



## A STUDY ON INVESTORS' INVESTMENT DECISION ON DERIVATIVES MARKET IN INDIA

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### **Abstract**

*This paper attempted to analyse the investors' investment decision on derivatives market in India. Investors have a way of thinking that measuring the derivative trading activities is a more complex and risky process, in this regards regulatory authority has taken more effort for reform the market regulation but still Indian investors are not clear of the derivatives market mechanism. The primary data have been collected from Indian derivative market investors in 16 districts of Tamilnadu and secondary data were collected from reports published by the derivatives market, stock market website in India, journals, magazines, periodicals and dailies. The sample size for the study was 402 derivative investors 16 districts in Tamilnadu. Factor analysis, cluster analysis and correlation analysis were used to analyse the data.*

### **Introduction**

Derivatives are difficult to understand partly because they have a unique language. For instance, many instruments have counterparty, which is responsible for the other side of the trade. Each derivative has an underlying asset for which it is basing its price, risk and basic term structure. The perceived risk of the underlying asset influences the perceived risk of the derivative.

Pricing is also a rather complicated variable. The pricing of the derivative may feature a strike price, which is the price at which it may be exercised. When referring to fixed income derivatives, there may also be a call price which is the price at which an issuer can convert a security. Finally, there are different positions an investor can take: a long position means he/she is the buyer and a short position means he/she is the seller. In this regard the investors have more confusion about the process of derivatives market. Therefore, this research concentrates what the factors are considering while taking investment decision on derivatives market.

### **Objectives of the Study**

1. To analyze the investors investment decision on derivatives market.
2. To study the relationship between dependent variables and independent variables

### **LIMITATIONS OF THE STUDY**

1. The study has covered 16 districts of Tamilnadu. The remaining districts of Tamilnadu are excluded from the study.
2. The independent variables pertaining to socio – economic profile of the investors are restricted to select variables only.

### **Research Methodology**

As far as objectives of the study are concerned, the study aims to analyse and describe the investment decision with respect to derivatives market. Hence, the research design applied for this study is analytical and descriptive in nature. Both primary and secondary data were used in this study. The primary data was collected from investors of derivative instruments in all the 16 districts of Tamilnadu. The secondary data was collected in the form of reports published by derivatives market, stock market website in India, journals, magazines, periodicals and dailies.

The investors who have invested in Indian derivatives market of Tamilnadu represent the population for the study. The sample respondents have been selected from 16 districts of Tamilnadu by adopting purposive sampling method.

According to the sample size determination, 402 respondents were chosen (by statistical formula is applied to determine the optimum sample size) from 16 districts (50%) out of the 32 districts of Tamilnadu namely, Chennai, Coimbatore, Dharmapuri, Dindigul, Erode, Kanchipuram, Karur, Krishnagiri, Madurai, Namakkal, Salem, Thiruvallur, Triruppur, Tiruvannamalai, Trichy and Villupuram using lot system.

### **Review of Literature**

**Avijit Banerjee (1998)** reviewed Fundamental Analysis and Technical Analysis to analyze the worthiness of the individual securities needed to be acquired for portfolio construction. The Fundamental Analysis aims to compare the Intrinsic Value (I.V) with the prevailing market price (M.P) and to take decisions whether to buy, sell or hold the investments. The fundamentals of the economy, industry and company determine the value of a security. If the I.V is greater than the M.P., the

stock is under priced and should be purchased. He observed that the Fundamental Analysis could never forecast the M.P. of a stock at any particular point of time. Technical Analysis removes this weakness. Technical Analysis detects the most appropriate time to buy or sell the stock. It aims to avoid the pitfalls of wrong timing in the investment decisions. He also stated that the modern portfolio literature suggests 'beta' value as the most acceptable measure of risk of scrip. The securities having low should be selected for constructing a portfolio in order to minimize the risks.

