JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

An empirical investigation of the Indian stock market's overconfidence tendency

1. Dr. Ashutosh Goswami, Assistant Professor, Satyawati College, University of Delhi.

2. Dr. Manoj Kumar, Assistant Professor, Satyawati College, University of Delhi.

3. Ruchi Sharma, Ph.D. Scholar, Center for management studies, Jamia Millia Islamia University.

Abstract:

Using a data set of a sample of Sensex 30 equities for a period of 9 years, this study attempts to capture the impact of overconfidence bias on trading volume in the Indian Stock Market using Vector Autoregressive Model (VAR) and Impulse Response Function (IRF) (2009-2018). The empirical findings support the presence of overconfidence in the Indian Stock Market and its impact on trade volume.

1.1 Introduction

Markets are efficient, investors have rational expectations, and they make decisions that maximize their expected utility (Fama, 1960). However, if investors are thought to be overconfident, several concerns on the financial markets emerge that could not previously be addressed using the standard financial theories. Several researches have looked at the idea that high trading volumes in financial markets are caused by investor overconfidence. (De Bondt and Thaler, 1995), Odean (1998), and Gervais and Odean (2001). Financial professionals have also been perplexed by investors' attitudes toward stock market trading. Several attempts have been made to comprehend the factors that influence an investor's trading decisions. According to behavioral theorists, there are several behavioral biases among investors, which increase trading volume in the stock market. One of them is overconfidence. Overconfidence is defined as the act of exaggerating one's actual performance, placing one's performance in relation to others, and expressing one's belief with excessive accuracy (Moore et al., 2007). Investors that are overconfident feel they can outperform others in the stock market. However, the level of overconfidence varies depending on market outcomes. For example, successful outcome make the investor more overconfident, causing them to trade excessively. Shiller (1997) stated that

"Overconfidence is associated with people believing in their own judgments; these people underestimate the margins of error that are likely to occur."According to Odean (1998) and Gervais (2001), overconfident investors trade more than typical investors and lose the greatest money. As a result of the high market gains, investors get overconfident and trade more than others. The purpose of this study is to see how overconfidence affects trading volume in the Indian stock market.

1.2 Review of Literature

In various market circumstances, a number of researches have been conducted to determine the relationship between stock returns and trading volume. Weber et al. (1998) conducted a controlled laboratory experiment in which people bought and sold six hypothetical stocks over the course of 14 trading rounds and discovered that subjects are around 50% more likely to make gains than losses. Furthermore, Ezzeddine et al. (1998) used a Vector Autoregressive Model (VAR) and associated Impulse Response Functions to examine the monthly return and trading volume in the Tunisian market and discovered evidence of overconfidence bias in the Tunisian market. To explore the influence of overconfidence bias, Billings et al. (2001) employed gender as a dependent variable. Men are more overconfident than women, according to the study, which looked at 35,000 households' common stock investments at the New York Stock Exchange between 1991 and 1997. Men trade 45 percent more than women (based on monthly portfolio turnover), and men's returns are decreased by 2.65 percentage points each year, compared to 1.72 percentage points for women, due to excessive trading rather than bad stock selection. Siwar (2006) employed Time Series Regression, VAR, and GARCH models to investigate the prevalence of overconfidence and disposition impact in the French Stock Market and discovered a substantial association between trading volume and prior stock returns. Weber et al., (2007) performed an internet poll to assess multiple aspects of overconfidence, such as mis-calibration, volatility, and the better-than-average impact, and discovered that investors who believe their investment skills or historical performance are above average trade more than others. Zaine (2013) employed the Vector Autoregressive Model (VAR) and Associated Impulse Response Functions to examine the monthly return and trading volume in the Chinese Stock Market between 2000 and 2006 and discovered indications of overconfidence bias. In the Chinese market, however, there was no evidence of a disposition effect. An attempt has been made to investigate the influence of overconfidence on the Indian stock market utilizing models such as VAR and Impulse Response Function based on the available literature analyzed in this study.

1.3 Data Source

The data source and its description are as follows:

1.3.1 Data Description

This section aims to identify and analyze the impact of overconfidence on trading volume in the Indian Stock Market using monthly observations of BSE 30 stocks collected from the Centre for Monitoring Indian

Economy (CMIE) prowess database for a period of 9 years, from 1st April 2009 to 31st March 2018. The study focused on monthly observations, as suggested by Odean, T. (1998), Ezzeddine et al., (1998), Lo & Wang, (2000), Statman et al., (2006), and Zaine, S. (2013), because monthly observations show variations in investor overconfidence.

