# Study on Major antecedents of overconfidence bias of Indian investors

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Abstract

This paper investigates the major antecedents of the overconfidence bias of the stock market investor. We surveyed Indian investors who have invested in the Indian stock market. The data related to their overconfidence character and factors make them become overconfident collected through a structured questionnaire. From the collected data 385 samples are selected for the final analysis of data. The Better than average and Illusion of control are taken as two aspects overconfidence bias of investors. Our results provide strong evidence in favor of positive and statistically significant relations between Self-attribution bias, perceived financial knowledge, and actual financial knowledge as antecedents to Overconfidence bias.

Keywords: Overconfidence bias, self-attribution bias, Perceived financial knowledge, risk propensity. Actual financial knowledge.

## 1. INTRODUCTION

An investor is a person or an organization put money in financial products or an asset with an expectation that gives a positive return in the future. The financial products like Stocks were unfamiliar among various investors in olden days. It took a long time to popular among various ordinary people in India. The return from stock market investment is uncertain and because of that, it is a risky investment avenue. The risky nature of stock market investment affects retail investors and their behaviors. Investor's behavior has a huge role in his or her investment decision in any investment. Behavioral finance studies explain how human behavior is influences investments decision of individuals and the stock market(Pompian 2008). Behavioral finance identified various behavioral biases of investors which can influence his decision and the asset prices in the market.

Behavioral bias is the rule of thumb, beliefs, a judgment of preferences that can create systematic errors in decisions. Human behaviour largely depends on the cognitive psychology of humans i.e.; the mental process that drives human behaviour. Cognitive psychology investigates the areas of memory, perception, knowledge representation, reasoning, creativity, and problem-solving. Some behavioural biases like overconfidence, representative bias, familiarity bias, anchoring and adjustment biases, cognitive dissonance bias, availability bias, self-attribution bias, the illusion of control bias, self-control bias, confirmation bias, etc are most common among in behavioural biases studies. This cognitive psychology can lead to systematic errors in judgments and make mistakes in the investment decision in the market.

When people make predictions and judgment under uncertain situations, they do not follow any statistical methods, instead, they follow some heuristic or biases. These heuristics may yield better return and sometimes it leads to severe and systematic error(Tversky et al. 2007). So it is relevant to study the major psychological biases and investigate their antecedents. As DeBondt and Thaler (1994) said in their study the most robust finding in the psychology of judgment is that people are overconfident. This study focuses on the reasons for the overconfidence bias of stock market investors.

According to several psychological studies and studies of finance, overconfidence is one of the most important psychological behaviours of many individuals and investors. Overconfidence is " the tendency of decision-makers to unwittingly give excessive weight to the assessment of knowledge and accuracy of information possessed and ignore the public information available" Lichtenstein and Fischhoff (1977).

Researchers in psychology argues that an average individual is overconfident. It means that an individual overestimates his ability. Generally, people or investors overvalue their knowledge, beliefs, abilities, and information. This behaviour we call it overconfidence.

Heath and Tversky (1991), found that the degree of overconfidence varied across the domain. People were more confident to predict an uncertain event or outcome in their area of expertise by holding their actual ability to predict. Odean (1998) said that an individual's overconfidence varies according to their profession. Finance market professionals have strong overconfidence in the market and if they failed in his decisions, they always blame external forces and the economy.

The behavioural approach says when an investor lacks the information to decide an uncertain environment, he uses his judgment and believes that his judgment is better than others, they are assumed to be precisely correct. But in some cases when the investor receives imperfect information and he thinks that the signal is perfect and he overestimates their precision. In both these cases, investors' overconfidence behaviors are emerging because he is overestimating his precision of the information and his judgment skills and he thinks, he is better than average. Most people are overconfident in their knowledge and abilities in their respective areas Shefrin and Statman (1984).