**Kumar and Chandra Abhijeet (2000)** stated in their article "Individual Investor's Sentiments and Asset Pricing" June 2000, that Individuals often invest in securities based on approximate rule of thumb, not strictly in tune with market conditions. Their emotions drive their trading behaviour, which in turn drives asset (stock) prices. Investors fall prey to their own mistakes and sometimes other's mistakes, referred to as herd behaviour. Markets are efficient, increasingly proving a theoretical concept as in practice they hardly move efficiently. The purely rational approach is being subsumed by a broader approach based upon the trading sentiments of investors. The present paper documents the role of emotional biases towards investment (or disinvestment) decisions of individuals, which in turn force stock prices to move.

**Giridhari Mohanta and Dr. Sathya Swaroop Debasish (2011)** studied that investors invest in different investment avenues for fulfilling financial, social and psychological need. While selecting any financial avenue they also expect other type of benefits like, safety and security, getting periodic return or dividends, high capital gain, secured future, liquidity, easy purchase, tax benefit, meeting future contingency etc.

**E. Bennet, Selvam, Eva Ebenezer, Karpagam, and Vanitha (2011)** concluded that the average value of the five factors, namely, Return on Equity, Quality of Management, Return on Investment, Price to Earnings Ratio and various ratios of the company influenced the decision makers. Further, other five factors, namely, recommendation by analysts, broker and research reports, recommended by friend, family and peer, geographical location of the company and social responsibility were given the lowest priority or which had low influence on the stock selection decision by the retail investors.

#### Data analysis and Interpretation

Investors' investment decision is analysed using statistical tools namely, factor analysis, and correlation analysis.

#### Factor Analysis

Factor analysis is used to identify and define the underlying dimensions (factors) in the original variables. Here 19 statements are identified to study the investment decision. The variables are stated in the form of statements to collect opinion from investors. They are asked to give their opinion for all the 19 statements in the Likert's five point scale with alternate options such as strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. Initially, the correlation among these variables is calculated. Usually a correlation value of 0.3 is considered sufficient to explain the relation between variables. If the correlation between variables is small, it is not likely that they share common factors. A closer examination of the correlation matrix may reveal variables which do not have any relationship. Therefore, all the 19 variables have been retained for further analysis. Further, two tests are applied to the resultant correlation matrix to test whether the relationship among the variables is significant or not.

**Table 1, KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.714
Bartlett's Test of Sphericity	Approx. Chi-Square	4.844
	Df	171
	Sig.	.000

Source: Primary Data

#### KMO and Bartlett's Test

The Kaiser-Meyer-Olkin test is based on the correlations and partial correlations of the variables. If the test value of KMO measure is closer to one, it is good to use factor analysis. If KMO measure is closer to zero, the factor analysis is not a good idea for the variables and data. The value of KMO measure of sampling adequacy is 0.714.

Another test namely, Bartlett's test of sphericity is used to test whether the correlation matrix is an identified matrix i.e., all the diagonal terms in the matrix are zero. The significant value of Bartlett test is 0.000. Hence, there exists a significant relationship among the variables. The measure of KMO test and value of Bartlett test indicate that the present data are useful for factor analysis.

**Table 2, Total Variance Explained**

Component	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.73	30.13	30.13	5.73	30.13	30.13	4.65	24.50	24.5
2	3.11	16.34	46.47	3.11	16.34	46.47	4.12	21.66	46.15
3	2.15	11.32	57.79	2.15	11.32	57.79	2.21	11.64	57.79

Source: Primary Data

### Factors and Total Variance

The next step in the process is to decide about the number of factors to be derived. Principal Component Analysis (PCA) method is applied to choose the number of factors for which “Eigen Values” with greater than unity. The component matrix so framed is further rotated orthogonally using Varimax Rotation Algorithm. All the statements are added on the three factors. The results so obtained have been given in the tables separately along with factor loadings. Among the three factors, the first factor which accounts for 24.495 percent of variance is the prima criteria considered to study the investors’ investment decision, second factor accounts for 21.659 percent and third factor accounts for 11.639 percent. The cumulative variance of all three factors is 57.793 percent. The following table gives the factor matrix where Principal Component Analysis extracted three factors.

