

# Investor Behaviour in Derivatives Market

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## **Abstract**

*Derivatives market has seen a tremendous growth in India during the last two decades. It has become relevant to understand investors perception and behavior as well as the factors that influence it for appreciating long term sentiments of this market. The objective of this paper was to analyse the investor behaviour in Indian derivatives market. In the light of investment features like frequency of investment in derivatives, investors experience in derivatives trading, method of trading, profit earned, objective of investment, percentage of investment, perceived risk of derivatives market, and importance of derivatives market in India. These investor behaviour characteristics have also been analysed on the basis of demographics wise differences in Indian investors. For the purpose of the study, a structured questionnaire was administered and responses were received from 432 respondents. The results reveal that investor behaviour in derivatives market which is governed by various factors mentioned above are affected by demographic variable of the investor like gender, age, nature of employment, workplace activity, work experience, annual family income, educational background.*

**Keywords:** *Derivatives market, investors experience, demographic variable*

## **I. Introduction**

India became an active participant in the global economy during post LPG reforms era since 1990s. These reforms led Indian economy to a new direction which had a huge impact on the financial markets. Introduction of derivatives in 2000 was another landmark event, which had drastically changed the financial markets and investors behavior. With the derivative instrument available for hedging, speculation and arbitration, both the small and large investors are now being exposed to what could be termed as “New Markets”. This has had a tremendous impact on the financial markets (hereon referred to as “market”) and particularly on the behavior and sentiments of the market players. However, with the onset of “Global Financial Crises of 2007-08” the market volatility and market behavior were deeply impacted. During this time Sensex, that had hit 21,206.7, tested the levels of 7,697.39 (decline of approximately 64%). This crisis, had hit both large and small investor gravely and impacted their behavior and sentiments in the market. Fast forward, India currently is among the largest financial markets of the world, with NSE ranking on the top in terms of volume. With Sensex trading over 40,000 indicates a huge bull ride for the investors in the market. Investors behavior in India is moving from savings towards investment aptitude. There is a significant change in the behavior of retail investors, specifically towards derivative market. Even for the academics, the concept of behavioral finance is booming. In today’s scenario there is a need to understand the investor’s attitude and behavior, to really understand the markets. In light of this, our study focuses on understanding the demographic profile of the

investors behavior and perception in the derivatives markets in light of their demographic profile. The study focuses on examining the various factors including frequency of derivatives investment, experience, method of trading, profit earned, objective, differences in investment and presumed risk of trading in derivatives market vis-a-vis the demographic profile of investors.

To understand the investor behavior towards derivative market it is important to draw inferences for unraveling factors that influence the risk tolerance level of the investors. So the results of the study may give the researcher a quantitative data reflecting the factors affecting the investor behavior in derivative market with load factors. Through this study we may identify the various factors influencing the investment behavior in derivative market. This will not only be useful for asset management companies to frame their investment policy but also help the macro policies makers to frame certain policy that may encourage investors to invest in derivative market.

The paper gives the review of the related literature, methodology of the study, discussion on the results, and conclusions.

## **II. Review of Related Literature**

The review of select related studies based on primary survey conducted for analysing the perception of investors in the derivatives market and other related aspects related to it are discussed as under:

Anbukarasi and Devaki (2020), analyzed the behavior myths in commodity derivative market of retail investors including herding behavior, over confidence, self-attribution, observation and narrative myths. Among the behavioral myths, it was found that herding behavior is more influencing the retail investors in commodity derivative market. The study thus concluded that investors are majorly following the previous investors return pattern in the commodity futures market.

Disha (2018) analyzes and compared the perception of investors towards derivatives and equity. It was analysed that there is no difference in the perception of the investors towards equity and derivatives. It was also identified that investors found derivatives more risky than equity, various favourable factors that make the investment in equity easier for the investors and due to that the investors prefer to invest in equity.

