Impact of Behavioural Biases on Perceived Market Efficiency: Empirical Evidence from Pakistan Stock market

Hassan Rafique*, Sheharyar Sultan, and Anam ul Haq

University of the Punjab Gujranwala Campus (Mphil Scholars)

Corresponding Author* Email: Hassanr472 @gmail.com

ABSTRACT

The aim of this study is to investigate the impact of behavioural biases on perceived market efficiency. The overconfidence, self attribution and optimism are behavioural biases that included in the current research paper. The study is significant for all investors, policy makers and investment advisors. Primary data has been collected through use of a well designed questionnaire. Reliability test, Correlation and linear regression techniques are used in this study by SPSS 20.0. The study concluded that all three biases overconfidence, self attribution and optimism have positive and significant effect on perceived market efficiency.

Keywords: Behavioural biases, Perceived market efficiency, Regression model, Correlation

INTRODUCTION

The theories of finance are based on some assumptions. The most powerful assumption in standard finance is that human beings are rational. People are also sometimes biased in their decisions intentionally or unintentionally. Psychology is a science in which we study the behaviour and attitude of human beings. The behaviour and attitude of human beings will evaluate in current study by analyzing the self control, optimism and overconfidence on decisions of investors. The purpose of study (1) is to measure the impact of above three biases on perceived market efficiency (1) strength of relationship between above three and perceived market efficiency.

EMH is the place where large amount of rational investor perform work for the purpose of maximizing his returns on his investment. In which all information is available for all investor in the market and no one can get more information for the prediction of future profits therefore no one can outperform in the market and it show that price are not predictable in efficient market. Market efficiency has two meaning first investor can't systematically beat the market and the second meaning is securely price are rational but finance accept the first meaning and reject the second meaning (Pompian 2006). Overconfidence bias effects the decisions of individuals as well as corporations. Overconfident investors think that their abilities are better than other that's why they use to take quick decisions and trade actively. They under estimating the risk associated with his active investment strategy. These people totally take decisions on their own thinking therefore they show quick response on investment (Kyle & Wang 1997).

In behavioural finance optimistic individual's investor are defined as those who overestimate the chance of good outcomes and underestimate the chance of negative outcomes therefore leading to more risk taking behaviour in financial markets. Kahneman and Lovallo(1993). Larsen and Shepperd (2001) optimistic bias is the propensity for people to report that they are less likely than others to experience negative events and more likely than others to experience positive events. Self-attribution bias is a long standing concept in consumer research and refers to individuals' tendency to attribute successes to personal skills and failures to factors beyond their control Feather and Simon (1971). In other worlds we can say that Self-attribution bias occurs when people attribute successful outcomes (high returns) to their own skill but blame unsuccessful outcomes (low returns) on bad luck or outside factors.

In present most of the researcher perform work on behavioural biases. Overconfidence bias is widely discussed past few decades. . Ko and Huang (2007) perform a study on overconfidence and information acquisition impact on market efficiency. Sembel (2011) Examine the overconfidence impact on excessive trading in stock market (Shah and Khurshid et. al. (2012) perform a work on overconfidence and perceived market efficiency. Most of researcher used one or two biases to check perceived market efficiency but in this study we measure three behavioural biases such as overconfidence, self-attribution and optimism to check the perceived market efficiency. The main objective of this research is to find out the "impact of overconfidence, self attribution and optimism on market efficiency". In this study we use three behavioural biases such as overconfidence, self attribution and optimism to check out the perceived market efficiency. In this research market efficiency is used as dependent variable and overconfidence self attribution and optimism use as independent variables.

Sub objective of this study is too derived from the main objective. Three sub objective are discuss in this study.

1 Find out the relation between overconfidence and market efficiency.

- 2 Find out the relation between self attribution and market efficiency.
- 3 Find out the relation between optimism and market efficiency.

This study provides help to the behavioural finance students for the understanding of the overconfidence, self-attribution and optimism and what's its impact on investment decision in the stock market and what kind of factors influence the market efficiency. Moreover, this research also provides information about the relationship of three behavioural biases with perceived market efficiency. Furthermore they provide guidance to the students to choose their research topic. This is also beneficial for the financial advisers to how they can give the knowledge to their investors about their investors about their investors. In last this research provides direction to the investors who are involved in the overconfidence bias, self-attribution bias and optimism bias.