1.4 Research Methodology

The impact of overconfidence and disposition effect on trade volume has been investigated in this section.

1.4.1 Description of the Model

The impact of overconfidence on trading volume in the Indian Stock Market was studied using the Vector Auto regression Model (VAR) and Impulse Response Function (IRF). To analyze investor overconfidence, the Vector auto regression model (VAR) was applied to market-wide transaction volume and market returns. Following that, the Impulse Response Function (IRF) was also utilized to evaluate the correctness of the VAR model.

a. **Investor Overconfidence Investigated Using a Market-Wide VAR Model:** Market turnover and market return are endogenous variables, while dispersion and market volatility are exogenous variables.

$$[mtrading_t\ mret_t] = [\alpha_{mtrading}\ \alpha_{mret}] + \sum_{k=1}^{3} A_k\ [mtrading_{t-k}\ mret_{t-k}] + \sum_{l=0} B_l\ [msig_{t-l}\ Disp_{t-l}] + [e_{mtrading,t}\ e_{mret,t}] \quad \text{eq. (1)}$$

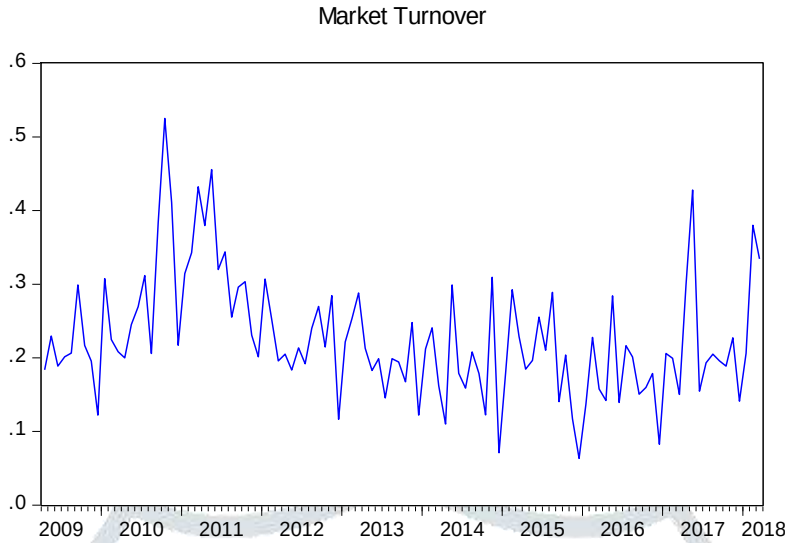
Since the lagged values of market trading appear on both the sides in the above equations through the coefficient matrix Ak, any change in the residuals, say $e_{mtrading,t}$, will alter not only the current value of market trading but also the future values of market trading and market return. We shock the market return by One Sample Standard Deviation to capture overconfidence and observe how market trading activity reacts to the residual market return over time.

b. **Impulse Response Function:** An impulse response function transfers the effect of a One Standard Deviation Shock (measured inside the sample) in one residual to current and future values of the dependent variables using the VAR's dynamic structure. It aids in the visualization of how endogenous variables are related to one another across time. To evaluate the presence of overconfidence and disposition effect in the Indian Stock Market, an impulse response function was used in conjunction with the market-wide model and security-wide model in this study.

1.5 Findings of the study

The following section presents the results and comments on the influence of overconfidence on trading volume in the Indian stock market using the preceding models, namely the VAR model and the Impulse Response Function.

1.5.1 Market Turnover



Source: Research Findings

Fig 1 Monthly Market Turnover for Sensex Index

Figure 1. depicts market turnover from April 1, 2009, to March 31, 2018. Although there is a large range of variation, there is no discernible trend in the turnover. One possible cause of long-term trading activity swings is changes in investor overconfidence produced by realized portfolio returns.

1.5.2 Market VAR Estimation and Test Results

The bivariate VAR model of market trading and market return for equation 1 is summarised in Table 1.

Table 1 Market VAR Estimation (m trading =turnover)

Table 1a Relations with Lagged Market Trading

		M trading (t-1)	M trading (t-2)	M trading (t-3)
M trading (t)	Co-efficient	0.367340	0.050801	0.590943
	Std. error	(0.07985)	(0.04104)	(0.08547)
	P-value	0.00**	0.47	0.00**
M ret (t)	Co-efficient	-0.077341	0.275769	-0.032595
	Std. error	(0.12425)	(0.13491)	(0.13412)
	P-value	0.40	0.02*	0.48

Source: Research Findings
Significant*(5%); Highly significant** (1%)

Market trading is auto correlated, as shown in Table 1a, with a significantly substantial first and third lag coefficient. However, with a significant second lag coefficient, delayed observation of market trade is highly linked to market return.

