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An Empirical Study on an Individual Investor's Perceptions and Behaviour Towards Financial Product Innovation

Geetika Madaan[1] and Amrinder Singh[2]

Abstract

This paper analyses the trading volumes of individual investors before and after the introduction of a financial product innovation and thereby also analyses returns and risk -adjusted returns of individual investors. The study evaluates the trade data of 11765 investors of stockbroking houses in India by applying an event study approach. The study by applying Sharpe ratio and descriptive statistics finally concludes that financial product innovation leads to excessive trading behavior of individual investors and revised risk adjusted returns do not provide explanation for increased trading volumes and finally concluded that young investors are more exposed towards excessive trading behavior. The young investors normally overreact towards information given for financial product innovation by financial intermediaries and thereby generate temporary momentum and volatility apart from what market fundamentals would anticipate.

Keywords: Event study, Financial innovation, Returns, Structured financial product, Trading volumes.

1. Introduction

Innovation of financial product is seen as a driver of trading volumes that considered disseminating risks and returning more uniformly and also seen as readily safe (Moleyneux and Shamroukh, 1999). There is plethora of instances in which it has played a positive role it presume to play. Financial product innovation has become constant and vital phenomenon, which needs to be continuously analyzed to evaluate its positive and negative facet on the trading behavior of investors (Anderloni and Bongini, 2009). For stock broking houses financial product innovation has become a critical 'competitive sword' that help them in demarcating their competitors and supporting in improving their skills to give solutions for the requirements of their clients (investors) (Beck, 2003). Most of academician argued that much of the financial product innovation over the past duration has helped to broaden access to credit for private investors, firms and government by knocking into new sources of investment avenues or innovation of financial product have certainly been aimed at reducing the dissemination of underlying risks and have been accomplished in doing so (Crouhy *et al.*, 2014). It has seen chronically noticed that innovation of financial products usually arises from new necessities created by crisis and scarcity (Allen, James, 2012). Financial product innovation has disposed

1. Research Scholar, Chandigarh University, Mohali, India
E-mail: Geetumadaan2009@gmail.com
2. Associate Professor, Chandigarh University, Mohali, India
E-mail: Amrinder783@gmail.com

to increase returns earned by the financial agents who market them and hence have regular positive impact on the long-term profitability of the financial markets (Ngari and Muiruri, 2014). Many academicians observed that while dealing with innovation and change, the current and prospective investors suffer from observing their knowledge becoming extinct and look at themselves strained into making the expensive efforts of acquiring knowledge which may not be immediately beneficial for the necessary skills of analysis, interpretation, selection and decision related with purchase.

The present study hypothesizes that a financial product innovation leads to excessive trading volume, thereby reducing individual investors returns. The neo classical academicians put on view that individual investors often commit errors incorporating new information and are inclined towards herding phenomenon. They observed that individual investors often overreact in markets, thereby infusing greater volatility, short run impetus and long lasting turnaround in financial markets outside the limits of what is traceable to market fundamentals and economic breakdown.

An ample of studies conducted exist on financial innovation but there are only few empirical studies that have applied event study approach to assess overreacting trading behavior of individual investors on financial production innovation. One area of researches that Frame and White (2004) highlight is an influence of financial product innovation on the welfare of society. This paper adds to filling the research gap described by researches done by above mentioned academicians and researchers. The main question is whether a financial product innovation or more specifically structured financial product has a positive or negative effect on the welfare of individual investors. In order to understand the main objective, two related questions are analyzed in detail. First, does financial product innovation change trading volume of individual investors? Second, what are the effects of financial product innovation on return and risk adjusted return of individual investors? Furthermore, this paper characterizes investors who are inclined to excessive trading after the commencement of structured financial product. In order to examine the impact of financial products on trade volume of individual investors, specific event is determined as the first time an investor trades an innovative financial product. Trade volume, returns and risk-adjusted returns before and after event are analyzed by applying an event study approach.

2. Data Methodology

In order to examine whether individual investors trading activities changes pre and post introduction of financial product, an event study approach is applied. According to Mackinlay (1997), the primitive requirement of applying an event study is to define first relevant event and that is event of interest. In this study main event is defined at individual level when for the first time an investor trade a financial product (derivative instrument). Event window is defined for instance, say for investor 'A' event date might be 1st April 2009 and while for investor 'B' event date might be 5th June 2011. In this paper, 365 days event window is mentioned. The day of the event is not included in order to have proper comparisons of 365 days pre and post events. Longer event window is defined at individual investor level to examine the effect of trading volume because of introduction of financial product.

