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GRT Golden Research Thoughts

A STUDY ON RISK AND RETURN RELATIONSHIP OF AUTOMOBILE INDUSTRY IN INDIAN STOCK MARKET

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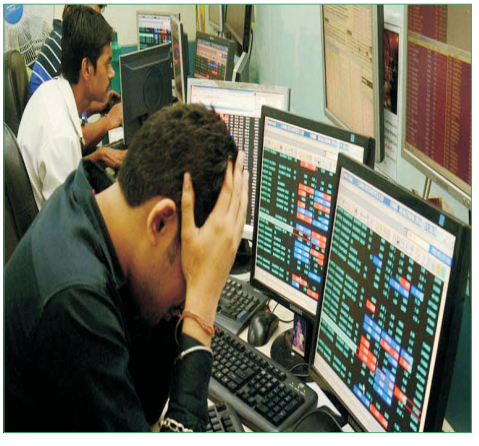
ABSTRACT

While making investment, the investors seek to achieve the right balance between risk and return, in order to optimize the value of the investment. Every investor wants to have minimum or no risk and high returns. In this context, risk and return are most important concept of investment. They are the foundations to make right investment decision. The present study has been undertaken to perceive the return and risk associated with Nifty Auto Index companies. It attempted to calculate the systematic risk of the firms. This study also estimates the rate of risk and return which will be considered in investment decisions. To understand concept of the risk and return in stock market, systematic risk (β) of different companies in automobile industry were calculated. This study also examines whether stock with higher beta values give higher return to investors by considering a period of eleven years commencing from 3rd January 2005 to 31st December 2015. The study includes fourteen automobile companies which constitutes in Nifty Auto Index. The selection of company is made on the basis of Indian Auto Nifty Index as on 1st May 2015.



KEYWORDS :*Risk and Return, beta, Automobile industry, Auto Nifty.*

INTRODUCTION

Any rational investor, before investing his or her investible wealth in the stock, analyses the risk associated with the particular stock. The actual return he receives from a stock may vary from his expected return. The variability of return is termed as risk. The downside risk may be caused by several factors, either common to all stock or specific to a particular stock. Anyhow investors in general would

like to analyze the risk factors. Expectation of every investor is to have minimum or no risk and high returns. In this way, the risk and return plays a major role in investing that supports the investors to make right investment decisions. A thorough knowledge of the risk helps the investors to plan their portfolio in such a manner to minimize the risk associated with the investment. In this study the researcher tried to analyze risk and return associated with the equity stocks of Indian automobile companies, which gives an idea about the risk and return relationship to investors at the time of making investment.

RISK – MEANING ANT ITS ELEMENTS

A person making an investment expects to get some return from the investment in the future. But, as future is uncertain, so is the future expected return. It is this uncertainty associated with the return from an investment that introduces risk into an investment. Thus, risk can be defined in terms of variability of returns. "Risk is the potential for variability in return". An investment whose returns are fairly stable is considered to be a low-risk investment, whereas an investment whose returns fluctuate significantly is considered to be a high-risk investment. Equity shares whose returns fluctuate significantly is considered risky investment. Government securities whose returns are fairly stable are considered to possess low risk.

Variations in returns is caused by a number of factors. These factors which produce variation in the returns from an investment constitute the element of risk. The elements of risk may be broadly classified into two group. The first group comprises factors that are external to a company and effect a large number of securities simultaneously. These are mostly uncontrollable in nature. The second group includes those factors which are internal to companies and effect only those particular companies. These are controllable to a great extent. The risk produced by the first group of factors is known as systematic risk, and that produced by the second group is known as unsystematic risk.The total variability in return of security represents the total risk of that security. Systematic risk and unsystematic risk are two components of total risk.

Total risk = Systematic risk + Unsystematic risk

SYSTEMATIC RISK

As the society is dynamic, change occur in the economic, political and social systems constantly. These changes have an influence on the performance of companies and all securities in varying degrees. For example, economic and political instability adversely affects all industries and companies. When an economy moves into recession, corporate profits will shift downwards and stock prices of most companies may decline. Thus, the impact of economic, political and social changes is system-wide factors is referred to as systematic risk. Systematic risk is further subdivided into interest rate risk, market risk, and purchasing power risk.

