Management

A Comparative Analysis of Arbitrage Trade Analysis of Ten Selected Stocks Traded in BSE and NSE for the period (2010-2014).

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ABSTRACT Arbitrage by definition is a financial transaction that makes an immediate profit without involving any risk. The research study is based on the volatility of the stock market and the scope of Arbitrage in the changing market scenario. The study is also comparing the ten selected stocks in BSE and NSE. In the study, both types of sampling techniques, Simple Random Sampling as well as Judgmental/Purposive Sampling was used to investigate the research problem under consideration. The time span of the study is restricted to the period 2010 to 2014 but it has been extended up to 2016. In order to compute the riskiness and volatility in the stock co-variance analysis and Beta analysis was performed on the monthly closing data of the stocks under analysis. Conclusions and suggestions is based on the study made by the collected data.

KEYWORDS : Arbitrage, BSE, NSE, Beta etc.

1. Introduction

A trader purchases the stock where it is undervalued and short sells the stock where it is overvalued, thus profiting from the difference. Arbitrage is recommended for experienced investors only. A central idea in modern finance is the *law of one price*. This states that in a competitive market, if two assets are equivalent from the point of view of risk and return, they should sell at the same price. If the price of the same asset is different in two markets, there will be operators who will buy in the market where the asset sells cheap and sell in the market where it is costly.

1.1 Meaning of Arbitrage

The simultaneous purchase and sale of an asset in order to profit from a difference in the price. This usually takes place on different exchanges or market places also known as a "**risk less profit".**

1.2 Definition- Arbitrage Pricing Theory

Arbitrage Pricing Theory-APT. An alternative asset pricing model to the Capital Asset Pricing Model-CAPM. Unlike the Capital Asset Pricing Model, which specifies returns as a linear function of only systematic risk, Arbitrage Pricing Theory may specify returns as a linear function of more than a single factor.

1.3 Arbitrage Strategies

Arbitrage is a strategy involving a simultaneous purchase and sale of identical or equivalent instruments across two or more markets in order to benefit from a discrepancy in their price relationship. It is a risk-free transaction, as the long and short legs of the transaction offset each other exactly. Thus, arbitrage engages in a strategy in order to reduce risk of loss caused by price fluctuations of securities held in the portfolio.

1.4 REVIEW OF LITERATURE

The Arbitrage Pricing Theory of Ross (1976) provides a theoretical framework to determine the expected returns on stocks, but it does not give any idea about the number of factors and their identity. Further researchers paid attention on two different methods to describe the stock returns, i.e. statistical APT and macroeconomic APT.

Chen, Roll and Ross (1986) in their empirical testing of macroeconomic model APT construct a set of measures of unanticipated changes in the following macroeconomic variables:

• Inflation
• The term structure of interest rate
• Default Risk premium
• Industrial production

The research gap study is based on Arbitrage Trade Analysis of Ten selected stocks traded in BSE and NSE Period for the Study is selected from 2010 to 2014 since we get recent data on which observations can be made which will be more relevant.

1.5 RESEARCH METHODOLOGY

1.5.1 Objectives of the Research

1. To measure the performance of the share prices of 10 stocks from 2010 to 2014.
2. To study the difference of 10shares prices traded in NSE & BSE.
3. To identify the chance of arbitrage, thus measuring the volatility in returns.
4. To identify the best share that gives maximum returns through arbitrage.

1.5.2 Hypothesis

Ho: Positive Returns on share prices increases the scope for Arbitrage than Negative returns on share prices.

1.5.3 Data Collection
1.5.3.1 Primary Data

Primary data has been collected through administering questionnaires to the Stock brokers, sub brokers and investment consultants in India. The Primary Research Tools used were Survey method.

Survey (Questionnaire): The brokers and sub brokers who support investors in stock market were covered with a Survey by circulating appropriate Questionnaires. The questionnaires do contain structured questions.