**1.1 NEED FOR THE STUDY**

Overconfidence, the overestimation of human ability and skill by himself is a much-talked subject in psychology and finance. Previous studies found overconfidence of human being leads to systematic errors in his decisions. Financial decisions are a very important decision for human beings, especially in finance. Investing in the stock market is a personal finance decision. Most human beings are irrational decision-makers; he uses his heuristics and beliefs to make decisions. One of the most important behaviours of the human being is his overconfidence. Unwittingly gives the excessive assessment of his knowledge, skills, and his private information when he takes decisions. This can lead to systematic errors like loss and wealth loss to him. Studies prove that because of this overconfidence biases investors are making unwanted trades in the stock market, taking wrong decisions to sell some stocks or hold loss-making stocks for the long term, not making enough precautions like diversification to avoid losses. These kinds of activities in the stock market by investors can lead to his capital erosion.

According to studies of Barber et al. (2006) and Jordan and Diltz (2003) overconfidence leads to less return on investment and it can lead to loss to stockbrokers and consultants.

The loss in the stock market and investment may force the investors to move out of the stock market and other risky assets. The loss in the equity market may reduce the trading activities of investors and this, in turn, may reduce the main source of income of stockbrokers. So these stock market participants need to maintain and guide their clients properly to survive in the market.

If they could identify the human behaviour in the stock market and the reasons for such behaviours can develop strategies for guiding and maintain these overconfident investors.

This study has considered and identified several factors that can lead to overconfidence among investors. The study has applied the survey method to identify each contributor of overconfidence bias because it is a psychological behavior of an individual.

## 2. Theoretical background and hypothesis

### 2.1 Review of literature

The overconfidence of a human being is psychological behaviour. The stock market investors follow overconfidence behaviours in the stock market because of several inherent factors and some external factors like the outcome from the stock market. The following section discusses previous studies related to overconfidence bias and its reasons. As we have discussed in the previous section, overconfidence is the human nature to overestimate his skills and knowledge in a particular area, here it is the stock market investment.

#### 2.1.1 Overconfidence and Self-attribution bias

The self-attribution bias of an individual is praising the success because of his skills and blaming the failure because of external factors. Statman, Thorley, and Vorkink (2006) studied investor overconfidence and trading volume in the market at the macro level. The proposition was the overconfidence about valuation and trading skills of investors could explain the trading volume in the market. Their findings were as self-attribution bias changed the level of overconfidence of investors and thus trading volume also varied accordingly. They used market data and past returns to measure the overconfidence and trading volume. Past successful investment experience from the market made the investor overconfident and this induced him to do more trade.

Cremers and Pareek (2011) studied the reason for the survival of overconfident traders in the market. They argued that overconfident and risk-averse traders were aggressively trade based on their valid information. Because of these active trading, they explicate the profit opportunities created by rational and noise traders. Overconfident investors traded aggressively because of underestimate risk and overestimate their trading strategies. This overestimation about their predictions and the success of the previous estimation made them more overconfident. They reported that overconfidence and self-attribution bias were related. Gervais and Odean (2001) showed that the self-attribution bias could lead to making the investors overconfident. They proposed that traders learned about their abilities and relied too much on presumptions about their skills which made them overconfident in their investment

decisions. Those who were able to predict the future dividends of a company successfully updated his beliefs improperly. This could overweight his success to forecast and ability. This belief made him overconfident in the stock market. Traders' level of overconfidence was changing dramatically when success and failure occurred in his previous trade. Initially, overconfidence was increasing in his early stage of trading and gradually his overconfidence was declined as he aged. They argued that overconfidence might not create wealth but wealth creation through trading could create overconfidence. They show that the overconfidence of investors leads them to do large volume. Successful previous trades make him praise himself and do more trade in the stock market.

