

Gender Dynamics in Behavioural Finance: Investigating Home Bias, Optimism Bias, and Overconfidence Bias among Indian Investors

Dr Neha¹, Dr Anil Kumar²

¹Assistant Professor, Department of Commerce,
Pandit Neki Ram Sharma Government College, Rohtak, Haryana, India

Email Id: neha.lucky05@gmail.com

Orcid Id: <https://orcid.org/0000-0003-3020-4955>

²Assistant Professor, Department of Economics,
RDSND Government Degree College, Captainganj, Basti, U.P., India
Affiliated to: Siddharth University, Kapilvastu, Siddharth Nagar, U.P.

Email Id: anilv013@gmail.com

Orcid Id: <https://orcid.org/0000-0003-2825-729x>

Abstract

Investors are susceptible to various kinds of biases while making investment decisions. This research paper proposes to investigate how gender influences behavioural biases- home bias, optimism bias, and overconfidence bias in Indian investors. The impact of gender on behavioural biases has been empirically investigated by employing t-test and frequency analyses. This study was carried out using a convenience sample of 461 individual (including male and female) investors from Delhi NCR of India. The study reveals that male investors have higher degree of optimism bias, lower degree of home bias, and greater overconfidence compared to female investors. Financial advisors and individual investors can utilize the findings of this study to identify and address behavioural biases in different types of investors, enhancing their decision-making processes.

Keywords: Gender Difference, Home Bias, Optimism Bias, Overconfidence Bias, Investment Decision, Behavioural Bias.

1. Introduction

While designing their portfolio or adjusting their portfolio or taking investment decisions, investors plan to earn decent in the competitive markets (Mohanty *et al.*2024) but they are susceptible to making decision errors while investing because of the sentiments (Tversky and Kahneman, 1974; French and Poterba, 1991). The inclination of sentiment oriented investors to make stock investment decisions driven by personal beliefs rather than rationality has been termed as behavioural finance. For example: instead of analysing the past price information and company fundamental analysis, one may make a buy/hold/sell decision on the basis of friends' or experts' recommendation/greed/fear or personal heuristics. These behavioural errors affect financial decisions and lead to a difference between an investor's actual earnings and his potential earnings (Bose and Shah, 2022; Kumar and Chaurasia, 2024; Shunmugasundaram and Sinha, 2024; Bihariet *al.*,2025). These decision-making errors derived from the emotional and cognitive behaviour of investors are termed as behavioural biases (Kumar and Prince, 2023).

There are various dimensions of research in the area of behavioural finance. Researchers have attempted to examine the presence or absence of certain biases in various market settings; the results of investors biasness are also discussed in literature. One key dimension is to examine the effect of social, psychological and demographic factors on behavioural biases of investors. Behavioural biases

vary from person to person based on their demographic characteristics as they are sentiment driven. (Lewellen *et al.* 1977; Baker *et al.*, 2018). Saivasan and Lokhande (2022) have examined how demographic factors affect different biases and observed that behavioural biases differ greatly depending on demographic traits of the investors.

In this context, this study aims to investigate the effects of demographic factor –gender on investors' behavioural biases, namely home bias, optimism bias, and overconfidence bias. Home bias is the inclination of investors to choose the stocks of home companies only, forgetting the concept of international diversification (Tesar and Werner, 1995). Investors prone to optimism bias view market very positive placing more emphasis on mean returns, disregarding the risks (Germain *et al.* 2005). Overconfident investors consider themselves to be better than others and overestimate their skills (Kumar and Prince, 2022).

This study aims to investigate whether the investors biases vary significantly on the basis of gender or not i.e. do the behavioural biases vary considerably between males and females or not. This will give an idea to investors, experts, practitioners, educators and policy makers about the behavioural patterns of males and females and take decisions accordingly.

The study is divided into various sections and sub-sections to systematically analyse the behavioural biases of investors based on their gender.

2. Literature Review

This section is sub divided into separate sub-sections to separately review the available literature to get a better understanding of selected biases namely-home bias, optimism bias and overconfidence bias.

