

An analysis of behavioural biases in investment decision making

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Abstract

The psychological biases cause participants in the financial market to feel uneasy and unfavourable, which causes them to act impulsively. Against this backdrop, this study attempted to investigate the connection between behavioural bias and financial decision-making for stock market investors. This study is sample-based and the sample of the study has been stock market investors from Rajasthan. Our results confirm that behavioural bias plays a significant role in explaining investment decisions. Specifically, we find a positive relationship between overconfidence bias, optimism bias, disposition bias and home bias on investment decision-making and a significant negative relationship between herding

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bias on investment decision making. These results imply that investor psychology plays an important role in investment decision-making.

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1. Introduction

The actual proponent of behavioural finance is that it is complementary to standard finance theory, and it holds that how people behave rather than how they should behave [1]. Human sentiments guide the investor in decision-making and these decisions are driven emotionally according to some judgements that might be irrational and inefficient, thereby bringing anomalies in the financial market. Some scholars have documented that behavioural finance is more effective and reasonable to describe this phenomenon because standard finance was unable to explain how the stock market behaved throughout the bubble and recession phenomena [2]. In prior literature scholars have incorporated psychology into finance and economics. By this amalgamation of the literature, studies have been able to explain how market participants' perceptions and responses to market volatility affect their choice of investments and thereby have an impact on securities prices. People are prone to biases because their heuristics are frequently ineffective. The varying perceptions create room for behavioural biases that affect investment decision-making. "The investors can select the portfolio based on their risk-taking propensity which can give near optimum solution". [3]. Against this backdrop, this research has been done to look into the effects of overconfidence bias, optimism bias, disposition bias, herding bias and home bias on investment decision-making among stock market investors in the state of Rajasthan.

2. Literature Review

"Investors are risk averse they take decisions rationally. But there are a few biases which disturb the rationality of the Investors." [4].

2.1 Overconfidence bias and investment decision making:

The confidence of investors in their knowledge and abilities in making investment decisions gives rise to overconfidence bias [5]. A study, [6] found that overconfidence bias results in lower portfolio performance since

it generates high trading volumes and thereby high trading costs. Studies like [7]; [8] found a significant relationship between overconfidence bias and investor decision-making.

2.2 Optimism bias on the investment decision making:

The overestimation of favourable outcomes over the unfavourable ones results in optimism bias that causes irrationality in investment decision-making [9]. More recently, [7] found a significant effect of optimism bias on investment decision-making.

2.3 Disposition bias on the investment decision making

Disposition bias is defined as the propensity of people to sell winning stocks extremely early and holds onto losing stocks for a very long time [10]. Many scholars have found evidence for the existence of disposition bias. It is regarded that the preference for a specific asset is responsible disposition effect [11].

2.4 Herding bias on the investment decision making

Herding bias exists when tend to follow the investment decisions of others [12]. Herding bias exists because investors conceal their information and imitate other people's opinions. More recently, documented evidence for the presence of herding bias in investment decision-making [13]. By these means it is asserted that herding bias has a significant impact on investment decision-making [14].

2.5 Home bias on the investment decision making

The "home bias" refers to an investor's propensity to underweight overseas assets in their portfolios. This term was coined by [15]. [16] stated that "investors overweight their home-country stocks so much that the forgone marginal benefit to increased international diversification looks far greater than any observable costs of holding foreign equities, such as withholding taxes". Previous studies document that investors prefer to invest in domestic stocks [17] thereby giving rise to home bias.

3. Research Methodology

3.1 Objectives of the study

1. To study the effect of overconfidence bias on investment decision-making.

2. To study the effect of optimism bias on investment decision-making.
3. To study the effect of disposition bias on investment decision-making.
4. To study the effect of herding bias on investment decision-making.
5. To study the effect of home bias on investment decision-making.

3.2 *Hypotheses of the study*

H_0^1 : There is no impact of overconfidence bias on investment decision-making.

H_1^1 : There is impact of overconfidence bias on investment decision-making.

H_0^2 : There is impact of optimism bias on investment decision-making.

H_1^2 : There is significant impact of optimism bias on investment decision-making.

H_0^3 : There is impact of disposition bias on investment decision-making.

H_1^3 : There is significant impact of disposition bias on investment decision-making.

H_0^4 : There is impact of herding bias on investment decision-making.

H_1^4 : There is significant impact of herding bias on investment decision-making.

H_0^5 : There is impact of home bias on investment decision-making.