The growth of technology and the emergence of the internet have forced the stockbrokers to offer online trading to investors Barber and Odean (2002). Because of low commissions, easy to access and speedy trade executions force many investors to go online. They studied the behaviour of young and active traders who shifted to online trading from traditional trading. Through multivariate analysis, they found that young men who were active in trading shifted to online trading. They observed that these online traders are more overconfident once they shifted from phone-based trading to online trading, this is because of several cognitive biases and selection bias. They report in their research, online traders are overconfident because of three reasons, self-attribution bias, Illusion of control, and the illusion of knowledge. The illusion of control and illusion of knowledge leads online investors to increase their confidence in the market and do more transactions. When they make the profit from the stock market investments their overconfidence level is increasing because they feel that it is because of his stock-picking skills.

Yung (2009) proved empirically, that there were different degrees of overconfidence among investors. He reported that futures traders' held a high degree of overconfidence. The futures traders were speculators, they traded aggressively when they gained from the futures market and overconfident investors assumed more risk after gaining from the previous trade. Overconfident investors tend to overestimate investment returns because of self-appraisal about his investment skills.

Bitmead, Durand, and Ng (2004) studied the returns of internets stocks in the period between 1998 and 2000. They found evidence for the internet bubble created before the crash of the stock market in the year 2000. This bubble was mainly created because of the behavioural biases of investors. This was created by biased self-attribution of investors. They attributed

their success to previous trades because of their skill and information processing ability. This had created overconfidence among investors and it led to excessive trading in the market and crashed the market.

Abes bBoujelbene, Boujelbene, and Bouri (2009) analysed whether overconfidence bias could explain the market anomalies such as short-term momentum, high-level trading activities, and excessive volatility in the French market. They found that overconfident investors were overreacting to private information and not responding to public information. Based on the Granger-causality test they reported that investors became overconfident because of previous market gain; this led them to do aggressive trading in the subsequent period. The study argued that self-attribution bias was the reason for investor overconfidence and high trading activities in the market by investors. When there is a good gain earned from his previous stock market investment, it makes him overconfident. The overall market return can lead to fast growth in the individual stock in the market, but individual investors feel that the return from his stock is because of his stock-picking skills.

**2.1.2 Overconfidence and Risk propensity.**

Risk propensity is the willingness to take risks knowingly. Stock market investments are risky because the return from the investment is uncertain. Several studies prove that risk-taking people are overconfident. People with high-risk propensity select the event which gives the high return and low probability of winning the event. The following discussions about studies related to risk-taking and overconfidence show that investors are overconfident when they take risks knowingly.

Wood, Lynne, and Zaichkowsky (2010) studied the different attitudes and trading behaviours of stock market investors. They have segmented the investors into the different groups as risk-tolerant investors, confident traders, loss-averse young investors, and conservative young investors and then studied their activities in the market. They report that those who have more control over investment have more confidence. Those who have more risk propensity are overconfident in the market. These overconfident investors frequently check the price and trading very frequently in the market. Those high-risk tolerance category investors trade actively in the market.

Lee (2009) investigated the online investors' trading behaviour in Taiwan. Using a survey questionnaire and structural equation modeling he analyzed the effect of risk propensity, perceived benefit, and trust in online trading behavior. The results show that risk propensity,

usage of technology make them more confident in their activities in the market and thus induce them to do more trade in the stock market.

Jordan and Diltz (2003) studied the behaviour and profitability of day traders in the Japanese market. The psychological behaviour, overconfidence among investors, is one main reason for doing day trade in the market. Many day traders think they can be successful because of his strong belief in trading skills, knowledge, and risk-taking. These excessive beliefs make him overconfident and do more trade. From the record of day trader's history and order placing they found that day traders were not making the profit. They made lose as twice as they made the profit in the market.

Nosic and Weber (2010) studied the determinants of risk-taking behaviour of investors in the stock market. Historical returns and volatility were not good predictors for determining the risk-taking behaviour of the investors. They reported that behavioural biases such as overconfidence and excessive optimism affected risky behaviour such as frequent trading and high-volume trading in the stock market.

