L. M., 2008). This can be attributed to many variables, but Krishnan and Parsons (2008) suggest women are more likely to exhibit ethical behaviors, even when they could profit from unethical behavior. Earnings quality is affected by ethical workplace behaviors and attitudes towards money and finance, so the ethical tendency of females should influence a higher earnings quality (Krishnan, G. V., & Parsons, L. M., 2008). Companies also have higher firm value when more women hold management positions. Performance of male versus female executives and company performance when senior management is gender diverse suggest that females are good for a company's bottom line, so a conclusion that female fund managers earn higher returns than males fits well with the previous literature.

There are numerous other authors who support this premise. Atkinson, Baird, and Frye (2003) say, "Anecdotal evidence may support the hypothesis that female fund managers outperform male fund managers." Niessen-Ruenzi and Ruenzi (2013) indicate that female investors have more predictable and steady investment styles and their funds show superior performance persistence. They continue to suggest that when male-managed funds of companies

employ one female manager, they experience high inflows (Niessen-Ruenzi, A., & Ruenzi, S., 2013). A *Morningstar* report claims, “performance of exclusively women-run funds rivals that of men-run funds, even though women tend to manage smaller, pricier funds in niche areas” (Lutton, L. P., & Davis, E., 2015).

Research Questions and Predictions

I investigated returns and characteristics of mutual funds managed by both males and females to see which gender tends to see higher returns. Men are overconfident, which leads them to trade more. Evidence shows that trading excessively leads to lower returns. Women take a less active approach, holding positions for longer and do more preliminary research than men. Men are notorious risk-takers, while women are more risk-averse. Taking these findings into account, women should outperform men.

Testosterone and oxytocin can influence stress management, which has shown to have an effect on trading floors and in the stock market. The theory of self-selection suggests that only women with superior abilities would enter such a male-dominated field. Female presence in senior management has a positive impact on business performance, as does female executives' firm management. Because of the differences in behavioral traits, self-selection, and female success in other financial positions, women should also have higher returns on their mutual fund performances than their male colleagues.

Data Collection and Methodology

Data for this analysis was collected from *Morningstar Direct*. I started with a dataset containing all the open-end mutual funds in the United States. To ensure there were not multiple share classes in the dataset, I added “Oldest Share Class” as a search criterion. I then had access to several data points for each fund. I selected relevant data points and made SecID the primary

identifier of each fund, further confirming there were no duplicates. This resulted in 7980 entries. The data was then exported to Microsoft Excel. I selected only equity funds, eliminating alternative and allocation funds. I continued by sorting the data by Global Category selecting only US Equity Large Cap Blend, Large Cap Growth, Large Cap Value, Mid Cap and Small Cap. This left 2256 observations.

To identify if the fund had a female manager, I manually went through the entries and coded them as a “1” if they had at least one female manager on their team and a “0” if there was no female manager present. The determination was made based on traditional male/female names and Google searches for those that were ambiguous or of foreign origin.

The variables of interest for analysis were 1-year, 2-year, 3-year and 5-year returns, 12-month yield, gross expense ratio, net expense ratio and turnover ratio. Returns are annualized and include both income and capital gains or losses. The yield is defined as the percentage income a portfolio returned over the past twelve months. The gross expense ratio is defined by Morningstar as the percentage of fund assets paid for interest expense, operating expenses and management fees. The following fees are typically included in this ratio: interest and dividends on borrowed securities, accounting, administrator, advisor, audit, board of directors, custodial, distribution, legal, organizational, professional, registration, shareholder reporting, sub-advisor, and transfer agency. It does not include the fund’s brokerage costs, any investor sales charges or any fee waivers in effect. The information for the ratio was pulled by Morningstar from the fund’s audited annual report. Morningstar defines the net expense ratio as the percentage of fund assets paid for operating expenses and management fees. The following fees are typically included in this ratio: accounting, administrator, advisor, auditor, board of directors, custodial, distribution, legal, organizational, professional, registration, shareholder reporting, sub-advisor,

and transfer agency. It does not include interest and dividends on borrowed securities but does account for fee waivers in effect. It also ignores the fund's brokerage costs or any investor sales charges. Morningstar gathered the net expense ratio from the fund's audited annual report and include the actual fees charged during the fiscal year. The turnover ratio measures the fund's trading activity. Morningstar does not calculate turnover ratio, rather it is collected from the financial highlights of the fund's annual report.

For the analysis, I then ran T-Tests in Excel on the grouped coded variables. The funds with a code of 1 were always inputted as Variable 1 and the funds with a code of 0, always as Variable 2. The confidence interval was 95%. The output table for each test was collated into one table that organized all of the results. The bar charts were derived from these collated tables and other summary data to provide a visualization of the results.