**Table 3, Component Matrix**

Statements	Component		
	1	2	3
I feel my investment decision should be accurate and perfect.	0.725		
I prefer to invest in debt instruments.	0.719		
I discuss with other derivative investors to understand the current scenario.	0.693		
I prefer to invest in IPO.	0.664		
I consider market volatility.	0.646		
I keep watch on other market indices.	0.641		
My investment decision is based on monetary and fiscal policies.	0.638		
My investment decision is based on advice from my broker.	0.617		
I intend to invest in open market.	0.596	-0.520	
I review my investment decision frequently.	0.592		
I ascertain demand of product.	0.575		
I analyse the information content of derivative market.	0.514		
I prefer investment opportunity potentially for large return even if they are more risky.			
I prefer to risk free investment when the market is in positive trend.		0.630	

I consider economic and political situation of our country and world at large.	0.546	0.570	
I never put all money in single investment option.		0.530	
I make investment decision on the basis of good investment opportunities.			0.862
I do save more as and when I get extra return.			0.807
Technology provides me investment information at finger tips.			0.712

Source: Primary Data

### Component Matrix

Table 3 reveals the factor loadings (co-efficient) which indicate how much weight is assigned to each factor. Factors with large co-efficient for a variable are closely related to that variable. Thus, the 19 variables in the data are reduced into three factor models and each factor is identified with the corresponding variables as given below.

**Table 4 ,Grouping of Factors**

Factors	Statements	Scores
Product and Market Information	I intend to invest in open market.	0.792
	I prefer to invest in IPO.	0.785
	I consider market volatility.	0.755
	I ascertain demand of product.	0.751
	I prefer to invest in debt instruments.	0.708
	I analyse the information content of derivative market.	0.699
	My investment decision is based on advice from my broker.	0.662
	I keep watch on other market indices.	0.652
Risk and Return	I consider economic and political situation of our country and world at large.	0.797
	My investment decision is based on monetary and fiscal policies.	0.782
	I prefer risk free investment when the market is in positive trend.	0.727
	I feel my investment decision should be accurate and perfect.	0.704
	I review my investment decision frequently.	0.692
	I never put all money in single investment option.	0.657
	I prefer investment opportunity potentially for large return even if they are more risky.	0.641
	I discuss with other derivative investors to understand the current scenario.	0.572
Opportunities	I make investment decision on the basis of good investment opportunities.	0.884
	I do save more as and when I get extra return.	0.844
	Technology provides me investment information at finger tips.	0.743

Source: Primary Data

Table 4 exhibits the factors and corresponding statements with scores. Factor scores are obtained for each statement. If the score is high the level of factor related to the factors influencing investment behaviours will be high on the respondents. All the 19 statements with score and rank are provided in the following table.

**Table 5,Investment Decision Statements with Rank and Score**

Sl.No	Statements	Scores	Rank
1	I make investment decision on the basis of good investment opportunities.	0.884	I
2	I do save more as and when I get extra return.	0.844	II
3	I consider economic and political situation of our country and world at large.	0.797	III
4	I intend to invest in open market.	0.792	IV
5	I prefer to invest in IPO.	0.785	V
6	My investment decision is based on monetary and fiscal policies.	0.782	VI
7	I consider market volatility.	0.755	VII
8	I ascertain demand of product.	0.751	VIII
9	Technology provides me investment information at finger tips.	0.743	IX
10	I prefer risk free investment when the market is in positive trend.	0.727	X
11	I prefer to invest in debt instruments.	0.708	XI
12	I feel my investment decision should be accurate and perfect.	0.704	XII
13	I analyse the information content of derivative market	0.699	XIII
14	I review my investment decision frequently.	0.692	XIV
15	Investment decision is based on advice from my broker.	0.662	XV
16	I never put all money in single investment option.	0.657	XVI
17	I keep watch on other market indices.	0.652	XVII
18	I prefer investment opportunity potentially for large return even if they are more risky.	0.641	XVIII
19	I discuss with other derivative investors to understand the current scenario.	0.572	XIX

Source: Primary Data

Table 5 describes the most as the well as least issues relating to investors' investment decision. Out of the 19 statements pertaining to investors' investment decision the statement namely, "I make investment decision on the basis of good investment opportunities." has high influence on investors' investment decision and this statement is placed first and the statement namely "I discuss with other derivative investors to understand the current scenario" has low influence on investors' investment decision and this statements is ranked 19<sup>th</sup>.