Hamid and Rangel (2013) reported that there was a strong relationship between risk propensity stock market investors and risk-taking behaviour in the stock market. Using primary data collected from the Malaysian stock market through a structured questionnaire, they analyzed the behaviour of the stock market investors. They identified the indirect effect of behavioural aspects of individual investors on their investment decisions. Risk propensity behaviour of an individual positively related to risk-taking activities in the stock market. Because of risk propensity behaviour, they become overconfident in the market and this makes them do more risky activities in the market. Those who knowingly take the risk in the market follow risky investment patterns and trade in the stock market frequently.

**2.1.3 Overconfidence and Financial knowledge.**

Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through the appropriate short‐term decision making and a sound, long‐range financial planning, while mindful of life events and changing economic conditions (Remund, 2010, p. 284).

Overconfidence among individuals emerged from the self-appraisal about his or her knowledge. Heath and Tversky (1991) found that people were overconfident when they declared that they had expertise in certain tasks and knowledge. They investigated the

relationship between judgments of probability and preferences between bets. Those who feel as more knowledgeable on a particular domain act as overconfident in an uncertain situation. They argue those individuals are more ready to bet on their judgments when they feel skillful or knowledgeable. Graham, Harvey, and Huang (2009) investigated the investor competency and home bias on the trading activities of investors. They studied the competence of investors by better than an average aspect of overconfidence. Those who perceive them as more knowledgeable than others are more competent in the financial market. They found in their studies male investors, investors with a larger portfolio and high educations were more competent than others. Those who feel more competent do trade very frequently and hold an internationally diversified portfolio. Those who feel them as better than an average also trade very frequently in the market. They argue that better than an average aspect of overconfidence leads the investors to do trading very frequently in the market. Chandra (2009) studied investor trading activities based on investor competence. Investor competence they analysed based on investors' perceived knowledge about the financial market and opportunities, age, income, education, and experience. Based on the analysis of the response of 250 investors in Delhi-NCR, they have reported that investors with a higher level of competence are more confident and do frequent trade in the market. If an investor is reported himself as knowledgeable in the financial services and securities, then this can consider as good proxy for the overconfidence (John R. Graham, Harvey, and Huang 2005).

Deaves, Lüders, and Schröder (2005) investigated whether the financial market practitioners were overconfident or not through survey measures using a miscalibration method. They found in their study investors with higher financial knowledge were overconfident in the market. Past successful prediction in the market makes them more overconfident. These past successes in the market increase their experience in the market and it leads to higher overconfidence in the market.

Blanc and Rachlinski (2005) propose that the irrational behaviour of investors is required for liquidity in the market. They argue that it will helpful for better pricing of securities, even if this irrational behaviour of investors leads to make many cognitive errors in investment decisions in the stock market. Reforms to reduce irrationality in the judgment of financial investment will lead to reduce market liquidity and remove valuable information from the market. So irrationality of investors is required in the market. The excessive belief of his knowledge of an investor gives him overconfidence and this leads him to commit cognitive

errors in investments. They support the investors' irrationality because it creates more liquidity in the market.

Kaustia and Perttula (2012) studied the overconfidence among finance professionals. The study reports that finance professionals hold overconfidence because of their better than average effect behavior. They feel that they have a higher knowledge than others and take investment decisions accordingly.

Russo and Schoemaker (1992) find that finance professionals are grossly overconfident regarding the accuracy of their knowledge about their own company and their decisions. This overconfidence leads them to take risky investment decisions and trade activities in the stock market.

Asaad (2012) studied how actual financial knowledge and perceived financial knowledge affected financial decisions. Based on the international data set he found that both types of financial knowledge affected financial decisions. He reported that perceived financial knowledge was one important factor to increase the overconfidence of investors. High financial literacy increases overconfidence and takes more action in investments. But with little actual knowledge individual are more apt to take risky financial choices.