LITERATURE REVIEW

Dittrich and Gauth et.al. measure the overconfidence in individual decision making in stock market by two experiment, first one is only one-risky asset and next is two-risky assets are involved. One hundred forty nine subjects participate in two experiments, 72 are contribute in experiment one and remaining are involved in experiment number two. Results of this research show that overconfident investor does not make correct decision and make the task more complex in cause of two-risky assets.

Shah and Raza et. al. examine the impact of overconfidence on market efficacy for this purpose they use the three dimension of overconfidence such as overestimation overplacement and over-precision questioner are use to collect the data four hundred four subjects participate in which and results show that irrational behaviour not the reason of decreasing the market efficacy and three dimension of overconfidence investor spend more time and recourse to collect information furthermore overconfident investor involve in active trading more over positive relation is prevail between market and overconfidence.

Bashir and Javed et.al.(2015) inspect the investor behaviour in financial decision making with respect of different biases such as overconfidence illusion of control loss aversion mental accounting conformation status quo and optimism questionnaire is use for data collection and different statistical test are applied for the measurement of this data and results show that overconfidence, illusion of control optimism and conformation bias influence the decision of investor in stock market and remaining biases have no impact on decision making in which overall biases show that significant results.

Sembel (2011) examine the overconfidence impact on excessive trading in stock market this is an experimental study and participant of this study are under graduate students, results of her study show that those people who are involve in higher overconfidence his investment level is high or excessive as compare to those peoples who have low overconfidence, excessive investment also decrease the profit of higher overconfident investor in contrast low overconfident investor earn high profit, and bad news about the market or stokes does not affect the trading level of overconfident investor but in cause of low overconfidence bad news decrease the trading level of investors in stock market.

ZAIANE (2013) conducted a study on Tunisian stock market to identify the overconfidence level of investors. Data is collected by questionnaire and experiments. Results show that The decision making of investors are always not depend on

rationality or market efficiency, there are some biases that also affect the decision making of investors. Investor of Tunisian are involved in overconfidence bias, actually they feel that they have full control on his investment therefore they involve in excessive trading, they use more information before investing in the stock market and overestimate the information or their abilities due to this reason overconfident investor feel that they have a full control over the market it also conclude that overconfident investor difficultly beat their peers.

Moore and Healy define the overconfidence by three ways such as overestimation over-placement and finally over-precision 82 subjects are participate in this study in the way of different quizzes these quizzes are divided in different topic every topic further divide in to three categories such as easy, medium and difficult task. Result of this experiment show that people in cause of difficult task overestimate their performance and think that his performance is bad as compare to others but in cause of easy task they underestimate their performance and think that his performance is good as compare to other. In his study over precision are more constant as compare to other categories of overconfidence and negative relation prevail between the first two types of overconfidence. Yeh and Yang conduct a study that is base on the agent artificial market to examine the overconfidence of different traders in the stock markets in which agent based modelling framework are use. Result show that overconfidence creates high instability in the marker, prices are disturbed and quantity of trading is increase and these result are reliable with hypothetical work.

Ko and Huang found that irrationality is the part of individual investors does not make the market less efficient according to their model overconfidence improve the price quality under some circumstances. They also found that overconfidence can produce information attainment whose effect on price quality can dominate the mispricing caused by this bias. They further explained that overconfidence generally over rationality provided this bias is not very high because it introduces information into the market while having a less effect in generating mispricing. In addition a market with high overconfidence can also have high price quality when private information is available.

Hsu and Shiu (2016) perform work on overconfidence and self attribution in Taiwan stock market. For this purpose they take 6993 investors that are bidding 77 IPO in Taiwan market for the period of five years. Results show that those investors who are regularly involved in bidding they can get lower return as compare to irregular investors further more regular investors little successful in their initial bid but later on return are gradually decrease and they also found that individual investor are bad in stock selection and institutional investor select a better stock for their investment. Overconfidence is greater than before by self attribution explain difference between regular bidder and irregular bidder in the stock market.

Hoffmann and Post (2013) perform work on self attribution bias to test the investor's financial decision making. For this motive researcher select 20000 brokerage clients randomly. Data is collected through an online survey moreover match this data with brokerage record of their clients. In this survey researcher find that investors give success acknowledgment to their personal skill and says that failure is due to outside or economic factors. They also find that there is a positive relation between self attribution and individual investment return In addition individual investment return affect the self attribution of investor and there is no affect on market return. Self attribution bias also supports the investor's overconfidence.