### Cluster Analysis

The investors' investment decision can be classified into three categories based on dynamics criteria using the cluster analysis. It classified into three segments because the difference between the co – efficient is significant only on three cases on the hierarchical cluster. For the purpose of classification of investors, K- means cluster is used.

**Table 6,Final Cluster Centers**

Factors	Cluster		
	1	2	3
Product and Market information	4	4	2
Risk and return	5	4	3
Investment Opportunities	4	3	4
<b>Total</b>	<b>13</b>	<b>11</b>	<b>9</b>
<b>Average</b>	<b>4.33</b>	<b>3.67</b>	<b>3</b>
<b>Rank</b>	<b>I</b>	<b>II</b>	<b>III</b>

Source: Primary Data

The final cluster centers' table 6 shows the mean values for the three clusters which reflect the attributes of each cluster. The high mean values for the first, second and third cluster are 5, 4 and 4 respectively. The average score of the first cluster is 4.33 with first rank, second cluster is 3.67 with second rank and third cluster is 3.00 with third rank. This means that the first cluster respondents have good investment decision, second cluster respondents have moderate investment decision and third cluster respondents have poor investment decision towards derivative products.

The following table 4.80 presents the cluster means square, error mean square and F- value.

**Table 7 ANOVA**

Factors	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
Product and Market information	66.073	2	0.185	399	357.3	0.000
Risk and return	61.414	2	0.234	399	262.2	0.000
Investment Opportunities	23.347	2	0.323	399	72.23	0.000

Source: Primary Data

The Anova table 7 indicates that the difference existing among the three clusters in the mean values is significantly different. The significant value for the factors is 0.000. This means that the above three factors have significant contribution on dividing investors into three segments based on prime criteria. The F- Values for the factor one, two and third factor are 357.3, 262.2 and 72.23 respectively. Similarly the cluster mean square for the factor 1, 2 and factor 3 are 66.073, 61.414, and 23.347 respectively.

**Table 8, Number of Respondents in Each Cluster**

Cluster	Respondents	Percentage	Rank
Cluster 1	213	52.99	I
Cluster 2	126	31.34	II
Cluster 3	63	15.67	III
<b>Total</b>	<b>402</b>	<b>100</b>	

Source: Primary Data

The table 8 reveals that out of the 402 respondents, 213 (52.99%) respondents have made good investment decision, 126 (31.34%) respondents have moderate investment decision and 63 (15.67%) respondents have made poor investment decision. It is important to note that majority of the respondents (52.99%) have made good investment decision towards derivative products.

#### 4.5.5 Correlation Analysis

Correlation between the factors relating to socio economic profile of the respondents and investment decision is given in the following table.

**Table 9, Socio - Economic and Investment Related Factors and Investors' Investment Decision**

Sl. No	Socio- Economic Variables	Pearson correlation	Sig. value (2 tailed)	Result
1	Age	-.217**	0.000	Significant
2	Gender	-0.096	0.054	Not Significant
3	Occupation	-.239**	0.000	Significant
4	Educational Qualifications	-.286**	0.000	Significant
5	Marital Status	-0.079	0.113	Not Significant
6	Family Type	.153**	0.002	Significant
7	Private Sector	-.155**	0.002	Significant
8	Government Sector	-.237**	0.000	Significant
9	Public Sector	-.193**	0.000	Significant
10	Foreign Sector	-0.035	0.485	Not Significant
11	Income Versus Expenses	0.097	0.053	Not Significant