Table 1b Relations with the Lagged Market Return

		M ret (t-1)	M ret (t-2)	M ret (t-3)
M trading (t)	Co-efficient	0.032568	0.046475	-0.062124
	Std. error	(0.01312)	(0.05293)	(0.03427)
	P-value	0.39	0.03*	0.73
M ret (t)	Co-efficient	-0.002341	0.073464	0.050023
	Std. error	(0.05488)	(0.05847)	(0.05460)
	P-value	0.69	0.75	0.20

Source: Research Findings
Significant*(5%); Highly significant** (1%)

The relationship between market trading and lagged market returns is depicted in Table 1b. The study's findings show that market trading is linked to lag market returns, with a substantial second lag coefficient. The findings are in line with earlier empirical research on the overconfidence theory (Statman et al., 2006; Glaser and Weber, 2007). According to Glaser and Weber (2007), high market returns cause investors to be overconfident in the sense that they underestimate stock return volatility.

Table 1c Relations with Lagged Volatility

		Constant e	M sig (t)	Disp (t)
M trading (t)	Co-efficient	0.086783	0.035117	3.245683
	Std. error	(0.01365)	(0.01206)	(1.30974)
	P-value	0.00**	0.18	0.12
M ret (t)	Co-efficient	0.010476	-0.051297	2.895638
	Std. error	(0.01715)	(0.02170)	(1.54190)
	P-value	0.63	0.00**	0.01*

Source: Research Findings
Significant*(5%); Highly significant** (1%)

The relationship between endogenous and exogenous variables is shown in Table 1c (msig and disp). The results show that there is no statistically significant relationship between trade volume and volatility. Furthermore, there is no correlation between dispersion and trade volume.

1.5.3 Market Impulse Response Function

The complete influence of the independent variable observations is not captured by individual VAR coefficient estimates. An Impulse Response Function, which incorporates all of the VAR coefficient estimations using

bivariate VAR estimation, outlines the full impact of a residual shock that is One Sample Standard Deviation from zero.

Figure 2 depicts all four possible impulse response function graphs.