Dorn and Huberman (2005) found that a man's knowledge about the financial market and financial securities would make his overconfidence in his activities in the stock market. They analysed the response of investors to the perceived financial knowledge and actual financial knowledge about the stock market operation and securities. They reported that perceived and actual financial knowledge were the major reasons behind the overconfidence bias of the investor. This was because of the illusion of the knowledge aspect of overconfidence bias. Investors perceived themselves as more knowledgeable than others which made them overconfident in investment decisions.

The above-mentioned studies and literature are indicating that investors' overconfidence behavior emerges because of Self-attribution bias, Risk propensity, Perceived financial Knowledge, and actual financial knowledge.

**2.2 Hypothesis**

Based on the above literature Following hypothesises are tested in the study.

1. Self-attribution bias (SAB) influences the overconfidence bias of stock market investors.
2. Risk Propensity(RP) of the stock market investor influences the overconfidence bias of investors.
3. Perceived financial knowledge(PFK) of an investor influences the overconfidence bias of investor
4. Actual financial knowledge (AFK) of the stock market investors influences the overconfidence bias of stock market investors

## 3. Empirical Test

### 3.1 Sample Selection

The population of the study is stock market investors in Kerala. Investors are those who are registered with national-level stock brokers and have a Demat account with either with national securities depository Limited (NSDL )or central depository security limited (CDSL). According to two depositories of India statistics is the total number of Demat account holders in Kerala is around eight lakhs.

For the study, we have collected 385 investors' response from the Kerala state of India. For data collection, we have divided the population region into three North Kerala, south Kerala, and central Kerala. Based on the presence of the number of national-level stock brokers present in Kerala. The major cities of each region identified the top 15 stockbrokers, those who have the national level presence and multiple branches in these cities or districts. The investors considered in this study are visitors to the branch offices of selected stockbrokers and those who have a stock trading account with those brokers. The study has adopted a purposive or judgmental sampling technique.

### *3.2 Measurement of variables*

#### 3.2.1 Dependent variable

**Overconfidence (OC) -** The proposed study measures the overconfidence bias of investors with the response to the two elements of overconfidence bias namely better than average effect and illusion of control. Better than the average effect is a dimension of overconfidence and measured using questions adapted from the research work of Merkle (2011). The Second

dimension of overconfidence, the illusion of control variable is measured using the questions adopted from the study of Dorn and Huberman (2005) and uses five-point Likert scales in receiving responses from the respondents.

To test whether stock market traders hold overconfidence bias, their overconfidence was measured from the two dimensions of overconfidence namely Better than the average effect (BTA) and Illusion of control (IC). BTA and IC consist of four elements each of which were measured on a 5-point scale. One sample t-test with test value 3.00 was used to assess the extent of agreement of the investors on the elements of the dimension of the overconfidence. The value 3 is the mean of the response scale. This is the model applied by Benoît (2009) to find out the overconfidence of respondents. The majority of respondents rank themselves above the mean; it indicates that respondents are overconfident in their skills or particular skills

**3.2.2 Independent variables are.**

1. **Self-attribution bias (SAB) -** Self-attribution bias is measured using the questions adopted from the research work of Dorn & Huberman (2005) that used a five-point Likert scale
2. **Risk propensity (RP)-** The propensity towards financial risk-taking has been measured by 13 questions adopted from the study of Weber and Milliam (1997).
3. **Perceived financial knowledge (PFK)-** This study follows the same method of Dorn and Huberman (2005) to measure the perceived financial knowledge. It is asked to rate his knowledge level about 11 financial assets on a five-point Likert scale.
4. **Actual Financial knowledge (AFK)-** The proposed study followed the method suggested by Dorn and Huberman (2005). It is asked to mark his knowledge level and answers to the questions about different terminologies in the stock market and investments.

