

Behavioural Biases and Investor Decisions

Raja Rehan¹ | Imran Umer²
Email: raja.rehan@s.unikl.edu.my | imran_js@yahoo.com

Abstract

The paper examines the impact of behavioural biases (i.e. cognitive and emotional biases) on investor decisions at the Pakistan Stock Exchange. The data was collected from a sample of 385 active investors in the stock market through a pre-tested questionnaire adapted from Chaffai & Medhioub (2014). The results suggest that five behavioural biases (i.e. anchoring, risk aversion, overconfidence, representativeness and regret aversion) have a positive and significant influence on investor decisions in Pakistan. On the contrary, two behavioural biases (i.e. mental accounting and availability) do not have a statistically significant impact on investor decisions. The findings imply that behavioural factors have a profound effect on investor decisions as argued by behavioural finance theorists.

Keywords: Behavioural Finance, Behavioural Biases, Investor Decisions.

Introduction

The efficient markets hypothesis suggests that information is swiftly integrated into stock prices. Models of the 1970s linked economic fundamentals with speculative asset prices through rational expectations. However, during the 1980s behavioural finance theorists argued that behavioural/psychological factors play a major role in explaining investor decisions and asset prices. Grossman & Stiglitz (1980) made a significant contribution on price patterns by examining the over-reaction of prices to new information. The proponents of rational expectations theory and efficient markets hypothesis have argued that there is no concrete statistical evidence regarding the over-reaction and under-reaction of stock prices (Fama, 1998). They also suggest that well-functioning markets are generally efficient (Fama, 1998). Prior research has found that investors are not able to make consistently high (abnormal) returns from trading in developed financial markets (Fama, 1998).

The stock market and the economy of a country are closely related. A booming stock market positively affects the growth and development of a country. Thus, investment

¹University of Kuala Lumpur, Kuala Lumpur, Malaysia

²Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology (SZABIST), Karachi

decisions in the stock market play a vital role in the economy. This research examines the impact of behavioural biases on investor decisions at the Pakistan Stock Exchange (PSX). Behavioural biases include both cognitive biases (such as anchoring, representativeness, mental accounting and availability) and emotional biases (such as risk aversion, overconfidence and regret aversion).

Despite decades of research in finance, behavioral finance research has remained scarce in developing countries. The study provides a basis for exploring the role of behavioral/psychological factors on investor decisions in the context of Pakistan. The remainder of the study is organized as follows. The next section presents the literature review and the conceptual framework. This is followed by the methodology, results and discussion. Finally, the conclusion and suggestions for future research are mentioned.

Literature Review

The section presents a synthesis of prior studies in order to understand how behavioral factors affect investment decisions. Chaudhary (2013) examined the irrational financial decisions of investors in the domain of behavioral finance. He found that emotional and cognitive factors have a strong impact on investors' decision making process (Chaudhary, 2013). Some of the factors that affect investor's decision making process are loss aversion, overconfidence, anchoring, over and under reaction and herd behavior (Chaudhary, 2013). Pennings and Gracia (2009) examined the impact of investor's psychological and behavioral elements on investor's decision making process. Based on secondary data, the study found that retail investors generally would avoid making rational decisions. They would rather make their investment decisions on behavioral factors including mental accounting, cognitive dissonance, anchoring, greed, fear and heuristics. In this context, studies have examined the effect of cognitive and arbitrage limits on investment decisions with varied results (Ritter, 2003). A study in Tunisia found that small investors investment decisions depends on their behavioral biases and market efficiency (Chaffai & Medhioub, 2014).

Behavioral finance offers alternatives for making investment decisions, which has become quite common in the capital market. During the financial crises of 2008, most investors suffered due to their behavioral attitudes (Adam, 2010). While carrying out a survey of behavioral finance, it was found that agents are not fully rational. Their investment decisions are influenced by behavioral factors/biases. These behavioral/psychological factors include overconfidence, sentiments and overreaction (Martin et al, 2009).

