Original Research Paper

Volume - 10 | Issue - 12 | December - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Economics

OVERCONFIDENCE BIAS IN INDIAN EQUITY MARKET

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ABSTRACT The paper investigates the presence of overconfidence bias in the Indian stock market for the period 1st - January 2014 to 31st December 2019 on the aggregate market level data. For this purpose the monthly data on endogenous variables market turnover and market returns and control variables return volatility and epu have been taken to analyze the relation between market turnover and market returns. We do not find significant impact of past market returns on current market turnover for lag1 and on other higher lags show declining trend. The return volatility and epu also do not have insignificant impact on both the endogenous variables. Our results confirm that investors in the Indian equity market do not exhibit overconfidence bias.

KEYWORDS : Overconfidence Bias, EPU, VAR

1. INTRODUCTION

The stock market history events like the Black Monday crash (1927), the dot.com bubble, and Asian financial crisis of the 90s, and the global financial crisis (2008), have put a question mark on the history of standard finance theories. It has shown a significant impact on stock price changes and trading volumes. These theories were unable to explain the anomalies caused by the various crises led to the emergence of the new branch of study called behavioral finance to study the irrational behavior of the investors in contrast to the assumption of rational behavior of the investors as assumed by traditional financial theories.

The anomalies occurred were related to the sentiment of the investors' which depends on the cognitive and heuristics biases that are most important to study the behavior of the stock market. For these various biases were study and overconfidence bias is one of the most prominent of them that explains this behavior.

The study analyzes the presence of overconfidence bias in the Indian stock market, using trading volume as a proxy for investor overconfidence as most of the previous studies explain (Statman, Thorley, & Vorkink, 2006). The monthly data for the period 1st-January 2014 to 31st- December 2019 on the aggregate market level is taken into consideration because of the rising stock prices and structural changes that happened in this period (Economic Survey 2019-20). The results find a significant impact of past market turnover on current turnover in lag 1st and lag 2nd and then it start to decline in fourth period and then remain positive. Further, it is noticed that the lagged return do not impact the current turnover for any lags. This study do not fits with the overconfidence theory of (Statman et al., 2006). To the best of my knowledge, this is the first paper which considers control variables like exchange rate to test the presence of overconfidence bias. The paper fills the gap by including economic policy uncertainty index (EPU) as a control variable.

The remaining paper proceeds as follows. The literature review is discussed in section 2 followed by the hypothesis of the study in section 3. The data and variables are in section 4 and the methodology in section 5. Results are explained in section 6 and, section 7 concludes the study.

2. Review of Literature

According to empirical studies, if people show a keen interest in trading and investment skills with the help of overestimation then they are more likely to choose their career as a trader or may actively be engaged in trade on their own. Thus, these overconfident traders can survive and dominate the markets for a longer period (Gervais & Odean, 2001). Therefore most of the investors suffer from overconfidence bias which is an example of cognitive bias. So it is possible to trace the behavior of investors by analyzing the market-level data. Using market-level data from Taiwan Stock Exchange (Chuang, Lee, & Wang, 2014) and (Chuang & Susmel, 2011) found a positive relationship between current trading level and past market returns using VAR analysis. (Statman et al., 2006) in their using U.S stock data analyze the investor overconfident for both the market-level data and individual security for the period August 1962 to December 2002. This study conducted using the VAR model.

'The paper by (Metwally,2015) empirically analyzes the presence of overconfidence bias in the Egyptian Stock market for the period from 2002 to 2012 on the aggregate market level data by testing the relationship between market turnover and market return. Further, the period of study is sub-divided into four subsamples: the two tranquil periods (2002-2005 and 2005 -08) and two volatile periods (global financial crisis 2008-10 and the Egyptian Revolt 2010-12). The study found a significant impact of past market returns on current turnover but in the bull market, it is more than the bearish market.

3. Hypothesis

$H_0$1: Investors are overconfident; therefore, current market turnover is positive relative to lagged return.