1.5.3.2 Secondary Data

The required data for the study were collected from various secondary sources such as publications of RBI, BSE and NSE, Journals such as Economic and Political weekly, Journal of Financial Economics, Company reports, databases such as Cline, Prowess and websites such as www.rbi.org.in, www.bseindia.com, www.nseindia.com, www.econstats.com, www.nseindia.com, www.sebi.gov.in, www.wikipedia.org, www.web-reg.com, www.indiainfoline.com, etc.

1.5.4 Tools Used and Methods of Analysis

Statistical tools used for the analysis varied from simple graphical analysis and descriptive statistics and correlation study to detailed time series analysis using econometric tools and statistical software SPSS ver. 20 and MS Excel. Time series analysis was used extensively on the data sets for various combinations of different indices /commodity prices for different durations/time periods.

1.5.4.1 Descriptive statistics

Measures like mean, standard deviation, coefficient of variation etc. were used to study the intensity of fluctuations and relative volatility of the two variables in different time zones and for various sub-segments of the market under various industry groups. In order to compute the riskiness and volatility in the stock co-variance analysis and Beta analysis was performed on the monthly closing data of the stocks under analysis.

• **HYPOTHESIS TESTING**
To test the hypothesis "Positive Returns on share prices increases the scope for Arbitrage than Negative returns on share prices" one-way

ANOVA test is applied taking whether Positive return on stock prices increases the scope for Arbitrage as independent variable and Arbitrage is not an Intraday Trade, Last Traded Price is not the Price for Arbitrage, Arbitrage Trades should never be Manual, Retail investors cannot trade in arbitrage and you can only do arbitrage for stocks that you have in your DP as dependent variable.Thus from the above

Table-1.1 Descriptive

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Arbitrage is not an Intraday Trade	Strongly Disagree	6	4.0000	.00000	.00000	4.0000	4.0000	4.00	4.00
	Disagree	8	3.5000	1.19523	.42258	2.5008	4.4992	2.00	5.00
	Neither agree nor disagree	12	3.1667	.71774	.20719	2.7106	3.6227	2.00	4.00
	Agree	66	3.1212	1.54437	.19010	2.7416	3.5009	1.00	5.00
	Strongly Agree	8	3.2500	1.58114	.55902	1.9281	4.5719	1.00	5.00
	Total	100	3.2200	1.39682	.13968	2.9428	3.4972	1.00	5.00
Last Traded Price is not the Price for Arbitrage	Strongly Disagree	6	3.3333	.51640	.21082	2.7914	3.8753	3.00	4.00
	Disagree	8	3.0000	.75593	.26726	2.3680	3.6320	2.00	4.00
	Neither agree nor disagree	12	2.3333	.98473	.28427	1.7077	2.9590	1.00	4.00
	Agree	66	3.2121	1.41981	.17477	2.8631	3.5612	1.00	5.00
	Strongly Agree	8	3.7500	1.16496	.41188	2.7761	4.7239	2.00	5.00
	Total	100	3.1400	1.30283	.13028	2.8815	3.3985	1.00	5.00
Arbitrage Trades should never be Manual	Strongly Disagree	6	2.3333	2.06559	.84327	.1656	4.5010	1.00	5.00
	Disagree	8	3.5000	1.60357	.56695	2.1594	4.8406	1.00	5.00
	Neither agree nor disagree	12	3.6667	.98473	.28427	3.0410	4.2923	2.00	5.00
	Agree	66	3.4848	.86367	.10631	3.2725	3.6972	2.00	5.00
	Strongly Agree	8	3.0000	1.06904	.37796	2.1063	3.8937	2.00	4.00
	Total	100	3.4000	1.08246	.10825	3.1852	3.6148	1.00	5.00
Retail investors cannot trade in arbitrage	Strongly Disagree	6	1.3333	.51640	.21082	.7914	1.8753	1.00	2.00
	Disagree	8	2.5000	1.19523	.42258	1.5008	3.4992	1.00	4.00
	Neither agree nor disagree	12	2.8333	1.52753	.44096	1.8628	3.8039	1.00	5.00
	Agree	66	3.4242	1.21605	.14969	3.1253	3.7232	1.00	5.00
	Strongly Agree	8	4.2500	.46291	.16366	3.8630	4.6370	4.00	5.00
	Total	100	3.2200	1.32253	.13225	2.9576	3.4824	1.00	5.00
you can only do arbitrage for stocks that you have in your DP	Strongly Disagree	6	2.0000	.89443	.36515	1.0614	2.9386	1.00	3.00
	Disagree	8	3.2500	1.58114	.55902	1.9281	4.5719	1.00	5.00
	Neither agree nor disagree	12	2.6667	1.15470	.33333	1.9330	3.4003	1.00	4.00
	Agree	66	3.1515	1.16675	.14362	2.8647	3.4383	1.00	5.00
	Strongly Agree	8	3.5000	1.19523	.42258	2.5008	4.4992	2.00	5.00
	Total	100	3.0600	1.21289	.12129	2.8193	3.3007	1.00	5.00