INTEREST RATE RISK

Interest rate risk is a type of systematic risk that particularly affects debt securities like bonds and debentures. A bond or debenture normally has a fixed coupon rate of interest. The issuing company pays interest to the bond holder at this coupon rate. A bond is normally issued with a coupon rate which is equal to the interest rate prevailing in the market at the time of issue. Subsequently to issue, the market interest rate may change but the coupon rate remains constant till the maturity of the instrument. The change in market interest rate relative to the coupon rate of a bond cause change in its

market price.The interest risk vitiation have an indirect impact on stock prices also speculators often resort to margin trading, that is purchasing stock on margin using borrowed funds. As interest rate increase, margin trade becomes less attractive. The lower demand by the speculators may push down prices. The opposite happens when interest rate fall. Many companies use borrowed funds to finance their operation. When interest rate move up, companies are using borrowed funds to finance their operation when interest rate move up, companies using borrowed funds have to make higher interest payments. This leads to lower earnings, dividends and share prices on the contrary, lower interest rates may push up earnings and prices. Thus, we see that variations in interest rates may indirectly influence stock prices. Interest rate is the systematic risk which effects bond directly and shares indirectly.

MARKET RISK

Market Risk is a type of systematic risk that affects shares. Market prices of shares move up or down consistently for some time period. A general rising in share price is referred to as a bullish trend where as a general fall in share prices is referred to bearish trend. In other words the share market alternates between the bullish phase and the bearish phase. The alternative movements can be easily seen in the movement of share price indices such as the BSE Sensitive Index, BSE National Index, NSE Index, etc. Business cycle are considered to be a major determinate of the timing and extent of the bull and bear phases of the market. This would suggest that the up and downs in the share market that would follow the expansion and the recession phase of the economy. This may true on the long run, but it does not sufficiently explain the short-term movements in the market.The short-term volatility in the stock market is cost by sweeping changes in the investor expectations which are the results of investor reactions to certain tangible events, political, economic or social, such as a fall of government, drastic change in monetary policy, etc. the changes. The change in investor expectation is usually by the reaction to real events. but the reaction is often aggravated by the intangible factor of emotional instability of investors .they tend to act collectively and irrationally, leading to an overreaction.

The stock market is seem to be volatile. This volatility leads to variations in the returns of investors in shares. The variations in the return caused by the volatility of the stock market is referred to the market risk.

PURCHASING POWER RISK

Another type of systematic risk is Purchasing power risk. It refers to the variation in investor return caused by inflation.Inflation results in lowering of the purchasing power of money. When a investor purchases a security, he forgoes opportunity to by some goods or services. In other words, he postponing his consumption. Meanwhile, if there is a inflation In the economy the prices of the goods and services would increase and their by the investor actually experiences a decline in purchasing power of his investments. And the return from the investment. Let us consider a simple example. Suppose a person lends Rs. 100 today at 10 percent interest. He would get back Rs. 110 after 1 year. If during the year, the prices have increased by 8 percent, Rs. 110 received at the end of year will have a purchasing power of only Rs. 101.20 that is 92 percent of Rs. 110. Thus, inflation causes a variation in the purchasing power of an investment. This is know is purchasing power risk and its impact is uniformly felt on all securities in the market and as such, is a systematic risk.The important sources of inflations are rising cost of productions and excess demand for goods and services in relation to their supply. They are known as cost push and demand pull inflation respectively. When demand is increasing but supply cannot be increased, price of the goods increases their by forcing out some of the excess demand and bring the demand and supply into equilibrium. This phenomena is known as

demand pull inflation. Cost push inflation occurs when the cost of production increases and this increase in cost is passed on to the consumers by the producers through higher prices of goods.In an inflationary economy rational investors would include an allowance for the purchasing power risk in their estimate of the expected rate of return from an investor. In other words, the expected rate of return would be adjusted upward by the estimated annual rate of inflation.

UNSYSTEMATIC RISK

The returns from a securities may sometimes vary because of certain factors affecting only the company issuing such securities. Examples are Raw materials scarcity, labour strike, and management inefficiently. When variability of return occurs because of such firm – specific factors, it is known as unsystematic risk. The risk is unique for peculiar to a company or industry and affects it in addition to the systematic risk affecting all securities.

The unsystematic or unique risk is affecting specific securities arises from two sources:

(a)The operating environment of the company of the company, and
(b)The financing pattern adopted by the company.
These two types of unsystematic risk are referred to as business risk and financial risk respectively.

BUSINESS RISK

In business risk every company operates with in a particular operating environment. This operating environment comprises of both internal environment with in the firm and external environment outside the firm. The impact of these operating conditions is reflected in the operating cost of the company. The operating cost can be segregated into fixed cost a variable cost. A larger proportion of fixed cost is disadvantages to a company. If the total revenue of such a company declines due to some reasons or the other, there would be a more than proportionate decline in its operating profits because it would be unable to reduce its fixed cost.