12	Investment Term	0.026	0.610	Not Significant
13	Investment Decision	0.011	0.833	Not Significant
14A	Income from Spot Market	.218**	0.000	Significant
14B	Income from Future Market	-0.069	0.168	Not Significant
14C	Income from Forward Market	.174**	0.000	Significant
14D	Income from Option Market	-.177**	0.000	Significant
15	Reason for Select of Derivatives Instruments	0.022	0.658	Not Significant
16	Stable Income from Investment	.101*	0.043	Significant
17	Willingness for the Continuance of Investment	.214**	0.000	Significant
18	Awareness on SEBI Guidelines	.187**	0.000	Significant
19	Solution to Protect Investors' Rights	-0.088	0.079	Not Significant

Source: Primary Data

Table 9 reveals that out of the 19 socio - economic variables, only three variables namely family type, tax benefits, income from future spot market have positive significant relation with investors' investment decision. Age, gender, marital status, income, family size, relationship between income and expenses, investment term, investment decision, income from future market, income from forward market, income from option market, reason to select derivative instruments, stable income from investment, willingness for the continuance of investment, awareness on SEBI guidelines, solution to protect investors' rights do not have significant relationship with investment decision. Occupation, educational qualification, private sector, government sector, public sector, foreign sector have negative correlation with investors' investment decision towards derivative products.

### Findings and Suggestions

1. It is found from the Factor analysis that the identified variables are found to be appropriate to the data. The value of KMO measure of sampling adequacy is 0.714. The significant value of Bartlett test is 0.000. Hence, there exists significant relationship among the variables. The measure of KMO test and value of Bartlett test indicate that the present data is useful for factor analysis.
2. It is learnt from the Factor analysis that 19 variables in the data are reduced into three factor models such as Product and Information and Risk and Return and Opportunities.
3. It is observed from the Factor analysis that the all nineteen statements are loaded on the three factors. Among the three factors the first factor which accounts for 24.5% of variance is the prima criteria considered to study the investors' investment decision on derivatives market. The second and third factors account for 21.66 and 11.64 respectively. The cumulative variance of all the three factors is 57.79.
4. It is found that out of the nineteen statements, the statement namely, "I make investment decision on the basis of good investment opportunities" has secured the highest score and is placed in first rank. It is considered to be the most important statements.
5. It is learnt from the Cluster analysis that the significant value for the factor is 0.000. It indicates that three factors have significant contribution on dividing investors into three segments based on prime criteria. Out of the 402 respondents, 213 (52.99%) respondents have taken high level investment decision, 126 (31.34%) respondents have medium level investment decision, 63 (15.67%) respondents have low level investment decision. It is important to note that majority of the respondents (52.99%) have taken high level investment decision towards derivative investments.
6. It is found out from the Pearson Correlation that family type, income from spot market, stable income from investment, willingness to continuance of investment and awareness on SEBI guidelines have positive significant relation with investors' investment decision. Gender, foreign sector, relationship between income and expenses, investment term, investment decision, income from future market, reason for the selection of derivatives and solution to protect investors' rights do not have significant relation with investment decision. Age, occupation, educational qualification, private sector, government sector, public sector, foreign sector and income from option market have negative significant correlation with investors' investment decision towards derivative products.
7. In the aspects of investment decision, it is suggested that corporate sectors should provide adequate information on derivative products, market condition, risk–return and opportunities in derivative investments to the investors for making right investment decisions only as 52.99% of the investors have made right investment decisions. [As per the Factor and Cluster Analyses]



### **Conclusion**

The regulating authority should take necessary measures to disseminate the information regarding derivative products, features and operations of derivatives market as well as merits and demerits of derivatives investment among the investors in general and female investors, married investors, investors who belong to joint family and investors who have less than post graduate qualifications in particular. The authority ought to help the investors to identify the right and reliable sources of investment advice to gain authentic information for making right decisions.

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