H_1^5 : There is significant impact of home bias on investment decision-making.

3.3 *Sampling Design and sample:*

The population includes the investors from the state of Rajasthan. The sample of the study was decided based on several statements multiplied by 7 as suggested by [18]. A sample of 259 was decided for the study. A total of 187 workable questionnaires were received back among the 259 distributed questionnaire.

3.4 *Reliability:*

Overall Cronbach alpha value is .864 which is much higher than the recommended Cronbach alpha value of 0.60.

4. Analysis

4.1 *Demographic characteristics*

Most of the respondents (n=144) are males and their percentage in the sample is 77 %. The females account for only 23 % (n=43) of the sample. Further, we find that the proportion of responders who fall within each age group of 25-30, 30-40, and 40-50 are approximately the same while the percentage of respondents belonging to the age group less than 20 and above 50 are almost same. Majority of the respondents are post-graduate (33 %; n=60), followed by graduates which are around 29 %; n= 54.

We find that the quarterly income of the respondents belonging to three income groups (50000-100000, 100000-200000 and 200000-500000) are almost similar in number and the respondents belonging to the income group of less than 50,000 and above 5,00,000 are almost same. However, the percentage of respondents belonging to the income group of (50000-100000, 100000-200000 and 200000-500000) is more than that of respondents belonging to the income group of less than 50,000 and above 5,00,000 both individually and collectively. Lastly, regarding occupation, we find that most of the respondents are either employed or self-employed and only a few respondents are students and housewives.

4.2 *Behavioural Biases*

Objective 1: In descriptive statistics, the mean value of the OV variable is equal to (3.2652) with a standard deviation equal to (.73800). **The correlation coefficient** of the variable is significant at a 1 % level of significance. In **Regression Analysis**, we find a significant positive coefficient (.553) on the OV variable with a t-value of (7.890) and p-value (.000).

Objective 2: In descriptive statistics, the mean value of the optimism bias (OP) variable is equal to (3.1154) and the standard deviation is (.72519). **The correlation coefficient** of the variable is significant at a 1 % level of significance. In **regression Analysis**, we also find a significant positive coefficient (.664) on the optimism bias (OP) variable with a t-value of (9.978) and p-value (.000).

Objective 3: In descriptive statistics, we find that the mean value of the disposition bias (DIS) variable is (4.0128) and a standard deviation of (.53224). **The correlation coefficient** of the variable is significant at a 1 % level of significance. **Regression Analysis**, we find a significant positive

coefficient (.584) on the disposition bias (DIS) variable with a t-value of (5.623) and p-value (0.011).

Objective 4: In descriptive statistics, with regard to herding bias (HE) we find the mean value of 2.2231 and the standard deviation of .84477. **The correlation coefficient** of the variable is significant at a 1 % level of significance. **In regression Analysis**, we find a significant negative coefficient (-.372) on the herding bias (HE) variable.

Objective 5: In descriptive statistics, regarding home bias (HO) we find a mean value of 3.5802 with a standard deviation of .57054. **The correlation coefficient** of the variable is significant at a 1 % level of significance. **Regression Analysis**, we find a significant positive coefficient (.639) on the home bias (HO) variable with a t-value of (6.820) and p-value of 0.000.

5. Result

5.1 Descriptive statistics

In Table 1, the mean value for the SC variable is (3.1039) and the standard deviation of (.73087). For the investment decision-making variable, we find the mean equal to 3.5949 and the standard deviation equal to .81362. Additionally, we find that the values of skewness and Kurtosis are within the acceptable limit of ± 1.96 , implying normal distribution for all the factors.

Table 1
Descriptive Statistics

Variable	Mean	Std.Div	Skewness	Kurtosis
OV	3.2652	.73800	-.143	-.206
OP	3.1154	.72519	.138	-.198
DIS	4.0128	.53224	-.616	1.506
HE	2.2231	.84477	.560	-.153
HO	3.5802	.57054	-.435	-.445
IN	3.5949	.81362	-.978	.874

5.2 Correlation Analysis

The correlation analysis helps to make an investigation of the existence of multicollinearity. All the correlation coefficients are less than

Table 2
Correlation results

	IN	OV	OP	DIS	HO	HE
IN	1					
OV	.502**	1				
OP	.592**	.428**	1			
DIS	.382**	.197**	.408**	1		
HO	.448**	.292**	.489**	.231**	1	
HE	-.386**	-.257**	-.299**	-.156*	-.099	1

Note: Asterisks ** indicate significance at a 1 % level of significance and * 5 % level of significance

0.80, implying that multicollinearity is not a problem. The literature on statistics suggests that a correlation coefficient of less than 0.80 indicates the non-existence of multicollinearity shown in Table 2.