Gakhar, D (2016) analyses derivatives awareness level of Indian investor and perception of the investor about the future of the derivatives market in India. The results reveal that in future, having an investor grievance redressal mechanism which is approachable under trading hours, steps to be taken by regulators to increase investments, conducting investor training and awareness programmes is required. Ngugi N., et al. (2013) found financial derivatives instruments help companies to manage risk, in the betterment of legal and regulatory framework, right market environment, and in increasing operational efficiency. Stulec, I., et. al (2013) found that firms believe that derivative is a risky instrument and only high class investors can invest in this market. Papa, Vincent T. and Peters, Sandra J. (2013) concluded that hedge accounting-related disclosures need to have financial statement (i.e. income statement and balance sheet) with effects of hedge accounting. Brahmabhatt, et. al, (2012) found that the awareness of investment knowledge, investment opportunities is very high in Mumbai. Thomas, T. C. and Rajendran, G. (2012) categorized investment perceptions of individual investors based on

BB&K personalities. Daniel, Ekerumeh Aduodehe (2010) checked level of awareness of financial derivatives and found a good level of awareness among investors and showed that Ghana is ready to develop a derivatives market but legal and regulatory framework for derivatives trading is needed. Martin, A., et. al (2009) obtained that the possibility of development of financial derivatives market in Peru is less due to less market regulations and less training was given to respondents (Chief financial managers). Milos Sprcic, (2007) indicated that non-financial firms of Croatian and Slovenian were weak in taking decision about derivatives. Ahmed A. El-Masry, (2006) shows that large firms are using derivatives more as compared to medium and smaller firms. Public companies use derivatives instruments more than private companies. No significant exposure, disclosures of derivatives under FASB rules, and costs of establishing and maintaining derivatives were high because derivatives are not very popular over there. Guay, Wayne, and Kothari, S.P. (2003) found that non-financial firms were using corporate derivatives very often. Worthington, Andrew (2006) found a low financial literacy level among the Australian respondents.

### III. Methodology

The objective of this study is to analyse the investor behaviour in Indian derivatives market. Investor behaviour is analysed in the light of investment characteristics like frequency of investment in derivatives, experience in derivatives trading, method of trading, profit earned, objective of investment, percentage of investment, perceived risk of derivatives market, importance of derivatives market in India. These investor behaviour characteristics have also been analysed on the basis of demographics factors of Indian investors. For this purpose, a structured questionnaire was administered and responses were received from 432 respondents. The sample included individual investors and institutional investors also. The institutional investors include: stock brokers, sub-brokers, property dealers, financial advisors, traders, mutual fund companies, insurance companies and businessmen.

The following hypotheses were tested:

*H<sub>01</sub>: There is no significant relationship between demographic factors and frequency of Investment in derivatives market.*

*H<sub>02</sub>: There is no significant relationship between demographic factors and experience of derivatives trading.*

*H<sub>03</sub>: There is no significant relationship between demographic factors and method of derivatives trading.*

*H<sub>04</sub>: There is no significant relationship between demographic factors and profit earned in derivatives market.*

*H<sub>05</sub>: There is no significant relationship between demographic factors and percentage of investment in derivatives instruments.*

*H<sub>06</sub>: There is no significant relationship between demographic factors and importance of derivatives instruments.*

*H<sub>07</sub>: There is no significant relationship between demographic factors and risk of derivatives market.*

*H<sub>08</sub>: There is no significant relationship between demographic factors and about objectives of derivatives market.*

Data analysis has been carried out using Chi-square test in SPSS.

#### **IV. Analysis and Discussion**

In this section the analysis of 432 investors' responses has been discussed. Investor behaviour in derivatives market has been analysed on the basis of their frequency of derivatives investment, experience, method of trading, profit earned, objective, percentage of invested portfolio, risk of derivatives market, importance of derivatives market in India.

The respondents were inquired about their trading behaviour in derivative market and Table 1 depicts the nature of trading based on frequency, experience, objectives and methods of trading in derivatives market.

| <b>Table 1: Investor Behaviour in Indian Derivatives Market</b> |                   |
|---|-------------------|
|   | <b>Percentage</b> |
| <i>Frequency of investment in derivatives</i>                   |                   |
| Intraday  | 34.7              |
| Daily   | 11.6              |
| Weekly  | 15.3              |
| Monthly   | 25.5              |
| Quarterly   | 6.9               |
| Annually  | 6.0               |
| Total   | 100.0             |
| <i>Experience of Trading in Derivatives Market</i>              |                   |
| Less than 1 year  | 37.3              |
| Between 1-3 years   | 39.9              |
| More than 3 years   | 22.8              |