**4. Results**

**4.1 Data analysis and Interpretation**

The mean score of the dimensions of overconfidence was computed from their elements and the mean of overconfidence is estimated from its dimensions by taking arithmetic means and the result was presented in Table 1

**Table 1 Mean score of investors for overconfidence and its dimensions**

| Variables | | Mean | SD | T | Sig. |
|---|---|---|---|---|---|
| Dimensions of Overconfidence | BTA | 3.66 | 0.64 | 20.064 | 0.000 |
| | IC | 3.75 | 0.83 | 17.565 | 0.000 |
| OC | | 3.70 | 0.67 | 20.703 | 0.000 |
| Source primary data | | | | | |

The test value is taken as the mean of the response scale namely Better than average and the illusion of control

The mean score of BTA is 3.66 with a standard deviation of 0.64 and the mean score of IC is 3.75 with a standard deviation of 0.83. The mean score of overconfidence is 3.70 with a standard deviation of 0.67. All the mean scores are significantly higher than the mean of the response scale as the significance levels of one sample t-test is less than 0.05. From the results, it is evident that the sample investors hold overconfidence bias as well as they are holding Better than average characteristics and the illusion of control.

### *4.2* Multivariate tests

#### 4.2.1 Multiple Regression of Antecedents on Overconfidence

The regression analysis has been done to check the impact of independent variables such as self-attribution bias (SAB), risk propensity (RP), perceived financial knowledge (PFK), and actual financial knowledge (AFK) on the dependent variable overconfidence (OC). The impact of each variable on overconfidence bias has been discussed below.

##### 4.2.1.1 Model summary

The multiple regression analysis was performed on the collected data, which shows the value of $R^2$, adjusted $R^2$, the standard error of estimate, and the Durbin-Watson values. Table 2 depicts the comprehensive result of the model summary of the multiple regression.

**Table 2 Model Summary of the Multiple Regression**

| R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|
| 0.565 | 0.320 | 0.313 | 0.553 | 1.939 |

R is the square root of $R^2$ and is the correlation between the observed and predicted values of the dependent variable. $R^2$ is the proportion of the variance in the values of the dependent variable (Y) which can be explained by all the independent variables (Xs) in the equation together. This is an overall measure of the strength of association and does not reflect the extent to which any particular independent variable is associated with the dependent variable.

$R^2$ is a measure of how much of the variability in the outcome (in this case increases the overconfidence) is accounted for by the predictors (i.e.four antecedents: SAB, RP, PFK, and AFK). As shown in Table 2, the $R^2$ value is 0.32, which means that four antecedent groups account for 32 % of the variation in overconfidence. This suggests that the model is quite significant in explaining the variances. The Durbin-Watson (DW)statistic tests for serial correlation of error terms. From table 2 it can visible that the DW statistics value is 1.93, it means that there is no serial correlation.

**4.2.1.2** Analysis of Variance

Table 3 reports the analysis of the variance (ANOVA), which assesses the overall significance of our model. The table shows the value of the sum of squares, degree of freedom, mean square value, F value, and its associated significance value. The dependent value is Overconfidence

**Table 3 ANOVA Table of the regression model for the effect of antecedents on overconfidence (OC) bias**

| | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 54.371 | 4 | 13.593 | 44.523 | 0.000 |
| Residual | 115.707 | 379 | 0.305 | | |
| Total | 170.077 | 383 | | | |

ANOVA was conducted to compare the effect of four antecedent groups on the overconfidence bias of investors. There was a significant effect of four antecedents groups on overconfidence at the $p < .001$ level [$F = 44.523$, $p < .001$]. The ANOVA table (table 3) tests the overall significance of the model (that is, of the regression equation), the significance of the F value is below 0.000, so the model is significant.