Such a firm is set to face a larger business risk. Business risk is thus a function of the operating conditions faced by a company and is the variability in operating income cost by the operating conditions of the company.

FINANCIAL RISK

Financial risk is function of financial leverage which is the use of debt in the capital structure in the presence of debt in the capital structure create fixed payment in the form of interest which is a compulsory payment to be made whether the company makes profit or loss. This fixed interest payment creates more variability in the Earning per Share (EPS) available to equity share. For example if the rate of return of the operating profit ratio is higher than the interest rate payable on the debt, EPS would increase. On the contrary, if the operating profit ratio is lower than an interest rate, EPS would be depressed. The increased or decreased in EPS in response to change in Operating Profit would be much wider in the case of a levered firm (A company having debt in the capital structure) than in the case of an unlevered firm. This variability in EPS due to the presence of the debt in the capital structure of the company is referred to as a financial risk. This s specific to each company and firms part of its unsystematic risk. Financial risk is an avoidable risk in so far as a company is free to finance its activities without resorting to debt.

STATEMENT OF PROBLEM

The problem considered for the present study is how to analyze the present instable market environment considering the return and risk related to various listed automobile companies in Indian Stock market. The estimation and evaluation of risk and return should be made for studying the systematic risk. By considering this present study one can make right decision regarding the selection of companies to invest in.

SCOPE OF THE STUDY

The present study is undertaken to perceive the risk and return associated with the Nifty Auto Index companies. It helps to calculate the systematic risk of the firm in order to analyze the approximate results with minimum risk and maximum returns of the company. This study also helps in analyzing the company's stock price performance so as to estimate its rate of risk and return which would result in considering the investment policies and schemes.

REVIEW OF LITERATURE

Although various researchers have widely examined the relationship between risk and return in their research work, existing literature has not been able to bring an agreement on the existence of such relationship in stock market. Decision making process of investment is always composed of relationship between risk and return. This has been known to every financial analyst that higher the risk, higher the return and lower the risk lower the return. It is generally believed that risk lower the return. It is also believed that risk and return relationship is an important element for stock market predictability and volatility.

Park (2004) depicts the maximum tests of CAPM that has concentrated on the cross section aspects of the data. He strongly advises on the cross – section aspects of data which is more accurate method to determine the conditional relationship between beta and return can be estimated through time series analysis as it is familiar on the fluctuating nature of beta. He also determines the conditional relationship between returns and beta by implying Kalman Filter technique which is the prominent case of the state space model and his concluding vision is on the significant and systematic relationship between return and Kalman Filtered beta.

Sinaee and Moradi (2003) analysed the relation between risk and return in Tehran stock market during 2003 to 2005. This study includes a sample of 74 Iranian companies listed in Tehran stock exchange. During the test of effect of returns for a span of three years research period signifies the relationship between returns and beta results to be non – linear. Their study also declare that these exists a conditional relationship between beta and risk and return during the fluctuation in the market through observing difference between these periods.

Chan, Gup and Pan (2005) tried to check if here is any integration among the price of security in different stock market globally like Hong – Kong, South Korea, Taiwan, Singapore, Japan and United States. They identified about no such co – integration that exists among the stock prizes in different stock market.

Vikkraman and P Varadharajan (2009) advocated that the objective of maximizing return can be pursued only at the cost of incurring risk. While selecting the firm for investment, the investor has to consider both the return potential and the risk involved. The empirical evidence shows that generally there is a high correlation between risk and return over longer period of time. This relationship is known as risk return trade-off.

Dr. R Karrupasamy and Prof. V. Vanaja (2013) estimate the performance of various mutual funds

schemes like large cap, small cap and mid cap equity schemes considering the returns and its comparison with bench marks in order to increase the performance of various category of funds using risk adjusted measures inaccordance to the recommendation by Sharpe, Treynor and Jensen.

OBJECTIVES OF THE STUDY

1.To understand concept of the risk and return in stock market.
2.To find out systematic risk (β) of different companies in automobile industry.
3.To analyse whether stock with higher beta values give higher return to investors.
4.To offer suggestions and recommendations based on the findings of the study.

METHODOLOGY

To carry out this present study, the researcher has considered a period of eleven years commencing from 3rd January 2005 to 31st December 2015. The study includes fourteen companies, all fourteen companies are Automobile companies which constitutes in Nifty Auto Index. The selection of company is made on the basis of Indian Auto Nifty Index as on 1st May 2015. The researcher fully requires secondary data, since it is an analytical study of secondary data. The study requires share prices of various companies selected for the study. The variables for the study are stock prices, stock return and other accounting variables of the listed company. This analysis is based on the systematic risk (β) and risk and return factor of automobile companies in the Indian stock market. The secondary data further needed for the study have been collected from NSE Journals, Magazines and other websites.