Table-1.2

		Sum of Squares	df	Mean Square	F	Sig.
Arbitrage is not an Intraday Trade	Between Groups	4.963	4	1.241	.626	.645
	Within Groups	188.197	95	1.981		
	Total	193.160	99			
Last Traded Price is not the Price for Arbitrage	Between Groups	11.510	4	2.877	1.746	.146
	Within Groups	156.530	95	1.648		
	Total	168.040	99			
Arbitrage Trades should never be Manual	Between Groups	9.515	4	2.379	2.122	.084
	Within Groups	106.485	95	1.121		
	Total	116.000	99			
Retail investors cannot trade in arbitrage	Between Groups	38.539	4	9.635	6.799	.000
	Within Groups	134.621	95	1.417		
	Total	173.160	99			
you can only do arbitrage for stocks that you have in your DP	Between Groups	10.988	4	2.747	1.938	.110
	Within Groups	134.652	95	1.417		
	Total	145.640	99			

analysis it is found that in majority of the cases the hypothesis is proved and hence it is concluded that the hypothesis "Positive Returns on share prices increases the scope for Arbitrage than Negative returns on share prices" is accepted.

1.7 FINDINGS, RECOMMENDATIONS AND CONCLUSIONS
Data was collected from Stock brokers, sub brokers and financial consultants and it was found that majority of the respondents were male and very few were female. Out of the total respondents, majority of the respondents were found dealing in securities on behalf of their clients. Market research is one of the key factors used in maintaining competitiveness over competitors.

• **RECOMMENDATIONS**
Investing in arbitrage funds during uncertain times, can prove to be one of the good choices by investors, other than putting the money in fixed deposits. The Fund House is claiming a return of around 9 - 9.9%, which is much better than that of many other savings instruments. Pair trade execution becomes difficult in low volume stocks therefore, spotting arbitrage in them should be avoided. Arbitrage when done in

an informative way and with proper stock market analysis can effectively increase your profit limit. To ensure that if get maximum return from the arbitrage consult stock broker or financial advisor for the proper asset and for the best time. Arbitrage trading is similar to hedging, which is done to eliminate risk. However, it is not completely risk-free. These returns from Arbitrage fund don't look high but keep in mind that as the investment is done in equity, they have zero tax if investors keep them for more than 1 year. The returns are comparable to fixed deposits and with the income tax benefits, where investors can make even more than FD with them.

• **CONCLUSIONS**
Market research provides important information to identify and analyse the market need, market size and competition. It was also rightly said that industry and budgetary analysis prior to recommending any stock. Technical analysts do not attempt to measure a security's intrinsic value, but instead use charts and other tools to identify patterns. Arbitrage is not an intraday trade. Retail investors spot some arbitrage opportunities in the market but cannot grab the opportunity as many big traders spotting the same. ICICI Bank

with highest beta is most risky and volatile stock followed by Tata Steel Ltd. with Beta of 1.56 and Maruti Suzuki India Ltd. at 3rd position in terms of risk with beta of 1.51. The covariance of Reliance industries ltd. with market index is 21.11 also Beta co-efficient of Reliance Industries Ltd. Is 1.00 which indicates that the stock moves exactly in step with the market.

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