Home Bias

Several fundamental works have been done on the study of home bias. Many researchers such as French and Poterba (1991), Uppal (1992), Cooper and Kaplanis (1994), Tesar and Werner (1995), Heaton (2002), Germain *et al.* (2005), and others have argued that investors should diversify their portfolios internationally to lower risk, but their portfolio mostly comprises home country securities due to home bias. This home bias tendency has been observed in developing and industrialized countries (Tesar and Werner, 1995). Investors are susceptible to home bias for many reasons, that include, transaction costs (Glassman and Riddick, 2001); institutional barriers (French and Poterba, 1991); tax compliances related to income earned from foreign investments (Uppal, 1992; Cooper *et al.*, 2017); availability of information (Coval and Moskowitz, 1999; Ke *et al.*, 2010etc); behavioural factors of individuals (Karlsson and Norden, 2007; Riff and Yagil, 2016); competence and skill level of investors (Graham *et al.*, 2009; Huang and Fu, 2014); and language and communication barriers (Konara, 2020).

Optimism Bias

Positive illusions makes one optimistic/ overoptimistic (Langer, 1975; Weinstein, 1980; Taylor and Brown, 1994). Positive illusion is about the propensity of individuals to be positively prejudiced. According to Germain *et al.* (2005), optimistic investors assume the expected value of their asset to be more and less volatile than the fundamental value. According to Heifetz and Siegel, (2005), Overoptimistic (pessimistic) investors overvalue (undervalue) mean returns and undervalue (overvalue) the variance of mean security returns same is further endorsed by Heifetz and Siegel, (2005); Germain *et al.*, (2005) and others. Many researchers such as Malmendier and Nagel,(2011) conclude that the past positive results make investors optimistic (Hoffman and Post,2015). Asset price bubbles are created in market due to excessive extrapolation of past positive returns.

Overconfidence Bias

According to Kumar and Prince (2022) overconfidence is made of two words “over” and “confidence”, which implies more than appropriate confidence is overconfidence. Oskamp, (1965) and Koriat *et al.*(1980) emphasize the one’s more than appropriate confidence in their accuracy level,

skills, fortune, knowledge and capabilities makes them overconfident. Daniel *et al.*, (1998); Gervais and Odean, (2001) argue that the investors have the tendency to turn overconfident due to his/her past decisions that turned right, availability of stock market information, and perceived ability to correctly analyze the information. Empirical studies conducted by Barber and Odean, (2000), Griffin *et al.*, (2007); assert that the overconfident investors have the tendency to trade more, stimulate market turnover but earn significantly less. Similarly Statman *et al.*, (2006) including Metwally and Darwish, (2015) and Zia *et al.* (2017) have also explored various aspects of overconfidence bias .

3. Research Objectives and Research Hypotheses

Demographic characteristics play a crucial part in deciding an investor's behavioural biases. The objective of this study is to empirically analyze how gender affects the home bias, optimism bias, and overconfidence bias on an investor.

The objectives of this research paper are to:

- 1) Empirically analyze the difference in the level of home bias on the basis of gender.
- 2) Investigate the difference in the level of optimism bias on the basis of gender.
- 3) Investigate the difference in the level of overconfidence bias on the basis of gender.

4. Research Hypotheses

Null hypotheses to compare the effect of Gender on investment biases are as follows:

- 1) **H₀₁**: There is no statistically significant difference in the level of home bias between male and female investors.
- 2) **H₀₂**: There is no significant difference in the level of optimism bias exhibited by male and female investors.
- 3) **H₀₃**: There is no significant difference in the extent of overconfidence bias between male and female investors.

These hypotheses provide a clear and testable framework to empirically investigate the influence of gender on various behavioural biases.

5. Research Methodology and Data Collection

This research work is primarily an empirical analysis based on primary data obtained from a sample survey of 470 investors randomly selected from the Delhi-NCR of India. For primary data collection, the investors involved in stock market investments have been surveyed through a scientifically constructed questionnaire to capture their behavioural bias. The questionnaire survey was conducted online as well as offline. A total of 470 responses were received from respondents, but 9 responses had to be rejected due to errors in filling the questionnaire. For analyzing and interpreting data various statistical tests such as the T-test have been applied to conduct a thorough empirical analysis. Software like SPSS, Microsoft Excel etc., have been used for empirical data analysis and visualization.