#### 4.2.1.3 Coefficients

Table 4 depicts the coefficients of multiple regression. It shows in detail the beta (standardized and unstandardized) value of various independent variables and its associated significance value. The table also shows the collinearity statistics with two parameters, namely the tolerance value and the VIF value

**Table 4 Coefficients of the regression model for the effect of antecedents on overconfidence (OC)**

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Tolerance | VIF |
| (Constant) | 0.606 | 0.277 | | 2.188 | 0.029 | | |
| SAB | 0.433 | 0.047 | 0.422 | 9.149 | 0.000 | 0.844 | 1.185 |
| RP | 0.084 | 0.073 | 0.053 | 1.155 | 0.249 | 0.857 | 1.167 |
| PFK | 0.223 | 0.042 | 0.237 | 5.359 | 0.000 | 0.916 | 1.092 |
| AFK | 0.217 | 0.070 | 0.136 | 3.115 | 0.002 | 0.948 | 1.055 |
| a. Dependent Variable: overconfidence | | | | | | | |

From table 4 β values tell us about the relationship between overconfidence and each predictor. If the value is positive, then there is a positive relationship between the predictor and the outcome, whereas a negative coefficient represents a negative relationship. In this case, all the predictors have positive β values indicating a positive relationship (table 4). The β value also tells us to what degree each predictor affects the outcome of the effect of all other predictors that are held constant.

Each of these β values has an associated standard error indicating to what extent these would vary across different samples, and these standard errors are used to determine whether or not β value differs significantly from zero (using the t-statistics). Therefore, if the t-test associated with a β value is significant (i.e., $p < .001$) then that predictor is making a significant contribution to the model. From table 4, it is evident that 3 predictors namely SAB, PFK, and AFK are making a significant contribution to the model. The contribution of the predictor will be greater if the value of significance is smaller and the value of t is larger. For this model, self-attribution bias, perceived financial knowledge, and actual financial knowledge are significant predictors of overconfidence bias.

The β coefficients and the constants are used to create the predictions (regression) equations. Predicted Overconfidence = 0.433* Self attribution bias + 0.223* perceived financial knowledge +0.21* actual financial knowledge

The t-test tests the significance of each β coefficients. It is possible to have a regression model, which is significant overall by the F test, but where a particular coefficient is not significant.

The presence of multicollinearity in our analyses was checked by estimating variance inflation factors (VIF) for each predictor. All VIF values were in the range of 1.05 to 1.18, well below the cut-off value of 10 suggested by Neter et al. (1989). Hence, multicollinearity is not a threat to the substantive conclusions of this study.

Normally and independently distributed residuals indicated independence of error terms. Linearity was assessed based on residual plots from the regression analyses. The following sub-sections depict various plots of the multiple regressions.

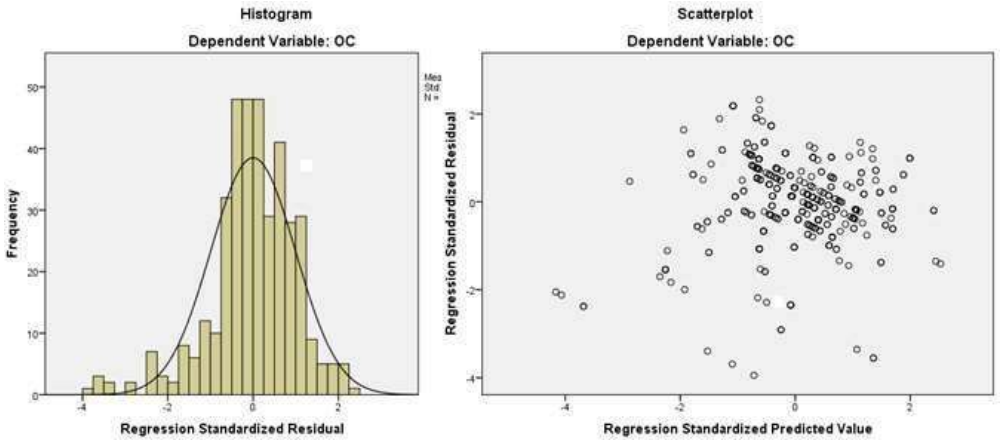


**Figure 1 Histogram and Scatter Diagram of the Residuals of OC**

Figure. 1 presents the histogram and Scatter Diagram of the Residuals of overconfidence (OC). The histogram shows that the frequency of regression standardized residuals is almost normally distributed indicating that the normality of residuals, which is one of the important assumptions of regression analysis.