|   |              |
|---|--------------|
| Total   | <b>100.0</b> |
| <b><i>Method of Trading in Derivatives Market</i></b>           |              |
| Self  | 31.3         |
| Through a Broker  | 50.3         |
| Take help of Friends  | 11.4         |
| Through your Family Members                                     | 7.0          |
| <b>Total</b>  | <b>100.0</b> |
| <b><i>Profit percentage of Derivatives Trading</i></b>          |              |
| 0-5 %   | 17.6         |
| 5-10 %  | 26.6         |
| 10-15 %   | 26.8         |
| 15-20%  | 17.1         |
| 20 % and above  | 11.9         |
| <b>Total</b>  | <b>100.0</b> |
| <b><i>Percentage of investment in Derivative Instrument</i></b> |              |
| 0-5 %   | 16.1         |
| 5-10 %  | 35.0         |
| 10-15 %   | 26.2         |
| 15-20 %   | 16.1         |
| 20 % and above  | 6.6          |
| <b>Total</b>  | <b>100.0</b> |
| <b><i>Importance of Derivative investment</i></b>               |              |
| High returns  | 47.9         |

|  |              |
|--|--------------|
| More efficient market  | 23.8         |
| Less physical monetary transactions                          | 8.5          |
| Less Risky   | 7.1          |
| No Problem in settlement                                     | 12.7         |
| <b>Total</b>   | <b>100.0</b> |
| <i><b>Risk associated with Derivatives market</b></i>        |              |
| Chances of losing money                                      | 61.7         |
| Difficulty found in fund transactions                        | 8.2          |
| Difficulty found in settlement procedure                     | 18.9         |
| Counter party risk   | 10.1         |
| <b>Total</b>   | <b>100.0</b> |
| <i><b>Investment objective of Derivatives Investment</b></i> |              |
| To discover the price  | 9.4          |
| To hedge my portfolio  | 26.4         |
| To do speculation and earn higher returns                    | 33.8         |
| To take benefits of arbitrage                                | 19.9         |
| To make my investment risk-free                              | 10.5         |
| <b>Total</b>   | <b>100.0</b> |

Around 34.7 per cent of the investors do intraday trading in the market. 37.3 per cent investors have 1-3 years of experience of trading in the derivatives market. 22.8 per cent respondents have more than 3 years of experience of trading in derivatives market. The majority of respondents (50.3 per cent) take help of brokers while investing money in the derivatives market. The respondents (26.8 per cent) conveyed that they are able to make 10-15 per cent profit in the derivatives market. The investment made by 35 per cent of the respondents in the derivative market is between 10-15 per cent of their total portfolio. With regard to the importance of derivative market 47.9 per cent respondents consider that derivatives market gives high returns and 23.8 per cent consider that it makes market more efficient. Most of the investors (61.7 per cent) consider that chances of

losing money make this market very risky. Most of the investors in this market consider that their objective of investment in derivatives market is speculation and earning high returns (33.8 per cent) and hedging their portfolio (26.4 per cent).

Investor behaviour in the derivative market can be reflected through these eight parameters. The data was analysed using chi-square test and frequencies of respondents were compared. The summary of the results has been presented in Table 2.