6. Empirical Analysis of the Effect of Gender on Behavioural Biases

6.1 Likert scale test to analyze gender differences on behavioural biases

To analyze the effect of gender on behavioural biases, a 5-point Likert scale test has been constructed. The survey questionnaire for the Likert test was developed so that a strongly agree (SA) response depicts the highest level of behavioural bias whereas, a strongly disagree (SD) response means the absence of behavioural bias.

Table 1: Explanation of Likert Scale Score

Sr. no.	Response	Score Denoted	Interpretation
1.	Strongly Agree	01	Highest Level of behavioural bias
2.	Agree	02	High Level of behavioural bias
3.	Neutral	03	Moderate Level of behavioural bias
4.	Disagree	04	Low Level of behavioural bias
5.	Strongly Disagree	05	Absence of behavioural bias

The higher mean score depicts lower behavioural bias. The mean scores for males and females were calculated separately to assess the gender-wise difference in behavioural bias.

- Mean Score < 3, High Degree of behavioural bias
- Mean Score > 3, Low Degree of behavioural bias
- Mean Score = 3, Moderate behavioural bias.

Table 2: Group Statistics: Average Biases of Investors (Gender-wise)

Behavioural Bias	Gender	Number	Mean	Standard Deviation	Standard Error
Home Bias	Male	348	2.155	1.761	0.094
	Female	113	1.549	1.316	0.124
Optimism	Male	348	1.489	1.271	0.068
	Female	113	2.027	1.693	0.159
Overconfidence	Male	348	3.195	1.929	0.103
	Female	113	4.310	1.458	0.137

Source: Computed by the researcher based of primary data

The mean score of home bias of both male and female investors is <3, depicting a very high level of home bias; however, mean of female investors (1.549) is less than male investors (2.155). Therefore, female investors depict a higher degree of home bias than males.

Similarly, the mean score of optimism bias of male and female investors is < 3, again, demonstrating a very high degree of optimism bias. The mean of optimism bias of male investors (1.489) is less than female investors (2.027), indicating a higher level of optimism bias among male investors.

The mean score of overconfidence bias of both male and female investors is > 3, signifying low extent of overconfidence bias among the investors. The mean score of overconfidence bias of male investors (3.195) is less than female investors (4.310), indicating a higher degree of overconfidence bias among male investors than the female investors.

Upcoming sections discuss whether the difference in the degree of behavioural biasness for male and female is significant or not.

6.2 Gender and Home Bias

Null Hypothesis (H₀₁): There is no statistically significant difference in the degree of home bias between male and female investors.

Alternate Hypothesis (H₁₁): There is a statistically significant difference in the degree of home bias between male and female investors.

Table 3: Effect of Gender on Home Bias (t-test statistics)

	Levene's Test		t-test						
	F	Sig.	t	d.f.	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	58.092	0	3.368	459	0.001	0.606	0.18	0.253	0.96
Equal variances not assumed			3.896	252.48	0	0.606	0.156	0.3	0.913

Source: Computed by the researcher based on primary data

To examine the degree of home bias between males and females, an independent sample t-test (see Table 2) has been performed at a 5% level of significance. According to Levene's test the assumption of equal variances is violated ($F = 58.092, p = 0$). Therefore, the alternative option (equal variances not assumed) has been checked. The t-test yielded $t = 3.896$ with a significant value ($p = 0$), a mean difference = 0.606, and a standard error difference = 0.156. Given that $p < .05$, we accept the alternative hypothesis (H_{11}) and the null hypothesis (H_{01}) is rejected. So, there is a statistically significant difference in the home bias level of male and female investors.