Results

Table 1 presents the results from the T-Tests on the 12-month yield, 1-year, 2-year, 3-year and 5-year returns. The return data is visualized in Graph 1 and the 12-month yield data is visualized in Graph 2. The difference in 12 Month Yield between male and female funds is 0.05767 with female funds exhibiting the higher returns. The P-Value for this T-Test is 0.1639 which is high but not outrageous. The difference in 1-Year Return between male and female funds is 0.0898 with female funds presenting the higher 1-Year Return. The P-Value for this T-Test is 0.81356 which is higher than I would like to see. The difference in 2-Year Return between male and female funds is 0.12724 with female funds showing the higher 2-Year Return. The P-Value for this T-Test is 0.5689, also higher than expected. The difference in 3-Year Return between male and female funds is 0.0697 with female funds representing the higher 3-Year Return. The P-Value for this T-Test is 0.6233. The difference in 5-Year Return between

male and female funds is 0.0287 with female funds accounting for the higher 5-Year Return. The P-Value for this T-Test is 0.0287 which is within an acceptable range. The difference between the returns of funds with female managers on the management team and the returns of funds with only males on the management team is statistically very small. However, the economic impact is significant considering these returns are representing a monetary value. An increase or decrease of a basis point can denote a large amount of capital when considering how much money actually makes up these funds. The P-Value represents the chance that the correlation between the data is random. In this study, the P-Value is fairly high until the 5-year return where it becomes significant and it can be said with confidence that the returns of female funds are statistically higher than male managed funds.

The results of the expense ratio T-Tests are more definitive. These results are exhibited in Table 2 and visualized in Graph 3. The net expense ratio as defined by Morningstar is the percentage of fund assets paid for operating expenses and management fees. The net expense ratio has a P-value of essentially 0, suggesting high confidence that there is no coincidence in the results. The difference between net expense ratio of funds with just males and those with female managers on the team is about 0.13. Again, statistically the difference is small but economically it saves the fund a lot of money. The gross expense ratio is defined by Morningstar as the percentage of fund assets paid for interest expense, operating expenses and management fees. The P-value for gross expense ratio is larger than that of net expense ratio, but the result is similar at 0.09. The turnover ratio presents the most substantial difference between the two results. The difference between funds with just male management and funds with female management is 5.38. The P-value is fairly low for this ratio, 0.11, so it can be said with confidence that this result is probably not accidental. It is known that high turnover leads to

lower returns. Considering the result of the turnover ratio T-Test and the notion that holding on to investments longer produces higher returns, it can be implied that the difference in turnover ratios between the male and female funds favors the funds with female representation. The results for turnover ratio are visualized in Graph 4.

Table 3 and 4 highlight summary statistics taken from the parent dataset. It provides an oversight of the data but did not warrant analysis using a T-Test. The data collected for this study showed that only 8.7% of fund managers were female, which is in line with the study Morningstar conducted. While there were only 8.7% female managers, these managers were on 25% of the funds. Several of the female managers were responsible for managing more than one fund. Table 4 shows the distribution of female managers based on Global Category. The percentage of women on funds in each Global Category is fairly consistent around 25-30%, but Small Value funds deviate from this norm with only 16% of funds having female representation.

Implications for Future Research

The results presented in this paper would be further supported by future research that considered risk. Risk is a forceful variable when considering investment reward. It would be noteworthy to account for the risk of funds with female management compared to those with just male management and how that affects the performance of the fund.

Another potential path would be to dissect the makeup of female performance within their Global Category. If there was a reason that female managers are only on 16% of Small Value funds, it might provide further insight into female investment strategies. Moreover, if there was an analysis on the fund's performance within its sectors, it could more precisely pinpoint where female managers are outperforming or underperforming their male counterparts. Further analysis should be conducted on the returns of the fund. Because the results show that turnover

ratio is lower for female managers and that holding on to investments longer produces higher returns, I would be curious to see if 10-year and 15-year returns produced more distinctive differences between funds with female representation and funds without such representation.

Conclusion

In conclusion, the difference between returns of funds with just male managers and funds with at least one female manager is statistically not very different. However, just a small change in basis points can represent a large monetary value which can definitely impact the performance of a fund. Moreover, the expenses funds incur are lower for funds with female management than for funds with solely male management. The difference in turnover is the most concrete result from the study. Funds with female management unquestionably turn over investments at a lower rate based on the results of this data. Because lower turnover usually leads to higher returns, this bodes well for the hypothesis that females representation on management teams leads to higher fund performance. Taking all of the results into consideration, having a female on a fund's management team gives investors a high performing investment at a lower cost. There is an advantage to that strategy, as over time the economic impact of female influence on fund performance will begin to show even more distinctively.

