

# The Impact of Portfolio Manager Gender on Mutual Fund Performance

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## 1. Introduction

Personal characteristics of mutual fund managers have a direct impact on the performance of their funds. Mutual funds are a collection of stocks controlled by a fund manager. Individuals invest their money into these funds. The fund managers control the mutual funds and decide which stocks should be bought and which should be sold. The decision when to buy and sell leads to the success or failure of the fund. However, personal characteristics of fund managers play a role in the fund's performance as well. Age, tenure, education, and gender all directly impact the fund (Chevallier and Ellison, 1999).

Understanding the effects gender has on the mutual fund is critical when a consumer is choosing to invest in a fund. In 2008, 12% of managers of the 200 largest US mutual funds are women and the number continues to grow (Nica et al). Women have an important role in mutual funds and make decisions that greatly vary from those of men. The impact of gender of mutual fund managers influences the success or failure of the fund.

The nature of the stock market impacts people around the world. We need to understand how and where to invest our money. Understanding the influence of gender in the mutual fund industry is critical and a pertinent topic in today's world.

Overall, the impact of portfolio manager gender has an important role in the stock market and the business world and can greatly influence the decisions of investors.

## 2. Review of Literature

How do individual characteristics, such as gender, influence the performance of a mutual fund? Studies have shown that gender differences have a direct impact on the mutual fund industry. However, assuming that all other factors are constant (including experience, age, trade, risk, etc.) does gender still play a role? Women are known for being more risk averse than men, therefore leading to more success in the industry (Niessan and Ruenzi, 2007). Men make riskier decisions, which have a much greater impact on the fund's performance in both a positive and negative manner (Barber and Odean, 2001).

Studies show that fund performance is positively correlated with other factors as well. The level of experience and education of a manager increase the success of a fund. Mutual fund managers who attended undergraduate institutions with higher composite SAT scores are more successful than those who do not. Age, gender, education, and tenure of fund managers also impact performances (Chevallier and Ellison, 1999). However, older managers do not necessarily perform to the same level as younger managers. Results showed that younger managers are more capable of understanding the current market better than older managers (Switzer and Huang, 2007).

In addition to the characteristics of the fund managers, the quality of the portfolio is critical as well (Bliss and Potter, 2002). It has been concluded that mutual funds with extremely diverse portfolios perform better than those that are more limited. By diversifying the portfolio with stocks in various industries, as the market fluctuates, there will be stocks that will benefit along with those that suffer. It helps balance the gains and the losses. Studies also looked at what the

mutual fund fee tells about the fund performance. Although low fees lead to more overall success, when funds have higher management fees, it indicates a successful manager (Bliss and Potter, 2002). The size and content of the fund has been shown to have a significant impact on a mutual fund's performance. Fund size generally erodes performance (Chen et al, 2004). Specifically, fund size plays the biggest role for funds that play small cap stocks. When looking at the size of fund family, it was shown to have little influence (Chen et al, 2004)

In today's economy, understanding how to invest money is extremely important. In order to determine the benefits of a specific mutual fund, investors should consider these personal characteristics of the portfolio manager. A better understanding of this issue would naturally be useful for investors. At the same time, the issue of persistence of fund performance depends on the actions of the portfolio manager. Moreover, the nature of fund managers in this industry may have implications for the relationship between managers and investors and the optimal compensation contract between them. Therefore, understanding the impact of manager gender on fund returns is an important step towards addressing these issues (Chen et al., 2004).

The public view and prejudices of males and females in the workplace impacts the performance of the individual (Niessan and Ruenzi, 2007). The varied views may be due to age and family responsibility. Women are more devoted to the family than men and are considered to be stable. Women are also perceived differently in the mutual fund industry. The public views women as less risky –this is beneficial to the women in the end. Female fund managers are

more careful about the decisions they make regarding when to buy and sell stocks. When managers trade stocks they must pay a fee and, if the trade was not beneficial, the fund loses money. Females choose to trade only when confident of success, allowing them to increase their rate of return (Schubert et al. 2004). However, because of the negative view of women in the industry and despite their strong return rates, female managers do not have as many investors as those funds that are managed by men (Eckel, 2008). The major reason for the different investment styles between men and women is overconfidence (Barber and Odean, 2001)

Barber and Odean studied the confidence of men and the resulted excessive trading. This excessive trading hurts the performance of the mutual funds. Single men trade 67% more than women, resulting in reduced returns of almost 1.44 percentage points per year more than women (Barber and Odean, 2001). Finance continues to be a highly male dominated industry and men are continuously subject to overconfidence for this reason. At times, the confidence can lead managers to make trades that have a high chance of hurting their fund, causing them to have a low chance of net gains. Other studies suggest that differences in investment behavior that are often attributed to gender may be related to investment knowledge and wealth constraints. In fact, it is the decision the managers' make, which may be attributable to gender, that influences the final performance of their mutual fund (Atkinson et al, 2003).