The group data based on the 5-scale Likert test (see Table 1) depicts that the mean score of home bias for male investors ($N = 348$) is 2.155 ($SD = 1.761, SE = 0.094$), while the mean score for female investors ($N = 113$) is 1.549 ($SD = 1.316, SE = 0.124$). Given that a lower mean score denotes a greater degree of behaviour bias, the findings imply that level of home bias for female investors is significantly higher than male investors. These findings reinforce the earlier studies of Barber and Odean, (2001); Bhandari and Deaves, (2006) implying significant gender differences in investment behaviour. The findings of this empirical analysis contradicts with the Feng and Seassholes (2008) who have found insignificant difference in level of home bias between male and female investors in China.

6.3 Optimism Bias and Gender

Null Hypothesis (H_{02}): There is no statistically significant difference in the level of optimism bias between male and female investors.

Alternate Hypothesis (H_{12}): There is a statistically significant difference in the level of optimism bias between male and female investors.

Table 4: Effect of Gender on Optimism Bias (t-test statistics)

	Levene's Test		t-test						
	F	Sig.	t	d.f.	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	39.561	0	-3.585	459	0	-0.538	0.15	-0.833	-0.243
Equal variances not assumed			-3.106	155.115	0.002	-0.538	0.173	-0.88	-0.196

Source: Computed by the researcher based on primary data

Male and female investors' levels of optimism bias have been tested by employing an independent samples t-test (Table 3). Levene's test, depicts that the assumption of equal variances has been violated ($F = 39.561, p = 0$). As a result, alternative values (Equal variances not assumed) obtained were: $t = -3.106$, and a significant value (p) = 0.002, with a mean difference = -0.538 and a standard error difference = 0.173. Given that $p < 0.05$, alternative hypothesis (H_{12}) is accepted. The difference in the level of optimism bias between male and female investors is statistically significant. The 5-scale Likert test group statistics (see Table 1) indicate that the mean optimism bias score for male investors ($N = 348$) is 1.489 ($SD = 1.271, SE = 0.068$), while the mean score for female investors ($N = 113$) is 2.027 ($SD = 1.693, SE = 0.159$). According to these findings, male investors show a significantly greater degree of optimism bias than female investors, as a lower mean score denotes a higher degree of behaviour bias.

6.4 Overconfidence Bias and Gender

H₀₃: There is no statistically significant difference in the degree of overconfidence bias between male investors and female investors.

H₁₃: There is a statistically significant difference in the degree of overconfidence bias between male investors and female investors.

Table 5: Effect of Gender on Overconfidence Bias (t-test statistics)

	Levene's Test		t-test						
	F	Sig.	t	d.f.	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	126.537	0	-5.639	459	0	-1.114	0.198	-1.503	-0.726
Equal variances not assumed			-6.487	249.396	0	-1.114	0.172	-1.453	-0.776

Source: Computed by the researcher based on primary data

Considering that the equal variances assumption of Levene's test has not been fulfilled ($F=126.537, p = 0$). Application of the alternative option (Equal variances not assumed) results $t = -6.487$ with a significant value (p) = 0, a mean difference = -1.114, and a standard error difference = 0.172 (see Table 4). Since $p < 0.05$, the alternative hypothesis (H_{13}) is accepted showing the difference in the level of overconfidence bias between male and female investors is statistically significant. According to group data statistics the mean score of overconfidence bias for male investors ($N = 348$) is 3.195 ($SD = 1.929, SE = 0.103$), whereas the mean score for female investors ($N = 113$) is 4.310 ($SD = 1.458, SE = 0.137$). As mean score for all investors is < 3 , there is a low level of overconfidence bias in male and female investors both, but male investors have a higher degree of overconfidence bias ($M=3.195$) compared to female investors ($M=4.310$).

The results of this analysis reinforce the findings of Paisarn *et al.* (2021), Kumar and Goyal (2016), Bhandari and Deaves (2006) and others. Whereas, our findings are contrary to Kansal and Singh's (2018), who have asserted that male and female investors have no significant difference in the level of overconfidence.

7. Key Empirical Findings

1) Both males' (2.155) and females' (1.549) average scores are < 3 , therefore both have high level of Home bias, but the level of home bias in female investors is significantly higher than male investors.