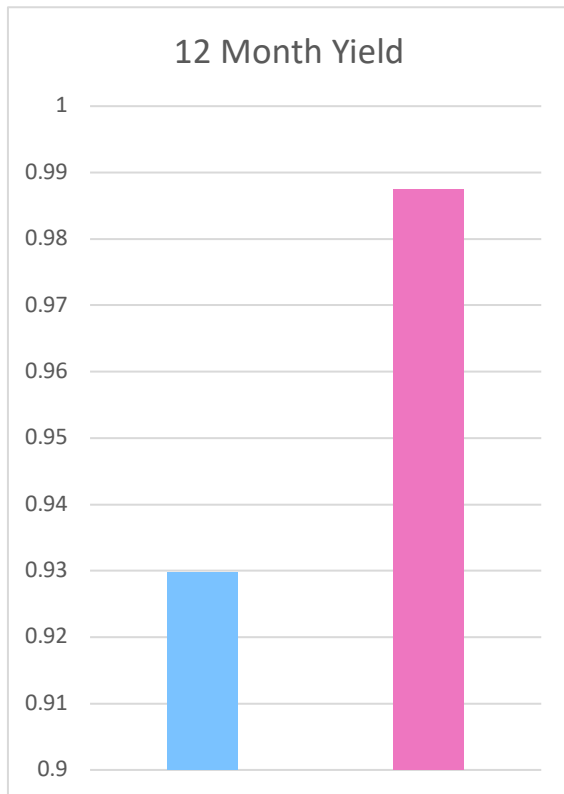
Tables and Graphs

Graph 1



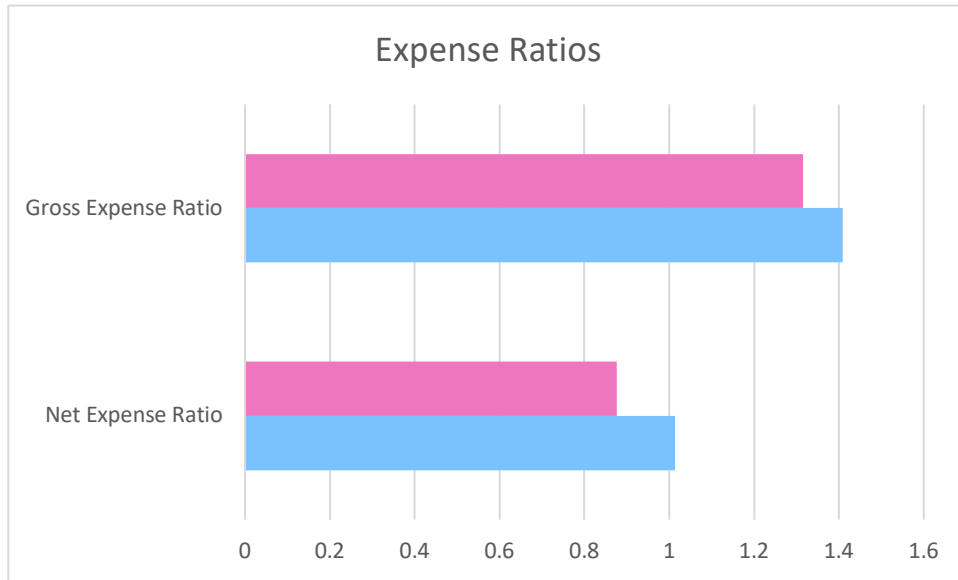
Graph 1 shows the returns over 1, 2, 3 and 5 years. The blue represents the return achieved by funds with only male managers on the management team. The pink shows the returns of funds with at least one female on the management team. The results are almost identical, with the female funds exhibiting a very slight advantage over the male-only funds. Returns in this dataset include both income and capital gains or losses.

Graph 2



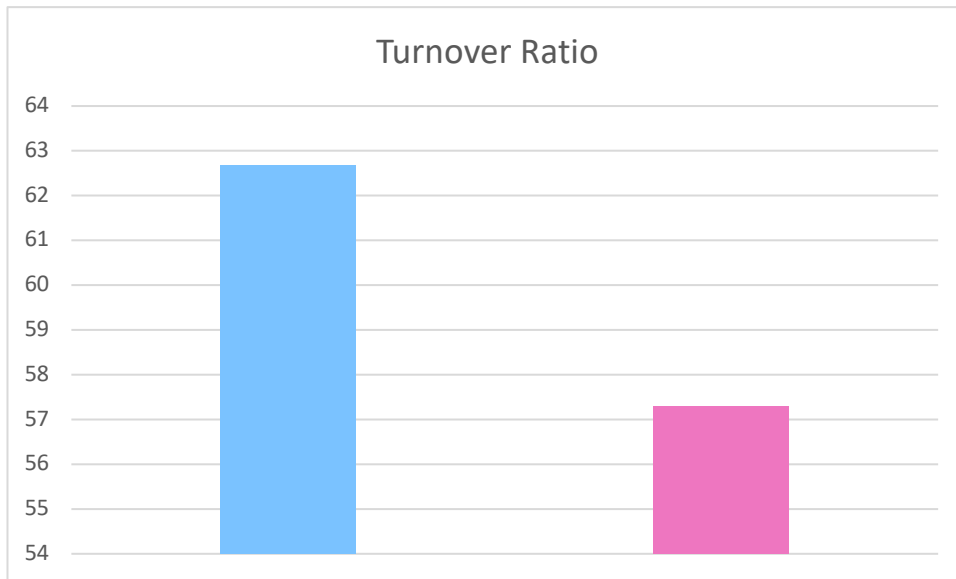
Graph 2 shows the difference in 12 Month Yield between funds with female managers (pink) and funds without female managers (blue). Female funds tend to outperform male funds by approximately 7 basis points.