The aim of this paper is to evaluate abnormal returns that depends on abnormal trading volume and can be calculated by using following equations:

$$AR_{ij} = R_{ij} - E(R_{ij})$$

AR_{ij} = The abnormal trading returns for investor i and period t

R_{ij} = The actual return for investor i and period t ; and,

$E(R_{ij})$ = The expected return for investor i and period t

The model used in this study is an adaption of the constant mean model approach described by Mackinlay (1997) described as below:

$$R_{st} = \frac{\overline{R_{dt}} - R_f}{\sigma_{di}}$$

R_{st} = Sharpe ratio of individual investor i;

$\overline{R_{di}}$ = Average daily round trip return of individual investor i;

σ_{di} = Round trip return standard deviation of individual investor i;

R_f = Risk free return of individual investor i.

Sharpe ratio is calculated twice pre and post event. The difference between the two Sharpe ratios is then measured at significance level. Finally, this study examines the overreacting trading behavior after the event by evaluating cumulative average trading returns as mentioned below:

$$CATR_t = CAR_{t-1} + AAR_t$$

$CATR_t$ = Cumulative average abnormal returns at time t;

$CATR_{t-1}$ = Cumulative average abnormal returns at time t-1;

AAR_t = Average abnormal return for time t.

3. Data Analysis

The data of 11765 investors used in this paper is taken from different broking houses in India and then cross-verified from the apex regulatory authority stock markets in India (Securities Exchange Board of India) in order to enhance the data's authentication. The whole database contains event window data from 9th April 1999 to 9th April 2006. Two files are compiled.

The following Table 1 has descriptive statistics of the sample of the study. The sample consists of 10675 investors. Demographic information available for these investors shows results that 96% of investors are male. This is seven percentage points higher than in the original data set. The average age is 38 (median=37), which is three years younger than in the original data set. There are 386 investors (3.6%) who trade in stocks before they trade structured financial product indicating that most investors do not use structured financial product as an mean to participate in the stock market for the first time.

Table 1: Descriptive Statistics of Investor's Sample

	Details
Panel I: Sample Size	
Number of investors	11,765
Panel 2: Investor demographics	
Percentage of male investors	96%
Average age	38 (37)
Panel 3: Investor portfolios	
Percentage of investor who trade stock before they trade structured financial products	96.4%
Average portfolio size	□41,006 (□21,916)

The table outlines that data used in this observational study. Data is retrieved from the demographic file and the position file. Brokerage houses in India provide this information. The table summarizes the review period from April 1999 to March 2006 and 730 days for each of the 11765 investors. Medians are given in parenthesis.

Table 2 comprised of descriptive statistics of structured financial product trades and all other trades that has given due consideration in this study. This study comprised approximately 1.4 Million transactions wherein 11% are structured financial product trades and 89% are other trades like stocks (shares) trades, mutual funds, government securities. As specified above, the study duration for each investor comprises 730 days. In this course duration, each individual investor carries out on average 18 trades of structured financial product and 196 other trades. Therefore, almost every 12th trade is a trade of structured financial product. The average holding period of round trip trade of structured financial product is 19 days and for other stocks trade round trip trade is 27. It appears that structured financial product trades are faster than other instruments.

Table 2: Descriptive Statistics of Structured Financial Product and Other Trades

	Structured Financial Product Trades	**Other Trades**	**Total**
Panel **I**: Totals			
Number of trades	186,166 (8%)	2,104,406 (92%)	2,290,576
Volume of trades (in ₹)	699M (7%)	9,306M (93%)	10,004M
Volume of trades (in shares)	222M (4%)	4,948M (96%)	4,947M
Commissions (in ₹)	2.8M (8%)	29.8M (92 %)	32.4M
Panel **2**: Averages			
Number of trades	18	196	214
Volume of trades (in ₹)	3,749	4,426	4,366
Volume of trades (in shares)	1,184	2,245	2,172
Holding period (round trips, in days)	19	28	27

The table outlines the information retrieved from the position file. The table summarizes the review duration from April, 1999- March, 2006 and 730 days for each of the 11765 investors. Percentages of total details are in parentheses.

The most commonly used structured financial product type is derivatives both futures and options, which are highly speculative instruments that are mostly knocked out if they hit a certain floor or cap. This derivative innovation as financial product is considered to second highest speculative instrument that are regularly traded in the stock market (Dodd, Randall, 2003). These derivative structured instruments simply follow index-based on National Stock Exchange (NSE) in India.

In order to achieve first object, the profitability of round trips made by the individual investors before and after the event are compared. To make a clear demarcation between round trips pre - event (before introduction of financial product) and post-event (after the introduction of financial product), study only consider round trips that decline absolutely before and after the event. If, supposed, for individual investor event falls on April 1st, 2003, only round trips between April 2nd, 2002 and April 1st, 2003 (before event phase) and round trips April 3rd, 2003 and April 2nd, 2004 (after event phase) are considered. Both the buy and sell transaction have to be executed within the time window. If on other hand, investor A buys an investment on October 26th, 2002 and sells it on June 11th, 2003, the round trip is not considered.