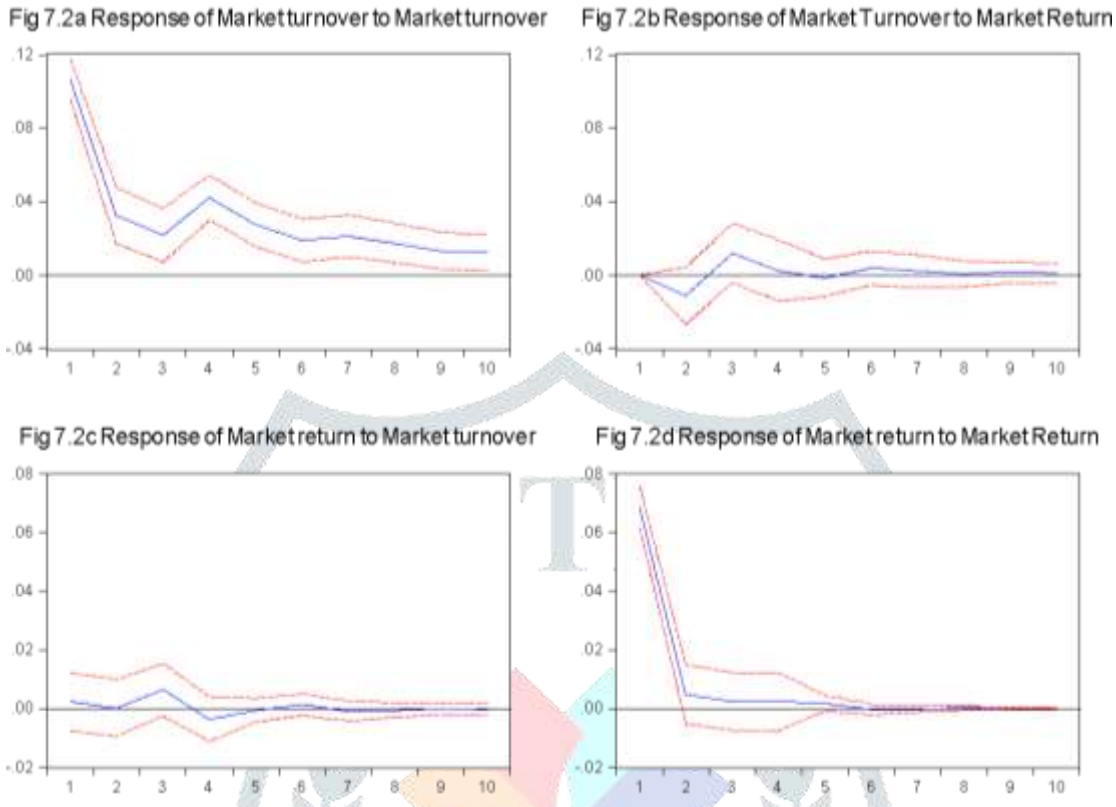


Fig. 2 Response to Cholesky One S.D. Innovations ± 2 S.E.

The vertical axis displays the percentage rise in mtrading, i.e. the volume, while the horizontal axis depicts the number of months in the aforementioned statistics. The impulse response function is shown by the blue line, and the 95 percent confidence intervals are represented by the red lines.

Figures 7.2a and 7.2b depict mtrading and mret responses to one standard deviation, with confidence bands spaced out at two standard errors. Figure 7.2a shows mtrading's large and sustained response to an mtrading shock. Figure 7.2b depicts a positive response in mtrading to mret shock, which is the study's main finding.

Figures 7.2c and 7.2d show mret's responses to one standard deviation of mtrading and mret, respectively, as well as confidence bars spread out at two standard errors. Figure 7.2c shows that mtrading increases modestly after a one standard deviation shock. The impulse response function in Figure 7.2d shows that the mret shock has a beneficial and long-lasting effect.

1.6 Conclusion

The validity of typical financial models is called into doubt by the understanding of investor behaviour toward trade volume. Trading volume has a negative impact on stock prices, which may not be justified by their

price/earnings (P/E) ratio, resulting in stock overvaluation and undervaluation. Stocks that are undervalued are likely to rise, while those that are overvalued are expected to fall. The impact of overconfidence bias on trading volume in the Indian Stock Market is confirmed by the results based on Vector Autoregressive Model (VAR) and Impulse Response Function. Investors might compile a checklist of behavioural biases before trading in the Stock Market to avoid the impact of these biases on trading activity. Before making an investment decision, they might assess the influence of this bias on the (P/E) ratio. In future research, it would be interesting to examine the influence of overconfidence on trading volume in the Indian Stock Market using weekly or daily data.

REFERENCES

Black, F. (1986). Noise. *The Journal of Finance*, *41*, 528–543.

Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under- and overreactions. *The Journal of Finance*, *53*(6), 1839–1885.

De Bondt, W. F., & Thaler, R. (1994). Financial decision-making in markets and firms: A behavioral perspective. https://doi.org/10.3386/w4777

Dhar, R., & Zhu, N. (2006). Up close and personal: Investor sophistication and the disposition effect. *Management Science*, *52*(5), 726–740.

Gervais, S., & Odean, T. (2001). Learning to be overconfident. *The Review of Financial Studies*, *14*, 1–27.

Glaser, M., & Weber, M. (2007). Overconfidence and trading volume. *The Geneva Risk and Insurance Review*, *32*(1), 1–36.

Grinblatt, M., & Han, B. (2004). Prospect theory, mental accounting, and momentum. *Journal of Financial Economics*, *78*, 311–339.

Karpoff, J. (1987). The relation between price changes and trading volume: A survey. *The Journal of Financial and Quantitative Analysis*, *22*(1), 109–126.

Lo, A. W., & Wang, J. (2000). Trading volume : Definitions, data analysis, and implications of portfolio theory. *Review of Financial Studies*, *13*(2), 257–300.

Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, *115*(2), 502–517.

Odean, T. (1998). Volume, volatility, price, and profit when all traders are above average. *The Journal of Finance*, *53*, 1887–1934.

Shefrin, H., & Statman, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. *The Journal of Finance*, *40*(3), 777–790.

Statman, M., Thorley, S., & Vorkink, K. (2006). Investor overconfidence and trading volume. *Review of Financial Studies*, *19*(4), 1531–1565.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, *103*(2), 193–210.

Zaiane, S., & Abaoub, E. (2009). Investor overconfidence and trading volume: The case of an emergent market. *International Review of Business Research Papers*, *5*(2), 213–222.

Zaine, S. (2013). Overconfidence, trading volume, and the disposition effect: Evidence from the Shenzhen stock market of China. *Business Management and Economics*, *1*(7), 163–175.