Gervais & Odean (2001) and Odean (1998) developed theoretical models, which suggests that vulnerable investors generally have behavioral biases like self-attribution and overconfidence. Thus, due to the lack of skills and overconfidence, these investors generally

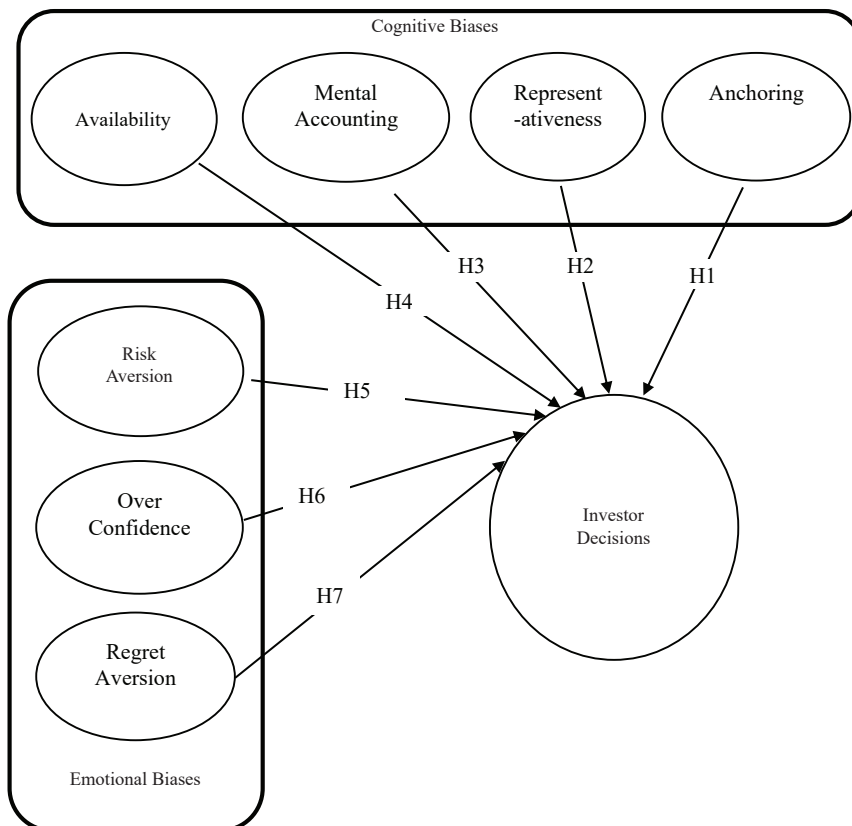
make inaccurate investment decisions.

Past studies have found that some investors due to their behavior including disposition effect, over-confidence and misguided beliefs bear heavy losses in their stock investment (Odean, 1998). In addition, females generally make more profits in the stock market as compared to males. One of the reasons for this disparity is that males due to overconfidence make whimsical decisions. Moreover, it is argued that investor overconfidence has contributed towards a bullish trading pattern (Grinblatt and Keloharju, 2009). The study also found that investor attitude towards risk influence their behavior (Grinblatt, & Keloharju, 2009).

Conceptual Framework

The study examines the impact of behavioral biases (i.e. cognitive and emotional biases) on investor decisions at the Pakistan Stock Exchange. Cognitive biases include anchoring, representativeness, mental accounting and availability. On the contrary, emotional biases include risk aversion, overconfidence and regret aversion. The conceptual framework is presented in Figure 1.

Figure 1: Conceptual Framework



Research Hypotheses

The following hypotheses were formulated and empirically tested in the study.

- H1: Anchoring has a positive impact on investor decisions.
- H2: Representativeness has a positive impact on investor decisions.
- H3: Mental accounting has a positive impact on investor decisions.
- H4: Availability has a positive impact on investor decisions.
- H5: Risk aversion has a positive impact on investor decisions.
- H6: Overconfidence has a positive impact on investor decisions.
- H7: Regret aversion has a positive impact on investor decisions.

Methodology

Data

The study uses a sample of 385 investors from the Pakistan Stock Exchange to examine the impact of behavioral biases on investor decisions. The data was collected through a pre-tested questionnaire which was adapted from Chaffai & Medhioub (2014). The constructs for behavioral biases (i.e. cognitive and emotional biases) and investor decisions were based on the 5 point Likert scale.

Profile of Investors (Respondents)

The data was collected through a questionnaire distributed among investors at the Pakistan Stock Exchange. A profile of investors (respondents) is presented in Table 1.