Graph 3



Graph 3 shows the difference between male (blue) and female (pink) fund expense ratios. Female funds exhibit noticeably fewer expenses than male funds. Gross expense ratio, per Morningstar, accounts for the percent of fund assets paid for interest and operating expense, and management fees. This does not reflect any brokerage costs or investor sale charges. Net expense ratio as defined by Morningstar is the percentage of fund assets paid for operating expenses and management fees. It reflects the fee waivers in effect during the time period and does not include interest and dividend on borrowed securities.

Graph 4



Graph 4 shows the difference in Turnover Ratios between male (blue) and female (pink) funds. Funds with female managers turn over their investments at a much lower rate than funds with male managers. It has been proven that the more a fund is turned over, the lower the realized return.

Table 1

	Male	Sample Size	Female	Sample Size	Difference	P-Value
<i>12 Month Yield</i>	0.92970773	1120	0.98738592	402	0.057678188	0.163931105
<i>1 Year Return</i>	14.2198126	1627	14.30965479	534	0.089842225	0.813562519
<i>2 Year Return</i>	21.376957	1575	21.50419965	513	0.12724269	0.568929535
<i>3 Year Return</i>	8.7069906	1507	8.776718432	491	0.069727835	0.623321005
<i>5 Year Return</i>	12.7698	1395	13.06320221	457	0.028780578	0.028780578

Table 1 shows the returns of male and female funds as well as the sample size of each dataset, the difference, and the P-value. The difference in returns is statistically small, but economically can be impactful. When working with large amounts of money, small differences can be economically significant. The P-Values are not extremely confident until the 5-year return.

Table 2

	Male	Sample Size	Female	Sample Size	Difference	P-Value
<i>Net Expense Ratio</i>	1.01404529	1634	0.875756458	542	-0.13828883	6.35348E-10
<i>Gross Expense Ratio</i>	1.40834862	1635	1.315092251	542	-0.093256373	0.364281435
<i>Turnover Ratio</i>	62.672295	1634	57.29177449	541	-5.38052049	0.110682355

Table 2 shows the expense ratios and turnover ratios for funds with female managers and funds without, as well as the differences and the P-value. The difference was calculated using the female fund ratios as the first variable, so the difference is negative because the ratios for these metrics were smaller in the female funds. The P-value for Net Expense Ratio is incredibly small, suggesting there is no coincidence in those results. The number is larger for Gross Expense Ratio and Turnover ratio, but isn't outrageous. Gross expense ratio, per Morningstar, accounts for the percent of fund assets paid for interest and operating expense, and management fees. This does not reflect any brokerage costs or investor sale charges. Net expense ratio as defined by Morningstar is the percentage of fund assets paid for operating expenses and management fees. It reflects the fee waivers in effect during the time period and does not include interest and dividend on borrowed securities.

Table 3

Total # Managers	# Female Managers	% Female Managers	# Male Managers	% Male Managers
2666	232	8.70%	2434	91.30%
Total # Funds	# Funds with Female Managers	% of Funds with Female Managers		
2256	564	25.00%		

Table 3 presents summary statistics from the cleaned dataset. I conducted a COUNT function in Excel to count the number of total managers, number of female managers, and number of male managers. I then used simple percentages to figure out the statistics above.

Table 4

	Number Female	Total Number	Percentage
<i>Large Blend</i>	100	389	25.71%
<i>Large Growth</i>	115	467	24.63%
<i>Large Value</i>	80	333	24.02%
<i>Mid Blend</i>	43	140	30.71%
<i>Mid Growth</i>	45	186	24.19%
<i>Mid Value</i>	26	120	21.67%
<i>Small Blend</i>	63	230	27.39%
<i>Small Growth</i>	67	249	26.91%
<i>Small Value</i>	19	114	16.67%
<i>Blanks</i>	6	28	21.43%

Table 4 shows the breakdown of funds with female management by Global Category expressed as a percentage of the total number of funds in that category.

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