| <b>Table 2: Chi-Square Results of Demographics-wise Differences in Investment Behaviour in Derivatives</b> |                                   |                                   |                                   |                                   |                                   |                                    |                                   |                                   |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|
| <b>Demographics</b>  | <b>Frequency of investment</b>    | <b>Experience of Trading</b>      | <b>Method of Trading</b>          | <b>Profit percentage</b>          | <b>Percentage of investment</b>   | <b>Importance</b>                  | <b>Risk associated</b>            | <b>Investment objective</b>       |
| <b>Gender</b>  | 6.236<br>(0.397)                  | <b>5.851</b><br>( <b>0.054</b> )  | 4.931<br>(0.177)                  | 2.586<br>(0.629)                  | <b>20.158</b><br>( <b>0.00</b> )  | <b>12.756</b><br>( <b>0.013</b> )  | <b>13.933</b><br>( <b>0.008</b> ) | 1.856<br>(0.762)                  |
| <b>Age</b>   | <b>35.016</b><br>( <b>0.009</b> ) | <b>37.895</b><br>( <b>0.000</b> ) | 10.228<br>(0.332)                 | <b>20.497</b><br>( <b>0.058</b> ) | <b>36.458</b><br>( <b>0.00</b> )  | <b>25.086</b><br>( <b>0.014</b> )  | 12.390<br>(0.415)                 | <b>26.574</b><br>( <b>0.009</b> ) |
| <b>Nature of your Employment</b>   | <b>69.965</b><br>( <b>0.00</b> )  | <b>38.321</b><br>( <b>0.000</b> ) | <b>21.151</b><br>( <b>0.048</b> ) | 20.041<br>(0.218)                 | <b>21.714</b><br>( <b>0.153</b> ) | <b>27.778</b><br>( <b>0.034</b> )  | <b>43.242</b><br>( <b>0.000</b> ) | <b>31.041</b><br>( <b>0.013</b> ) |
| <b>Workplace Activity</b>  | 8.789<br>(0.186)                  | 3.038<br>(0.219)                  | <b>13.107</b><br>( <b>0.004</b> ) | 2.979<br>(0.561)                  | 6.126<br>(0.19)                   | 3.571<br>(0.467)                   | 1.704<br>(0.790)                  | <b>9.286</b><br>( <b>0.054</b> )  |
| <b>Work Experience</b>   | <b>56.540</b><br>( <b>0.000</b> ) | <b>98.088</b><br>( <b>0.000</b> ) | <b>20.936</b><br>( <b>0.013</b> ) | <b>23.540</b><br>( <b>0.023</b> ) | <b>30.732</b><br>( <b>0.002</b> ) | <b>37.975</b><br>( <b>0.00</b> )   | <b>29.236</b><br>( <b>0.004</b> ) | <b>37.579</b><br>( <b>0.00</b> )  |
| <b>Annual Family Income</b>  | <b>21.522</b><br>( <b>0.043</b> ) | <b>17.059</b><br>( <b>0.002</b> ) | <b>14.115</b><br>( <b>0.028</b> ) | <b>15.982</b><br>( <b>0.043</b> ) | <b>15.725</b><br>( <b>0.046</b> ) | <b>12.094</b><br>( <b>0.0147</b> ) | 6.557<br>(0.585)                  | 11.990<br>(0.152)                 |
| <b>Educational Background</b>  | <b>37.006</b><br>( <b>0.005</b> ) | <b>19.363</b><br>( <b>0.004</b> ) | 12.102<br>(0.208)                 | 9.147<br>(0.690)                  | <b>24.177</b><br>( <b>0.019</b> ) | <b>24.730</b><br>( <b>0.016</b> )  | 14.963<br>(0.243)                 | 13.748<br>(0.317)                 |

The analysis of results in Table 2 reveals that null hypothesis  $H_{0j}$  is not supported, as frequency of trading in derivatives market is statistically significantly different for various demographics namely age, nature of employment, work experience, annual family income, educational background. The frequency of investment depicts the attachment and comfort level of any investor with derivatives products and majority of investors'

trade on monthly basis in this market. So, it seems logical that age, work experience, income and education level enhances the confidence and comfort of trading in derivatives market.

Experience of derivative trading is an important indicator of knowledge of any investor about the market. Broadly, the trading experience of investors were categorized into three categories- less than one year (new investors), 1-3 years and more than 3 years (highly experienced investors who have seen ups and downs of the market). The chi-square result (5.851) shows that there is significant relationship between gender of the respondents and their experience of derivative trading. Age of the respondent has significant difference with regard to experience of derivative trading with chi square result (37.895). Nature of employment of the respondents and their experience of derivative trading has found to have relationship as per chi-square result (38.321). It was observed that that self-employed respondents and non-corporate sector respondents were the one who had maximum experience in trading of derivatives in the market and not employed respondents had least experience in trading of derivatives in the market. Work experience of the respondents and their experience of derivative trading has significant relationship as depicted by chi-square result (98.088). Annual family income was observed to be significantly related to the experience of derivative trading as depicted by the chi-square results (17.059). The chi-square result (19.363) depicted that educational background and their experience of derivative trading were significantly related. It can be summarized that null hypothesis ( $H_{02}$ ) is not-supported and there exists significant relationship between age, nature of employment, experience, family income and educational background and experience in derivatives trading.

The relationship between demographic factors and the method of derivative trading by the respondents shows the chi-square result (4.931) showed that gender of the respondents and their method of derivative trading had no significant relation. The workplace activity in which respondents are involved was found to have significant relation with their method of derivative trading as depicted by chi-square result (13.107). Work experience of the respondents and their method of derivative trading also had significant relation as depicted by chi-square result (20.936). Annual family income was observed to be significantly related to the method of derivative trading of the respondents as depicted by the chi-square results (14.115). The chi-square result (12.102) depicted that educational background and their method of derivative trading were not significantly related. It can be concluded that null hypothesis ( $H_{03}$ ) is not supported as there exist significant association between nature of employment, workplace activity, work experience and annual family income and method of derivatives trading.