Balasuriya and Muradoglu et.al define three heuristic one is financial optimism, second is priori optimism and last is posterior optimism. For this purpose 6 million observations are use from the British house hold panel, questioner is also use for data collection and this survey cover the period from 1991 to 2007. Demographic analysis of this study shows that optimistic, pessimistic and neutral participant have a significant different characteristic. Optimistic investors are younger and barrow more debts for their investment and they add high risk in their portfolio result also show that there is a

significant positive relation with optimism and risk taking behaviour and optimistic investor chose a risky portfolio for their investment in the market

Bennet and Selvam et.al. (2012) define individual investor optimism level investor attitude before investing in Indian stock market they also analyses those factors of investor behaviour that influence the market. In this research researcher use simple random sampling technique and 375 investor are participate in which as sample. Data is collected by structure interview from investors that live in Tamil Nadu. 7 variables are use in this research out of which 6 as independent variable namely (Herd behaviour, Risk & Cost factor, Internet access, Macro economic factors, Performance & Confidence and Best game in town) and optimism is use as dependent variable. Results of this study show significant and positive relation with dependent variable and influence the optimism level of investor. Head behaviour, risk and cost factor have opposite relation with optimism. Park and Konana et. al. Describe that investors seeks those information which they have previous beliefs and it leads to overconfidence and investment affected adversely. The high overconfidence investor is higher in their trading and there is no affect of bad news on overconfidence investor but the low overconfidence investor is low in their trading and bad news also affects their trading and earn significantly higher than high overconfidence investor.

Hypotheses

H1 There is a positive and significant relation between overconfidence and perceived market efficiency.

H2 There is a positive and significant relation between self-attribution and perceived market efficiency.

H3 There is a positive and significant relation between optimism and perceived market efficiency.



METHODOLOGY

Aim of the study is to recognize the effect of behavioural biases (overconfidence bias, optimism bias, and self attribution bias) on perceived market efficiency. The target population of this study was Lahore Stock Exchange and 120 respondents were selected to collect data. Primary data was used in this study and a well designed questionnaire was used to collect data. The questionnaire was consisting of two sections, 1st section consists of demographic variables and 2nd section consists of behavioural factors. Questionnaire consisted of 39 questions, 6 questions for demographic information, 12 used for overconfidence, 5 and 6 used for self attribution and optimism respectively and rest of the 8 questions were used to collect data for market efficiency. All the questions of section 2 consist of 5 point likert scale. The respondents express their answers from 1 to 5. 1 stand for strongly disagree and 5 means strongly agree.

SPSS 20.0 software was used to analyze the data. Descriptive analyses used to describe the respondent, Kolomogrov Simirnov Test used to measure the normality of variables, Pearson correlation and linear regression test use to measure the direction and strength of relationship between behavioural biases and perceived market efficiency.

Out of 120 respondents 108 were males and rest of 12 are females, in which 88 were married, 30 were un-married and 2 were widow. The age of 24 respondent was below 30, 84 respondents belong to age group 30-50 and other 12 were 50 +. Education level of 53 respondents was bachelor, 43 from inter, 18 from master and 6 from M.phill. Majority of respondents in this study was self employed that were 77, 38 were govt employed and only 5 were retired. 24 respondents monitor their stock daily, 43 monitor monthly, 39 monitor quarterly and rest of 11 and 3 monitor their stock semi-annually and annually respectively.

Variables	Scale	Frequency	Percentage
Age	<30	24	20%
	30-50	84	70%
	50+	12	10%
Gender	Male	108	90%
	Female	12	10%
Marital status	Married	88	73.3%
	Un-married	30	25%
	Widow	2	1.7%
Qualification	M.phill	6	5%
	Master	18	15%
	Bachelor	53	44.2%
	Inter	43	35.8%
Occupation	Retired	5	4.2%
	Govt. employed	38	31.7%
	Self employed	77	64.2%
Monitoring stock	Daily	24	20%
_	Monthly	43	35.8%
	Quarterly	39	32.5%
	Semi-annually	11	9.2%
	Annually	3	2.5%

Table: 1

Table: 2 Reliability Test

	Behavioural biases	Cronbach Alpha	No of items
1	Overconfidence	0.736	12
2	Self attribution	0.758	5
3	Optimism	0.687	6
4	Market efficiency	0.762	8
5	Overall reliability	0.919	31

Cronbach Alpha is used to measure the reliability of data. The results of table 2 shows that all variables cronbach Alpha is greater than 0.5 i.e. overconfidence has 0.736, self attribution has 0.758, optimism has 0.687 and market efficiency has 0.762. The overall cronbach Alpha is 0.919 that is also greater than 0.5 and it indicate that consistency of items from scale is higher.