Table 1: Profile of Respondents

Variable		Number	Percentage
Gender	Male	344	89.35%
	Female	41	10.65%
Age	Up to 25 Years	76	19.74%
	26 to 45	154	40.00%
	46 to 65	132	34.28%
	65 plus	23	5.98%
Income (Rupees)	Below 25, 000	95	24.67%
	25,000 to 60,000	186	48.31%
	60,000 to 100,000	71	18.44%
	100,000 plus	33	8.57%
Marital Status	Single	224	58.18%
	Married	161	41.82%
Profession	Student	60	15.58%
	Businessman	55	14.28%
	Salaried Person	186	48.31%
	Retired Friend	84	21.83%
Amount Invested	Under 20000	212	55.06%
	From 20,000 to 50,000	112	29.09%
	From 50,000 to 100,000	44	11.42%
	Over 100,000	17	4.43%
Ownership Duration	Less than 3 Months	104	27.01%
	3 to 6 Months	37	9.61%
	6 to 12 Months	191	49.61%
	Less than 1 Year	53	13.77%
Course attended in PSX	Yes	70	18.18%
	No	315	81.82%
Placement of money in PSX for	Dividend	116	30.12%
	Capital Gain	200	51.94%
	Other	69	17.94%
Placement in PSX	Short Term	306	79.48%
	Long Term	79	20.52%

Results

Descriptive Analysis

Descriptive analysis of the data was carried out to ascertain the normality and reliability of the adapted constructs. The results from descriptive analysis are presented in Table 2.

Table 2: Descriptive Analysis of Behavioral Variables

Variable	Cronbach Alpha	Mean	Std. Dev.	Skewness	Kurtosis
Risk Aversion (RA)	0.83	4.41	1.18	-0.59	1.87
Overconfidence (OC)	0.84	4.40	1.45	-0.96	-0.07
Regret Aversion (REA)	0.78	3.95	1.36	-0.85	-0.06
Anchoring (AN)	0.87	3.44	1.70	-1.20	0.63
Mental Accounting (MA)	0.89	4.25	1.79	-.158	1.89
Availability (AV)	0.90	3.69	1.26	-0.60	1.06
Representativeness (RE)	0.79	3.75	1.56	.019	-1.23
Investor Decisions (ID)	0.82	4.15	1.42	-0.42	-1.27

Table 2 shows that the values of Kurtosis ranged between (1.89 to -0.06). It was highest for mental accounting (Mean = 4.25, SD = 1.79), and the lowest for regret aversion (Mean = 3.95, SD = 1.36). Additionally, the highest skewness value (-1.20) was for anchoring (Mean = 3.44, SD = 1.70), and the lowest for representativeness (Mean = 3.75, SD = 1.56). As all the skewness and kurtosis values are between ± 3.5 , we can assume that the adapted constructs fulfill the requirement of univariate normality (Hair et al, 1998).

Table 2 also suggests that the Cronbach's alpha of availability is the highest ($\alpha = 0.90$, $M = 3.69$, $SD = 1.26$) followed by mental accounting ($\alpha = 0.89$, $M = 4.25$, $SD = 1.79$), anchoring ($\alpha = 0.87$, $M = 3.44$, $SD = 1.70$), overconfidence ($\alpha = 0.84$, $M = 4.40$, $SD = 1.45$), risk aversion ($\alpha = 0.83$, $M = 4.41$, $SD = 1.18$), investor decisions ($\alpha = 0.82$, $M = 4.15$, $SD = 1.42$), representativeness ($\alpha = 0.79$, $M = 3.75$, $SD = 1.56$), and regret aversion risk ($\alpha = 0.78$, $M = 3.95$, $SD = 1.36$). All the values of Cronbach's alpha are above 0.70, we can assume that the constructs satisfy the requirements of internal consistency (Hair et al., 1998).

Correlations Analysis

In order to ascertain the association between the variables, bivariate correlations were calculated. The results are presented in Table 3.