5.3 Regression analysis

In column 2 of Table 3, we present results with OV as the independent variable and IN as the dependent variable. Subsequently, through columns 3 to 6, we present the results with OP, DIS, HO, and HE as independent variables in each column respectively. About the specification of the model, F-value is significant at a 1 % level of significance in all the columns of Table 3. Additionally, we find that the Durbin-Watson statistic is within the range of 1.50 to 2.25 in all the columns of Table 3. It is suggested that Durbin-Watson statistics within the range of 1.50 to 2.25 indicates the non-existence of autocorrelation. The Adjusted R-squared for all the models has remained within the range of 0.15 to 0.35, implying that the independent variables can explain the Adjusted R-squared percent of the variation in the dependent variable.

With regard to the coefficients of the independent variables, we find a significant positive coefficient (.553) on the OV variable with a t-value of (7.890) and p-value (.000).

6. Findings

The results imply that overconfidence bias is a key indicator of how investors will make decisions and a 1-unit increase overconfidence bias causes irrational investment decision-making to increase by 0.553 units.

Table 3
Regression results

Dependent variable: Investment decision making					
(1)	(2)	(3)	(4)	(5)	(6)
OV	0.553* (7.890)				
OP		0.664* (9.978)			
DIS			0.584* (5.623)		
HO				0.639* (6.820)	
HE					-0.372* (-5.687)
F	62.258* (0.000)	99.570* (0.000)	31.618* (0.000)	46.513* (0.000)	32.344* (0.000)
Durbin Watson	1.782	1.946	1.856	1.835	1.706
Adjusted R-squared	0.252	0.350	0.146	0.201	0.149

Asterisks (*) indicate significance at a 1 % level of significance. T-values are reported in parentheses.

These results are in line with the findings of [19] and [7] and support our hypothesis. We also discover a significant positive coefficient (.664) on the optimism bias (OP) variable with a t-value of (9.978) and p-value of (.000). By these means we can assert that 1 unit increase in optimism bias causes irrational investment decision-making to increase by .664. Further, we find a significant positive coefficient (.584) on the disposition bias (DIS) variable with a t-value of (5.623) and p-value (0.011), implying that a 1 unit increase in DIS causes IN to rise by .584. In a similar vein, we find a significant positive coefficient (.639) on the home bias (HO) variable with a t-value of (6.820) and p-value of 0.000, which implies that a 1 unit increase in HO causes IN to rise by .639. These results confirm the results of [16]. Lastly, we find a significant negative coefficient (-.372) on the herding bias (HE) variable, implying that a 1 unit increase in HE causes IN to fall by .372. This might be true because as the herd grows together investors irrationality decreases.

How to mitigate the impact of behavioural biases? For Overconfidence Bias people should constantly maintain an open mind and be modest about potential outcomes. For the Optimism Bias, try to make an effort to recall unpleasant memories or instances when things didn't go as expected, it will help in analysing the risk. Disposition Bias can be avoided by creating a disciplined and maintained investment strategy, this will prevent making irrational investment. For Herding Bias, keep track of your actions when it appears that everyone is flooding a market, you could be more inclined to imitate their actions because making choices in situations when timing is crucial is difficult. Diversification lowers the risk associated with a portfolio in Home Bias.

7. Discussion

"Behavioural aspects play a critical role in imparting investment decisions. The investors, particularly women investors, generally get influenced by behavioural aspects that can affect the process of their investment decisions". [20]. We find that the correlation coefficient of all the variables is significant at a 1 % level of significance which provides a clue for the existence of a relationship between the sub-dimensions of behavioural bias (OV, OP, DIS, HO and HE) and investment decision making (IN).

Implications of The Study

Our research offers a distinct perspective for portfolio managers to address investor psychology while developing investment strategies and hedging risks. This exercise will enable the creation of behaviourally adapted portfolios as per the needs of the investors.

8. Conclusion

The outcome shows that availability bias behaviour influences investors' decisions in a way that is both positive and significant. We find a significant positive relationship between overconfidence bias, optimism bias, disposition bias and home bias and a significant negative relationship between herding bias on investment decision-making.

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