### 3.1 Research Question

- 1) Does the gender of mutual fund managers impact the performance of a mutual fund?
- 2) If so, are female fund managers more successful than male fund managers?

### 3.2 Research Hypothesis

- 1) The gender of the portfolio manager has an impact on performance
- 2) Women have more successful mutual funds and have higher annual performance rates than men.

### 3.3 Null Hypothesis

- 1) Gender of the portfolio manager has no statistically significant impact on the performance of the mutual funds
- 2) No significantly greater success among female managers

## 4. Methods

This study was conducted using the Wharton Research Data Services, a database provided by the University of Pennsylvania. WRDS is the leading, comprehensive data research service used by academic, government, non-profit institutions, and corporate firms. This researcher's primary data came from the Center for Research in Security Prices (CRSP) Mutual Fund Database, found in WRDS. CRSP maintains the most comprehensive collection of security price, return, and volume data for the NYSE, AMEX and NASDAQ stock markets. The CRSP Fund Database includes style, fee structure, holdings, and asset

allocation. Also included are fund dividends, monthly/daily total returns and net asset values, in addition to monthly total net assets.

The mutual funds used in this study were collected from January 1992 – December 2007. By not collecting data past 2007, fluctuations due to the 2008 stock market crash are eliminated. For a fund to be included in this sample, it must report returns on an annual basis. In addition, all the funds must be managed by a single portfolio manager. This was imposed as the study is focused on the impact of gender, and multiple managers would not be consistent in the research. Dummy variables were given to represent the gender of the managers; ‘0’ represented female managers and ‘1’ represented male managers. 6141 observations were collected and included in this study.

There were two categorical variables in this project. The independent variable was the gender of the mutual fund managers, either male or female. The dependent variable was the mutual fund performance, as defined and measured using various factors. It is possible that gender may be correlated with other fund characteristics such as fund age or turnover, and it may be these characteristics that are driving the performance. Therefore, when this researcher regressed the various adjusted returns, regressions of many other observable fund characteristics were included. These variables included turnover, age, expense ratio, and past year inflows.

Table 1 reports summary statistics for this sample. The table reports statistics, including mean and standard deviation, for the variables of interest for each fund. This researcher utilized a distinct 6,141 funds in the analysis.

The database reported various other fund characteristics that were utilized in the analysis. The first is fund turnover (*Turnover*), the minimum of purchases and sales over average *TNA* in one year. The average fund turnover is 83.04% per year. The average fund age (*Age*) is about 8.02 years. The funds in this sample have expense ratio (*ExpRatio*) that average about 1.31 basis points per

Variable	Q1	Median	Q3	Mean	Standard Deviation	MAD
<i>Age (years)</i>	2.9167	5.2500	9.0833	8.0224	9.3318	3.9536
<i>Turnover (per year)</i>	0.3000	0.6200	1.0600	0.8304	1.1733	0.5337
<i>LogTNA</i>	2.4159	3.9647	5.3047	3.7716	2.2020	2.1216
<i>ExpRatio (per year)</i>	0.0111	0.0148	0.0201	0.0164	0.0131	0.00667
<i>Flow</i>	-0.0104	0.00475	0.0338	0.2933	10.7791	0.0289

year. The sample has an average flow (*Flow*) of 29.33% per year. Table 1 also shows the statistics for the annual fund returns. These returns were adjusted by the return of the market portfolio – simple market-adjusted returns. The average fund returns (*SumRet*) are 10.82% and the average forward returns (*FwdRet*) is 7.25%.

Table 1 - Summary Statistics

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(per year)						
<i>SumRet</i>	-0.0131	0.1125	0.2349	0.1082	0.2185	0.1838
<i>Female</i>	0	0	0	0.0943	0.2922	0
<i>FwdRet</i>	-0.0628	0.0964	0.2241	0.0725	0.2488	0.2039

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*Note:* This table reports summary statistics for funds in our sample. *TNA* is the total net assets in millions of dollars. *LogTNA* is the logarithm of *TNA*. *Turnover* is the fund turnover, defined as the minimum of aggregate purchases and sales of securities divided by the average *TNA* in one year. *Age* is the number of years since the formation of the fund. *ExpRatio* is the total annual management fees and expenses divided by the year-end *TNA*. All variables are reported annually. *SumRet* is the annual market-adjusted fund return of the past year. *FwdRet* is the predicted return of the coming year. This sample consists of funds from January 1992 to December 2007.

In addition to the CRSP Mutual Fund Database, Statistical Analysis Software (SAS) was utilized to analyze the effect of gender on the performance of these funds. SAS was used to calculate the information in Table 1 as well as run the regression to be used in the analysis of the data.