- 2) Both males' (1.489) and females' (2.027) average scores are < 3 , which means both have high levels of Optimism bias, but the degree of optimism bias in males is significantly greater than in females.
- 3) Both males' (3.195) and females' (4.310) average scores are > 3 , therefore both have low levels of Overconfidence bias, but the degree of Overconfidence bias in males is greater than in females.

8. Understanding Reasons for Significant Effect of Gender on Behavioural Biases

8.1 Potential Reasons for Higher Home Bias in Females

The empirical finding that female investors have a higher home bias than males, can be explained through a combination of several interrelated psychological, informational, and socio-cultural factors.

1) Higher Risk Aversion and Lower Overconfidence

According to several empirical studies such as Byrnes *et al.* (1999); Bhandari and Deaves, (2006) female investors have the tendency to be less overconfident and highly risk-averse compared to males. Their heightened risk aversion leads them to prefer investments in well-known, domestic markets where they believe that risk factors are lesser and the information regarding the domestic market is more trustworthy. Risk-averse investors are particularly concerned about uncertainty, which can be mitigated by the comfort that comes from familiarity with the domestic market. However, male investors tend to be more overconfident, which encourages them to look into riskier, unfamiliar, and even foreign investing options.

2) Familiarity and Information Reliance

A major contributing factor to home bias is familiarity bias. While making investment decisions, female investors tend to rely more on familiar local networks, readily available knowledge and information. Huberman, (2001) argue that investors frequently choose assets they are familiar with, to minimize uncertainty. Yuliawati *et al.* (2021) assert that female investor's preference for domestic assets is strengthened by their reliance on localized knowledge and familiar market conditions. Mohanty *et al.* (2024) also confirm the significant effect of familiarity bias on financial decisions. This tendency is further reinforced by their limited exposure to global markets, which may be the result of sociocultural limitations or lower levels of financial awareness about global instruments.

3) Socio-Cultural Influences and Investment Experience

Sociocultural factors also play major role in the gender difference in home bias of investors. Historically, women have had limited access to global financial resources and financial education in many emerging economies, including India. The disparity can make them less confident and less capable of negotiating international markets, which may make them lean more toward the security of domestic assets (Banerjee *et al.* 2018). As domestic assets are thought to be safer and easier to understand, having less exposure to international markets or limited access to international financial education may thereby strengthen the home bias (Tversky and Kahneman, 1974).

Therefore, the most likely explanation for the greater home bias shown among female investors seems to be the combined effects of risk aversion, dependence on known information, and sociocultural conditioning. Reducing home bias in investment behaviour and improving portfolio diversification among female investors may be achieved by policy interventions targeted at improving financial literacy in women and expanding their access to information regarding the global market.

8.2 Potential Reasons for Higher Optimism Bias in Males

Empirical findings suggest that male investors are more prone to optimism bias compared to female investors. The higher optimism bias in male investors can be primarily explained by several interconnected factors:

1) Greater Risk-Tolerance and Self-Confidence

Studies show that male investors typically exhibit greater levels of self-confidence in their capacity to make prudent choices (Barber and Odean, 2001). Optimism bias is a common manifestation of this

overconfidence, where men overestimate the possibility of positive results. A higher tendency to take risks may cause individuals to have unrealistic expectations for possible profits, even when those expectations may not be supported by the underlying facts (Byrnes *et al.* 1999).

2) Social and Cultural Influences

Men are frequently encouraged to approach financial issues with greater assertiveness and risk-taking due to societal standards and cultural expectations. Such social conditioning promotes an optimistic bias by reinforcing the notion that they have superior judgment capability and ability to effectively forecast market trends (Mishra and Matilda, 2015). On the other hand, women are more predisposed to adhere to a cautious approach because of social conditioning that promotes cautiousness and risk aversion tendencies (Barber and Odean, 2001). In contrast to women, males are socially conditioned to be more positive about the results of their investments, but it also restricts their ability to objectively assess the potential risks.

3) Cognitive Processing and Perception

Optimism bias may also be caused by gender-specific cognitive differences. It is frequently observed that male investors analyze information with a positive frame of mind that is presumably inclined towards favourable outcomes, which may adversely affect their expectations of market performance. According to Byrnes *et al.* (1999), this positive framing may increase optimism bias by causing people to overestimate possible rewards and underestimate potential threats.