$H_0$2: Investors trade's excessively in stock markets positively contribute to returns volatility.

4. Data and Variables

Data: The monthly data on market turnover and the market return is obtained from Centre for Monitoring Indian Economy (CMIE) which is a composition of 50 large companies comprising different sectors of the economy. The entire period of data is from 1st January 2014 to 31st December 2019. The value of data is in the domestic denomination.

Variables:

Market Turnover (Mkt trn): It is the total turnover of the Nifty 50. The percentage change in turnover is taken as market turnover.

$$\text{Mkt trn} = \ln(trn_t/trn_{t-1})*100$$

Market Return (Mkt rtn): The market return is the log difference between the current price and its previous price of market return index.

$$\text{Mkt rtn} = \ln(P_t/P_{t-1})*100$$

Where R_t is a market return for period t. P_t is the current period closing value of the index and, P_{t-1} is the previous period closing value of the index.

Market Volatility (Mkt vlty): It is a measurement of risk. The market volatility is defined in many ways but in our study we have taken GARCH (1, 1) to estimate monthly volatility.

Economic Uncertainty Policy (EPU): This index is constructed on the basis of seven Indian papers like The Economics Times, the Times of India, the Hindu, the statesman, the Indian Express and the Financial Express which is based on uncertainty, economy and the regulation of central bank, monetary policy, policymakers, deficit, legislation and fiscal policy.

5. Methodology:

Following a plethora of literature, we adopt the vector autoregression (VAR) methodology given by Statman et al (2006). The VAR model is The following VAR model is applied:

$$Y_t = \alpha + \sum AkYt\text{-}k + \sum Bl\,Xt\text{-}l + et \quad (1)$$

Where Y_t = is an n x l vector observation of endogenous and X_t = is an n x l vector observation of exogenous variables.

A_k & B_l = estimate the time-series relationship between endogenous variables and exogenous variables in the system.

e_t = is a residual vector.

K = is the number of lagged endogenous variables & L is the number of lagged exogenous variables.

6. Results

Descriptive Statistics

Table 1

Variables	Mkt trn	Mkt rtn	Mkt vlty	epu
Mean	1.518	1.576	32.968	0.152
Median	2.804	1.899	8.173	3.887
Maximum	302.951	14.421	806.015	100.112
Minimum	-239.147	-26.880	0.002	-73.818
Std. Dev.	68.352	5.782	98.912	39.292
Skewness	0.594	-1.705	6.932	-0.023
Kurtosis	8.461	9.954	54.165	2.698
Jarque-Bera	92.394	177.462	8313.03	0.277
Probability	8.6E-21	2.92E-39	0.000	0.871

Table 1 represents the descriptive statistics of data. The total observation for each variable is 71.

Unit Root test for stationary:

Before working on the variables data, we test the battery of the unit root. For this purpose, we have tested the unit root test using the Augmented- Dickey-Fuller test and Philips Perron test. We found that all the variables are stationary at 5% level of significance.

Lag -Length Criteria:

We allow endogenous variables to identify the lag by conducting VAR at different lags. Thus using Schwartz Information Criteria (SIC) and Akaike Information Criteria (AIC) criteria minimum value is obtained at lag 5.

VAR Analysis:

Lag	Mkt trn	Mkt rtn
Mkt trn(-1)	-0.950199	0.014736
	-0.13057	-0.01169
	[-7.27728]	[1.26084]
Mkt trn(-2)	-0.762734	0.045674
	-0.17962	-0.01608
	[-4.24648]	[2.84093]
Mkt trn(-3)	-0.434765	0.050832
	-0.20001	-0.0179
	[-2.17374]	[2.83943]
Mkt trn(-4)	-0.334029	0.035662
	-0.18306	-0.01639
	[-1.82473]	[2.17647]
Mkt trn(-5)	-0.382494	0.014928
	-0.13056	-0.01169
	[-2.92965]	[1.27745]
Mkt rtn(-1)	-0.802295	-0.270354
	-1.14082	-0.10211
	[-0.70326]	[-2.64761]
Mkt rtn(-2)	-1.511296	-0.354468
	-1.1337	-0.10148
	[-1.33307]	[-3.49315]
Mkt rtn(-3)	-0.606261	-0.029217
	-1.11514	-0.09981
	[-0.54366]	[-0.29272]
Mkt rtn(-4)	-1.72958	0.070205
	-1.06795	-0.09559
	[-1.61953]	[0.73444]
Mkt rtn(-5)	-1.10261	0.032367
	-1.095	-0.09801
	[-1.00695]	[0.33024]
C	13.90257	3.156069
	-8.04933	-0.72048
	[1.72717]	[4.38052]
Mkt vlty	-0.00449	-0.038619
	-0.06264	-0.00561
	[-0.07169]	[-6.88839]
epu	-0.113271	0.000854
	-0.16788	-0.01503
	[-0.67472]	[0.05686]

Table 4 concludes the VAR results. The turnover is in a high correlation with the previous value. It means that yesterday turnover has an impact on today's turnover. The impact of market volatility and the epu is found to be insignificant for both market return and market turnover. The other part of the result indicates that the previous returns do not have impact on today's turnover and, the impact is not too strong as we expected. Thus, yesterday's return do not determines today's turnover. The results show the absence of overconfidence bias in the Indian stock market. It also means that Indian investors have perfect knowledge of the market and perfect hypothesis do hold.

Impulse Response Function (IRF): IRF explains the one standard deviation in endogenous variables to the shock of other endogenous variables. This is possible only in VAR analysis. IRF graph predicts the future 10 months behavior for market turnover and market return.

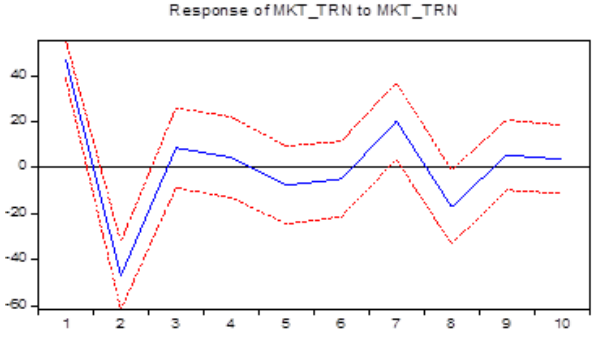

Fig a

The graph in figure (a) shows the impact of one standard deviation of turnover on its self. It is positive for the first month and it is declining and then remains positive for the third month indicating a positive relationship due to shock in turnover.

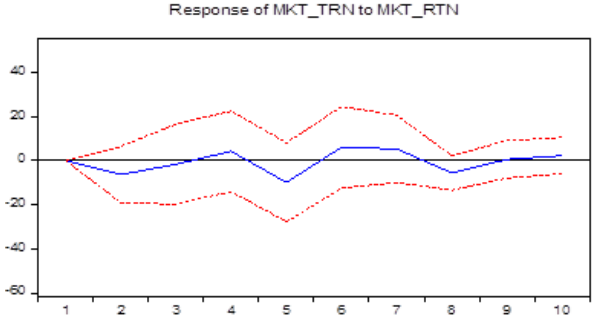

Fig b

In figure (b) the shock of return on turnover is represented. It indicates that turnover is not impacted by return although it is positive for few months because some of the coefficients are positive. This doesn't mean that current turnover is determined by lagged return values.

8. CONCLUSIONS

In this paper, we empirically analyze the relation between market turnover and market return to find the presence of overconfidence bias which is inconsistent with the overconfidence hypothesis. The results show that investors in the Indian stock market do not exhibit overconfident behavior and the investors are well informed about the market.

Further, future works can be done on other control variables like GDP, interest rate due to its proven impacts on changes in prices by taking intraday stock data.

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