This researcher then ran a regression of annual return in the next year (*FwdRet*) on all the variables.

This regression equation is as follows:

$$\begin{aligned} \text{FwdRet} = & B1 * (\text{age}) + B2 * (\text{turnover}) + B3 * (\text{logtna}) + B4 * (\text{expratio}) + B5 * (\text{flow}) \\ & B6 * (\text{sumret}) + B7 * (\text{male}) + B8 * (\text{female}) \end{aligned}$$

This regression predicted the *FwdRet* using the listed variables. *MALE* and *FEMALE* are dummy variables – they take the values 0 and 1, respectively. This means that when the portfolio manager is male, holding everything else constant, the *FwdRet* is expected to increase from  $B7^*(0)$  to  $B7^*(1)$ . Therefore,  $B7$  measures the average annual return a male manager is expected to make.

Similarly, B8 measures the average annual return a female manager is expected to make, again, when all other variables are controlled.

Hypothesis 2 focused on the success of females in comparison to that of male managers. This is illustrated by the difference between B7 and B8. In order to calculate this, this researcher ran the following regression:

$$\text{FwdRet} = \text{CONSTANT} + B1 * (\text{age}) + B2 * (\text{turnover}) + B3 * (\logtna) + B4 * (\text{expratio}) \\ + B5 * (\text{flow}) + B6 * (\text{sumret}) + B9 * (\text{female})$$

Where CONSTANT is a constant - a variable that always has the value 1 - and B9 gives the incremental effect of the manager when female.

When *FEMALE* = 0 in this equation, it means the expected value of the *FwdRet* can be given by:

$$\text{FwdRet} = \text{CONSTANT} + B1 * (\text{age}) + B2 * (\text{turnover}) + B3 * (\logtna) + B4 * (\text{expratio}) \\ + B5 * (\text{flow}) + B6 * (\text{sumret})$$

Therefore,

$$B9 = B8 - B7$$

This shows the incremental impact of having a female fund manager. By choosing to run the regression instead of simply subtracting B7 from B8, a t-

statistic was calculated for B9. In order for the t-value to be significant, the absolute value of the t-value must be greater than 2. If it is less than two, it is simply concluded that, though there is a difference, it is possible that the difference is simply due to chance.

Then, in order to determine whether females do better than males in specific years, the two regressions were run on a year-by-year basis. If the coefficient B9 was significant in one year, it shows that women were more successful as fund managers.

## 5. Results

If mutual fund manager gender has an impact on company performance, then there should be a distinct difference between the performances of their funds. However, there are other factors that have an influence on performance and may be related to gender. For this reason, this study controlled for these variables and focused on the direct impact of gender on performance. Several regressions were performed with different variables. The variables included were age, turnover, expenditure ratio, flow, and annual returns. The results of the first regression are shown below:

Table 2 – Parameter Estimates

Variable	Label	Standard Error	T Value	Pr >  t
Intercept	Intercept	.00875	13.55	<.0001
Female		.01085	-1.37	0.1716

In Table I, *FEMALE* was the independent variable. A t-value > abs(2.0) is to be considered significant. The t-value of *FEMALE* was -1.37, making it

reasonable to conclude that the female mutual fund managers do not have higher annual performance rates than their male counterparts.

Following this, the same regressions were run on a year-by-year basis to determine if female managers are more successful in specific years. This is illustrated in Table 3. As illustrated below, out of the time span from 1992-2007, three of the years (1995, 1997, and 2000) have t-values that have an absolute value greater than two. 1995 had a t-value of -2.14, 1997 had a t-value of -2.09, and 2000 had a t-value of 3.14. These three values show that in these specific economic years, the performance of female mutual fund managers varied significantly than that of the male managers. However, all of the other years have t-values that are not statistically significant and therefore cannot be conclusive. Because these t-values are less than two, there is no significant difference between the performance of male and female fund managers. In comparison, the three years that had larger t-values show an influence of gender, but, based on this study, it is not possible to determine what was different in these years that caused the variation.