Relationship between demographic factors and the profit earned in derivative market by the respondents shows that the chi-square result (2.586) showed that gender and the profit earned by respondent in derivative market had no significant relation. It is seen that null hypothesis ( $H_{04}$ ) is partially supported as there is no association between gender, nature of employment, workplace activity, and educational background and profit earned in derivatives market.

In terms of relationship between demographic factors and the percentage of investment in derivative market by the respondents the chi-square result (20.158) showed that gender and the percentage of investment in derivative market has significant relation. The chi-square result is also significant for age and percentage of investment in derivatives market at 1 per cent level of significance. Work experience, annual family income and educational background were also found to be statistically significant for percentage of investment in derivatives



market. So, null hypothesis is not supported ( $H_{05}$ ) as gender, age, nature of employment, work experience, annual family income, education significantly affect percentage of investment in derivatives market.

Gender has significant association with importance of derivatives instruments as chi-square value is 12.756 which is significant at 0.05 per cent level. Age is also significantly related to importance of derivatives at 1 per cent level. Nature of employment, work experience and educational background are also significantly associated with importance of derivatives market. The null hypothesis ( $H_{06}$ ) is thus not supported.

Demographic profile wise differences about risks are related to derivatives market. The chi-square result (13.933) showed that gender of the respondents and the risk related to derivative market had significant relation. Age of the respondents and the profit earned by respondent in derivative market were found to be not significantly related with chi square result (12.390). Nature of employment of the respondents and the risk in derivative market had significant relation as depicted by chi square result (43.242). The workplace activity in which respondents are involved was found to have no significant relation with the risk in derivative market as depicted by chi-square result (1.704). The chi-square results do not significant association between annual family income and education and investor's understanding about risks of derivatives market. Similarly the results are also significant between work experience ( $F=23.810$  with 0.022 level of significance) and understanding of risks. It can be summarized that null hypothesis ( $H_{07}$ ) is partially supported as gender, nature of employment and work experience are significantly associated with risk perception of derivative market.

The chi-square result (1.856) shows that gender and the objectives of respondents in derivative market had no significant relation. Age of the respondents and the objectives of respondents in derivative market were found to be significantly related with chi square result (26.574). Work experience of the respondents and the objectives of respondents in derivative market had significant relation as depicted by chi-square result (37.579). Annual family income was observed to be significantly related to the objectives of respondents in derivative market as depicted by the chi-square results (11.990). It can be summarized that null hypothesis ( $H_{08}$ ) is partially supported as age, nature of employment, work place activity and work experience are significantly associated with investment objective of derivative market.

The results show that all null hypothesis are partially supported or not supported. This indicates that demographic factors significantly affect investor behaviour.

## V. Conclusion

Gender of the respondent affects their perception about importance and risk in derivatives market as females consider derivatives market more risky as compared to males. Also gender of the investor significantly affects their percentage of investment and number of years of experience in derivatives market. Age wise differences in investment behaviour is found to be significantly affecting frequency of trading, experience of trading, profit earned, investment objective, importance and perceived risk in derivatives. Nature of employment which characterizes investors into those employed in government sector, corporate sector, business and self employed, this significantly affect investor behaviour in terms of frequency, percentage, experience, objective, perceived importance and risk of derivatives market. Workplace activity which is classified into finance related job profile and non-finance related job profile also affects their method of trading and investment objective.

Work experience of investor and annual income of investor is very important factor that significantly affect investor behaviour in derivatives market. Educational qualification significantly affects investors' frequency of trading, experience and perceived importance of derivatives market.

Overall we can conclude that investor behaviour in derivatives market which is governed by factors like frequency of investment, experience in market, method of investment, objectives of derivatives market, importance, risk, profit earned in derivatives market, percentage of investment made are affected by demographic variable of the investor like gender, age, nature of employment, workplace activity, work experience, annual family income, educational background.

The findings of this study are useful for investment consultants, portfolio managers, wealth managers, mutual funds, for designing portfolios for their clients and suggesting them right investment product mix.

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