Similarly, the other important assumption of regression mainly homoscedasticity is also proved by the scatter plot in which the points are scattered without forming any distinguishable pattern. The results thus, establish that the regression model can be used to explain the variation in the

overconfidence (OC) by antecedents like self-attribution bias, risk propensity, perceived financial knowledge, and actual financial knowledge.

## 5. Discussions

From the analysis and findings, it is visible that the self- attribution bias (SAB) is one major antecedent of overconfidence. This is in line with the findings of the study done by (Deaves, Lüders, and Schröder 2005; Kyle and Wang 1997). The market-wide return makes investors overconfident(Simon Gervais and Odean 2001; Odean 1998) because investors think that return made because of his skills. Here the investors praise his success because of his past trades and decisions were positive and right. Our finding is consistent with the findings of the study of (Daniel, Hirshleifer, and Subrahmanyam 1998). They said in their study that the biased self-attribution made the investor praise his successes because of his skills and loss to chances. This behaviour makes him an overconfident investor and this confidence offset the losses from the market. Based on this finding the study accepts hypothesis 1 of the present study.

According to the data analysis and findings, risk propensity has no direct relationship with overconfidence bias. All risk-takers or those who are high risk tolerant may not have overconfidence bias but they may have a risk attitude in some area. This is in line with the findings of Grinblatt and Keloharju (2009) as risk attitude might not show overconfidence in all areas, but it would lead to overconfidence in some areas like sensation seeking. Hamid and Rangel (2013) also said risk propensity of investor may lead to show risk-taking behaviour in the market, but might not be as overconfidence. Risk propensity means, willingness to take risks intentionally or knowingly Simon, Houghton, and Aquino (2000). Overconfidence is an irrational behaviour; it comes as unknowingly among the human being. Thus based on the analysis of the data the null hypothesis 2 is accepted, i.e the risk propensity of the investor doesn't have any relation to the overconfidence behavior of the investor.

According to the results of the data analysis, perceived financial knowledge has a direct effect on the overconfidence bias of stock market investors. The investor who thinks as he has good knowledge about the stock market, different financial products and economy are very active in stock market investments. If the investors frequently purchase and sell stocks, doing a high volume of the trade then he is an overconfident investor. These findings are the same as the findings of Asaad (2012) and Dorn and Huberman (2005) mentioned in their study that those who were with high perceived financial knowledge were overconfident and had a higher

propensity to do risky trading activities. Based on this evidence hypothesis 3 accepted in this study

According to the data analysis, one can easily conclude that actual financial knowledge is also a major factor behind the overconfidence bias. Financial awareness and knowledge make the investor more confident and take a wise decision. This is because of the illusion of knowledge Barber and Odean (2002). Our findings are consistent with the study of (Fares and Khamis 2011; Park, Konana, and Gu, n.d.) as they found financial knowledge is an important antecedent of the overconfidence of investors. Based on this evidence hypothesis 4 accepted in this study.

## 6. Conclusion

The objective of the study was to identify the major antecedents of the overconfidence bias of investors. The review of literature could help to identify major variables that are associated with overconfidence bias. To understand and analyses the reasons behind the overconfidence bias the study has conducted a survey using a structured questionnaire among different investors in Kerala. From the analysis of collected data, the study found that Majority of Stock market investors are having overconfidence bias, Self-attribution bias is the major antecedents of the investor's overconfidence bias. An increase in self-attribution bias leads to an increase in investors' overconfidence. Perceived financial knowledge and actual financial knowledge of investors make them overconfident in investment decisions. Risk propensity is not an antecedent of investors' overconfidence bias. Further study can explore with more variables and socio-cultural factors behind the overconfidence behavior of investors.

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