Table: 3 Pearson Correlations

	Behavioural biases	Perceived Market Efficiency
1	Overconfidence	0.756**
2	Self attribution	0.783**
3	Optimism	0.786**

** Correlation is significant at the 0.01 level.

The results of table 3 showed that Overconfidence, Self attribution and Optimism has positive correlation with perceived market efficiency at level 0.01. The values of overconfidence is 0.756, self attribution is 0.783 and optimism is 0.786 indicate that the relationship is strong because all values are near to 1. It's means that all above behavioural biases has significant and positive relationship with perceived market efficiency.

Linear regression model

The impact of behavioural biases on perceived market efficiency is calculated by a linear regression model. The following is model for this research paper.

 $Y = \alpha + \beta(overconfidence) + \beta2(self attribution) + \beta3(Optimism)$ Y = 4.486 + .238(Overconfidence) + .355(Self attribution) + .414(Optimism)

Where

Y= Perceived Market Efficiency

α= constant

 β = Co-efficient of overconfidence,

 β 2= co-efficient of self attribution,

 β 3= co-efficient of optimism,

Table: 4 Model Summary

1	.843a	.711	.704	2.47082
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

a. Predictors: (Constant), Optimism, Overconfidence, Self attribution

Table 4 show that 71.1% change in dependent variable is because of the independent variables. The 71.1% change in perceived market efficiency is due to three behavioural biases that are Overconfidence, self attribution and optimism. Rest of 28.9% change in perceived market efficiency is predicted due to other variables that are not a part of that study. The R square is close to 1 so the model is good for prediction. The model is fit to predict market efficiency.

Table: 5 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1745.293	3	581.764	95.294	.000 ^a
Residual	708.174	116	6.105		
Total	2453.467	119			

a. Predictors: (Constant), Optimism, Overconfidence, Self attribution

b. Dependent Variable: Market efficiency

The 5th table of ANOVA shows that model is fit because the P-value is less than α . It's means that all independent variables have impact on dependent variable.

	Un standardized coefficients		Standardized		
Mode	В	Std. Error	coefficients	Т	Sig.
(Constant)	4.486	1.694		2.648	.009
Overconfidence	.238	.069	.279	3.445	.001
Self attribution	.355	.106	.306	3.349	.001
Optimism	.414	.112	.332	3.695	.000

Table: 6 Coefficients

a. Dependent Variable: Market efficiency

Table 6 shows that all the independent variables have a significant role in change of perceived market efficiency. β = is rate of change in perceived market efficiency due to change of 0.238, 0.355, 0.414 in independent variables. The table 6 show that optimism has more influence on market efficiency rather than overconfidence and self attribution. The P-value of overconfidence, self attribution and optimism is less than α so we accept all three hypothesis of this study.

Findings

The findings of this research paper are that there is a positive and significant relationship between overconfidence, self attribution and optimism with perceived market efficiency. Optimism has more affect on perceived market efficiency as compared to overconfidence and self attribution and overconfidence have more impact on market efficiency as compare to self attribution. The findings also showed that 1st, 2nd and 3rd hypothesis are accepted as overconfidence, optimism and self attribution have impact on perceived market efficiency. The overconfidence, self attribution and optimism increase the market efficiency.

Conclusion

The main purpose of this study is to find out the impact of behavioural biases on perceived market efficiency. This study used three biases overconfidence, self attribution and optimism. On the basis of results, this study concluded that overconfidence, self attribution and optimism have great impact on market efficiency. Increase in all three biases increase the market efficiency.

Researcher used SPSS 20.0 to analyse the data but E.views and other software can also be applied, researcher has time constraint to collect data but there is an option for future researcher to add more proxies of behavioural biases on market efficiency.

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