Table 3: Annualized Sharpe Ratios for Daily Round Trip Returns Pre and Post Event

	Pre event	Post event
N	11765	11765
Average daily round trip return	0.002	0.0006
Average standard deviation	0.098	0.148
Annualized Sharpe ratio	0.061	-0.424

The table outlines the information used in the empirical study. Data is obtained from position file. The table summarizes the study duration from April 1999 to March 2006. 'N' denotes the number of individual investors taken for this analysis.

Table 3, shows results on the round trip returns of all 11765 investors, overall 271868 round trips before the individual events and 373,245 round trips after the individual events are considered. For, 11765 investors individual annualized Sharpe ratios pre and post event are estimated. The average daily round trip return of pre- event, which is of 0.2%, is greater than the post event 0.06%. In contrast, the standard deviation of pre-event is lesser than the post event (0.098 vs. 0.148). This is a first detrimental effect of a financial product innovation. It is observed that in post events investors take more risk but earn lesser returns. The annualized Sharp ratio for round trip returns pre-event is 0.061. The fact that the value is slightly larger than zero indicates that investors perform slightly better than as if they invested in the risk less instruments like government securities, bonds, treasury bills etc. The annualized returns Sharpe ratio after the event is -0.424. This indicates that after the event, investors are not even able to outperform the riskless instruments. In brief, it can be concluded that after the introduction of financial product introduction investors trade more, pay additional commissions but are not able to compensate this by greater returns or greater risk – adjusted returns (Vayanos and Woolley, 2008). Finally, investors are in difficult situation in longer run after traded in structured financial products.

Table 4: Investors That Trade in Equity Shares only Before They Trade in Derivative Financial Product

	Investors who trade stocks before they trade derivative financial products	Investors who do not trade stocks before they trade derivative financial products
N (number observations)	10,289	1476
Cumulative abnormal trading Volume (in ₹)	75,679* (1.71)	-72,775 (-0.39)
Cumulative abnormal trading Volume (in shares)	64,845*** (6.43)	-97,212 (-0.42)
Cumulative abnormal trading Volume (in number of trades)	16.29*** (14.83)	23.99*** (3.21)

Table outlines information retrieved from the demographic file and position file. The t-statistics is applied and is shown in parentheses. Three stars (***) shows significance level at 1% or lesser; two stars (**) indicates significance level at 5% or lesser; one star (*) indicates significant level at 10% or less.

The left column exhibits outcome for investors who trade in stocks before they trade in innovative financial products. These investors (individuals) trade in structured financial products in addition to stocks. The right column displays results for investors (individuals) who do not trade in stocks before they trade in innovative financial products. The investors might use structured financial products as a medium to perform in the stock market as beginners. Outcome for investors that trade in stocks before they trade in innovative financial product are not unexpected. The mean for cumulative abnormal trading volume is -72775 but not significant. Cumulative trading in shares is also negative (-97212) and similarly not significant. Intriguingly, the mean for cumulative abnormal trading volume in number of trades is 23.99 and significant. Therefore, all results of inordinate trading are positive and significant. Nevertheless, results for individual investors who do not trade in stocks before they trade innovative financial product differs.

4. Conclusion and Recommendations

This study considers in detail deep understanding of innovation of financial instruments on the trading behavior of individual investors. The study shows the result that financial product innovation leads to excessive trading of individual investors and thereby reduces investor's returns. Better risk- adjusted returns do not serve as an explanation for higher trading volumes (Clement *et al.*, 2016). By applying descriptive statistics paper validate that young investors are risk takers and shows overreacting trading behavior. There are few researches that contribute to the literature on innovation of financial product (Allen *et al.*, 2012). This paper is among the few that analyses the impact of a financial product innovation on overreacting trading behavior of individual investors. It appears as if innovation of financial product intrinsically does not automatically have the significant impact on the well being of investors in terms of long-term profitability (Elul, 1999). It can prompt excessive trading and thereby reduce investor's returns. Overreacting trading behavior has some realistic implications (Barber and Odean, 2013). Financial institutions and financial agents should precisely explain the benefits and probable drawbacks of new products (Crouchy *et al.*, 2014).

Future research should also analyze the impact of new innovative instruments on private or institutional investor's portfolio risk. Furthermore, it would be interesting to experience whether recommendations of financial advisor curtail the overreacting trading behavior of investors after the introduction of financial products. Moreover, this research examines the impact of innovative financial product on individual investors. Future research should involve financial institutions; foreign institutional investors to better comprehend if financial innovation has positive or negative impact on trading volumes and on their long-term profitability.

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