Table 3 – Yearly Parameter Estimates

<b>Year</b>	<b>Variable</b>	<b>Label</b>	<b>Standard Error</b>	<b>T Value</b>	<b>Pr &gt;  t </b>
31DEC1992	Intercept	Intercept	0.05236	1.12	0.2636
	Female		0.04244	1.28	0.2029
31DEC1993	Intercept	Intercept	0.01936	1.04	0.2989
	Female		0.01481	-0.22	0.8250
31DEC 1994	Intercept	Intercept	0.02668	16.21	<.0001
	Female		0.02218	-0.38	0.7026
31DEC1995	Intercept	Intercept	0.02298	7.12	<.0001

	Female		0.01555	-2.14	0.0330
31DEC1996	Intercept	Intercept	0.03137	6.68	<.0001
	Female		0.02689	0.07	0.94111
31DEC1997	Intercept	Intercept	0.03397	1.44	0.1505
	Female		0.2531	-2.09	0.0375
31DEC1998	Intercept	Intercept	0.05304	4.60	<.0001
	Female		0.05521	-0.33	0.7452
31DEC1999	Intercept	Intercept	0.02896	6.02	<.0001
	Female		0.03182	-1.11	0.2659
31DEC2000	Intercept	Intercept	0.02321	-1.56	0.1198
	Female		0.02538	3.14	0.0018
31DEC2001	Intercept	Intercept	0.01290	-11.56	<.0001
	Female		0.01526	0.75	0.4534
31DEC2002	Intercept	Intercept	0.01753	18.43	<.0001
	Female		0.02099	0.98	0.3278
31DEC2003	Intercept	Intercept	0.01109	11.39	<.0001
	Female		0.01525	-0.12	0.9014
31DEC2004	Intercept	Intercept	0.01331	4.64	<.0001
	Female		0.01719	-0.56	0.5751
31DEC2005	Intercept	Intercept	0.01556	12.25	<.0001
	Female		0.01935	-0.95	0.3405
31DEC2006	Intercept	Intercept	0.1738	3.06	0.0023
	Female		0.01676	0.95	0.03415
31DEC2007	Intercept	Intercept	0.01158	-29.55	<.0001
	Female		0.01266	-0.72	0.4706

## 6. Discussions/Conclusions

At the start the researcher posed two research questions, two research hypotheses, and two null hypotheses. From the results, the researcher cannot indefinitely say that portfolio manager gender has an impact on the mutual fund performance since the regression did not exemplify a significant relationship. In

addition, one cannot say that women perform better in the industry than their male counterparts. It is plausible that managers perform differently when other variables, such as age and turnover, of the fund are considered as well. As past research has shown, the level of risk taken by managers directly relates to manager gender and, therefore, has an impact on the annual returns of the fund (Barber and Odean, 2001). Future research could examine the relationship between gender and these variables. It may also include further study of the three specific years, 1995, 1997, and 2000. In these three years, women did have a significant difference in performance than men. Research could explore the economy and the mutual fund industry in these years and determine what may have led to this difference between the performances of male and female managers.

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## 8. Bibliography

- Atkinson, Stanley, Samantha Baird, and Melissa Frye. "Do Female Mutual Fund Managers Manage Differently?" *The Journal of Financial Research*. Vol. 26 2003. 1-18.
- Azmi, Rania. "Mutual Fund Performance: Does Gender Matter in an Emerging Market." *Journal of Finance*. 2008. 1-19
- Barber, Brad and Terrance Odean. "Boys will be Boys: Gender, Overconfidence, and Common Stock Investment." *The Quarterly Journal of Economics*. Feb 2001. 261-292
- Bliss, Richard and Mark Potter. "Mutual Fund Managers: Does Gender Matter?" *The Journal of Business and Economic Studies*. Vol. 8 Iss. 2002. 1. 1-17
- Chen, Joseph, Harrison Hong, Ming Huang, and Jeffre D. Kubik. "Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization." *The American Economic Review*. Vol. 94 No. 5, Dec 2004. 1276-1302
- Chevalier, Judith and Glenn Ellison. "Are Some Mutual Fund Managers Better Than Others? Cross Sectional Patterns in Behavior and Performance." *The Journal of Finance*. Vol. 3 June 1999. 285-297
- Eckel, Catherine, and Phillip Grossman. "Men, Women, and Risk Aversion: Experimental Evidence." *Handbook of Experimental Economics Results*. Volume 1, 2008. 1061-1073.
- Nica, Dumitru, and Mihaela Nica. "The importance of gender and market types in mutual fund industry." *Advances in Marketing, Management, and Finances*.
- Niessan, Alexandra and Stefan Ruenzi. "Sex Matters: Gender Differences in a Professional Setting." *Center for Financial Research*. Feb 2007. 1-62
- Olsen, Robert and Constance Cox. "The Influence of Gender on Perception and Response to Investor Risk. The Case of Professional Investors." *The Journal of Behavioral Finance*. Vol. 2 Iss. 1. Mar 2001. 29-36
- Schubert, R., Gysler, M., Brown, M., and Brachinger, H. "Gender Specific Attitudes Towards Risk and Ambiguity", *Center for Economic Research, Swiss Federal Institute of Technology*. 2004.
- Switzer, Lorne, Yanfen Huang "How does human capital affect the performance of small and mid-cap mutual funds?" *Journal of Intellectual Capital*, Vol. 8 Iss: 4, 2007 pp.666 – 681.