Table 3: Correlations Analysis

Variables	RA	OC	REA	AN	MA	AV	RE	ID
Risk Aversion (RA)	1							
Overconfidence (OC)	-.04	1						
Regret Aversion (REA)	.25 ^b	.32 ^b	1					
Anchoring (AN)	.24 ^b	.24 ^a	.19 ^b	1				
Mental Accounting (MA)	.10	-.06	.10	.38 ^b	1			
Availability (AV)	.14 ^b	.18 ^b	.08	-.02	.01	1		
Representativeness (RE)	.42 ^b	-.10	.35 ^b	.66 ^b	.30 ^b	.07	1	
Investor Decisions (ID)	.31 ^b	.09	.38 ^b	.59 ^b	.24 ^b	.08	.54 ^b	1

a, b denotes statistical significance at the 5% and 1% level respectively

Table 3 shows that the highest correlation ($r = 0.66$) was between the variables representativeness ($M = 3.75$, $SD = 1.56$) and anchoring ($M = 3.44$, $SD = 1.70$). In addition, the lowest correlation ($r = -0.06$) was between mental accounting and overconfidence. As the correlations are substantially lower than 0.80 in absolute value, there is unlikely to be any statistical issue of multi collinearity (Hair et al., 1998).

Multiple Regression Analysis

Multiple regression analysis was performed to examine the impact of the seven predictor variables (i.e. Risk aversion, representativeness, overconfidence, regret aversion, anchoring, mental accounting and availability) on investor decisions. The results are presented in Table 4.

Table 4: Multiple Regression Results

Model	Coefficient	p-value
Constant	-15.214	0.000
Risk Aversion (RA)	.251	0.013
Overconfidence (OC)	.311	0.000
Regret Aversion (REA)	.343	0.001
Anchoring (AN)	1.029	.0.000
Mental Accounting (MA)	-.062	0.720
Availability (AV)	.132	0.574
Representativeness (RE)	.258	0.030

$R^2 = 0.485$, Adjusted $R^2 = .475$, F -value = 46.640

The results of regression analysis indicate that the predictor variables (i.e. Risk aversion, overconfidence, regret aversion, anchoring, mental accounting, representativeness and availability) explain 48.50% of the variance in the dependent variable ($R^2 = 0.485$, $F\text{-stat} = 46.640$, $p < .05$). Although the overall model fitted very well, the effect of mental accounting ($\beta = -0.062$, $p > .05$) and availability ($\beta = 0.132$, $p > .05$) were statistically insignificant.

Discussion

The first hypothesis states that anchoring has a positive impact on investor decisions. Consistent with prior research, the results suggest that anchoring has a positive and statistically significant influence on investor decisions ($\beta = 1.029$, $p < .05$). The second hypothesis states that representativeness has a positive impact on investor decisions. The results also suggest that representativeness has a positive and statistically significant influence on investor decisions ($\beta = 0.258$, $p < .05$). The third hypothesis states that mental accounting has a positive impact on investor decisions. However, the results show that the relationship between the two variables is statistically insignificant ($\beta = -0.062$, $p > .05$). The fourth hypothesis states that availability has a positive impact on investor decisions. Contrary to expectations, the results show that the relationship between the two variables is statistically insignificant ($\beta = 0.132$, $p > .05$). The fifth hypothesis states that risk aversion has a positive impact on investor decisions. Consistent with theoretical expectations, the results suggest that risk aversion has a positive and statistically significant influence on investor decisions ($\beta = 0.251$, $p < .05$). The sixth hypothesis states that overconfidence has a positive impact on investor decisions. The results also suggest that overconfidence has a positive and statistically significant influence on investor decisions ($\beta = 0.311$, $p < .05$). The final hypothesis states that regret aversion has a positive impact on investor decisions. Confirming a priori expectations, the results also suggest that regret aversion has a positive and statistically significant influence on investor decisions ($\beta = 0.343$, $p < .05$).

Conclusion

The study examines the impact of behavioral biases (i.e. cognitive and emotional biases) on investor decisions at the Pakistan Stock Exchange. Overall, the results from regression analysis indicates that several behavioral biases have a profound effect on investor decisions. Consistent with prior studies, the results indicate that anchoring, risk aversion, overconfidence, representativeness and regret aversion have a positive impact on investor decisions. However, contrary to expectations, this study did not find a significant impact of availability bias and mental accounting bias on investor decisions. Future studies may examine the role of behavioral factors on investor decisions in the foreign exchange and commodity markets of Pakistan.

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