According to several empirical studies, males have the cognitive intent to trade more frequently and put greater faith in their capabilities to timely enter the market or select profitable equities (Barber and Odean, 2001). This continuous positive reinforcement, even if it is partly the result of coincidence, may further reinforce overly optimistic expectations about future performance. Research of Gervais and Odean (2001) demonstrate that male investors mostly exaggerate their skills ultimately resulting in an optimistic bias in their portfolio decisions.

Therefore, the strong optimism bias among male investors is a complex phenomenon that stems from the socio-cultural environment and psychological personality traits. Targeted financial education that promotes well-informed risk assessment and an objective assessment of market uncertainties can help to address this bias. Long-term investment outcomes may be improved by interventions that promote thoughtful decision-making and the application of formal analytical frameworks which may assist reduce overly optimistic expectations.

8.3 Potential Reasons for Higher Overconfidence Bias in Males

Several studies including this, have extensively established that male investors display a much higher level of overconfidence bias than female investors. The psychological attitude for people to have excessive faith in their knowledge, and capacity to forecast future market trends is termed as overconfidence bias (Barber and Odean, 2001). The gender difference in overconfidence bias can be explained by several interconnected factors:

1) Greater Profit earning attitude and self-perception:

Several studies have shown that with the urge to earn more money, male investors have more willingness to take risk than female investors (Barber and Odean, 2001; Bhandari and Deaves, 2006). Due to their profit-earning attitude, risk tolerance and self-perception, male investors frequently overestimate their capacity to handle unpredictable market conditions. This attitude of male investors can lead to an exaggerated confidence in their own financial decisions.

2) Socialization and Gender Norms

Behavioural features are significantly shaped by cultural upbringing and societal expectations. Women are generally trained to be more cautious and deliberate, whereas men are frequently socialized to be forceful, decisive, and confident in their decisions (Malmendier and Nagel, 2011). Due to these gender stereotypes, men may be more likely to become overconfident as a result of developing a larger confidence in their investment ability.

3) Cognitive Biases and Feedback Loops

Their overconfidence is strengthened by this feedback loop, as prior accomplishments are regarded as evidence of their superior proficiency but failures are attributed to external reasons (Bhandari and Deaves, 2006). On the other hand, women usually adopt a more balanced approach to their performance analysis, which may prevent them from becoming overconfident.

Therefore, a combination of psychological, cultural, and cognitive variables contribute to the gender gap in overconfidence bias among investors. Social norms that value decisiveness and assertiveness, along with male investors' higher risk tolerance, foster an atmosphere that encourages overconfidence. Cognitive processes that promote favorable self-evaluation independent of performance, including self-attribution bias, exacerbate this tendency even more. Financial education programs should place a strong emphasis on critical self-reflection and risk assessment methods designed to overcome these gender-specific inclinations to lessen any potential negative consequences on portfolio performance.

9. Conclusion

This empirical research indicates significant gender disparity in the level of optimism bias, overconfidence bias, and home bias among investors, with men showing lower levels of home bias and greater levels of overconfidence and optimism than women. It is important to take into account the underlying sociocultural and cognitive factors that distinguish male and female investors when interpreting these findings. According to Barber and Odean, (2001); and Bhandari and Deaves, (2006) males tend to overestimate their own investment process and information accuracy because they are conditioned to be more forceful and risk-tolerant

This tendency probably makes them more optimistic and overconfident, which encourages them to invest in riskier, unfamiliar investments. This lessens their dependence on domestic assets and lessens home bias. Whereas, women are psychologically more cautious and risk averse, frequently depending on local, familiar information when making investing decisions. Due to their preference for the presumed secure nature of domestic investments, this behavioural pattern may result in a greater degree of home bias (Kumar and Goyal, 2016).

The disparities of social norms, cognitive processing, and risk perception illustrate the gender-specific processes influencing investing behaviour. Future studies might offer a more extensive understanding of gender-specific biases in investment decision-making by elucidating these dynamics and incorporating socioeconomic and psychological insights in this direction.

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