DATA ANALYSIS

For the present study, the data analysis required the monthly closing price of each day is taken for ten years of fourteen companies and daily rate of return is calculated which are listed in the Nifty Equities of Indian stock market of Automobile Industry. The different tools to be used in the study in order to achieve the objectives of this study are Stock return, Mean, Standard deviation, Variance, Co variance, Correlation and Slope.

LIMITATIONS OF THE STUDY

1.The risk and return of the firm is observed only for 11years.
2.The accuracy of the study is based on the accuracy of the data collected.
3.The study is based on data collected from secondary sources only.
4.Bajaj Company, TATA Motors DVR, Amaraja Battery were excluded from the study as there is a lack of data of such companies in the Nifty Auto Index.

DATA ANALYSIS AND INTERPRETATION

The performance (returns) of companies on Nifty Auto Index is analyzed using the data of the recent eleven calendar years i.e. from January 2005 to December 2015. Different tools like stock return, mean, covariance, correlation, and slope, alpha are used to calculate the returns of the companies based on Nifty Auto Index for that particular time period and are interpreted accordingly to understand the performance of the individual companies. The analysis is done for different time periods starting from the closing day, for every day for eleven consecutive years and for thirteen companies

AVERAGE / MEAN

The mean is the average you're used to, where you add up all the numbers and then divide by the number of numbers.

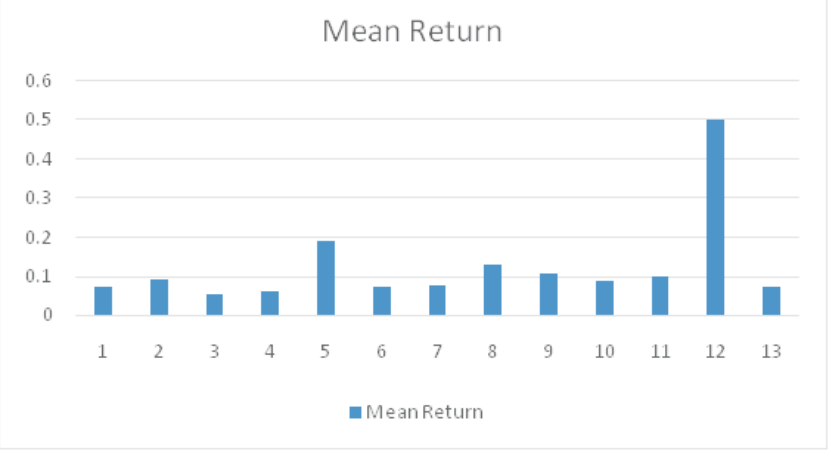
TABLE 1
MEAN DAILY RETURN OF COMPANIES ON NIFTY AUTO INDEX

Sl. No.	Name of the Company	Mean Return
1	Apollo Tyres Ltd.	0.073194935
2	Ashok Leyland Ltd.	0.090875283
3	Bharat Forge Ltd.	0.053973073
4	Bosch Ltd.	0.060279
5	Eicher Motors Ltd.	0.190621
6	Exide Industries Ltd.	0.071185
7	Hero MotoCorp Ltd.	0.075173
8	MRF Ltd.	0.129552
9	Maruti Suzuki India Ltd.	0.106822
10	Motherson Sumi Systems Ltd.	0.086839
11	TVS Motor Company Ltd.	0.099941
12	Tata Motors Ltd.	0.501813
13	Mahendra and Mahendra	0.072634
Mean return of Nifty is 0.082378 for all the above thirteen companies is same according to the above table		

Source: Compiled and Calculated.

Mean Return of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 0.073194, Ashok Leyland Ltd is 0.090875, Bharath Forge Ltd is 0.0539730, Bosch Ltd is 0.060279, Eicher Motors Ltd is 0.190621, Exide industries Ltd is 0.071185, Hero Motors Corp Ltd is 0.075173, MRF Ltd is 0.129552, Maruthi Suzuki India Ltd is 0.106822, Mothers Sumi System Ltd is 0.086839, Tata Motors Company Ltd is 0.099941 and Tata Motors Ltd is 0.501813. Nifty Return is same for all companies i.e., 0.082378.

GRAPH 1
MEAN RETURN OF COMPANIES ON NIFTY AUTO INDEX



CORREALATION

Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases.

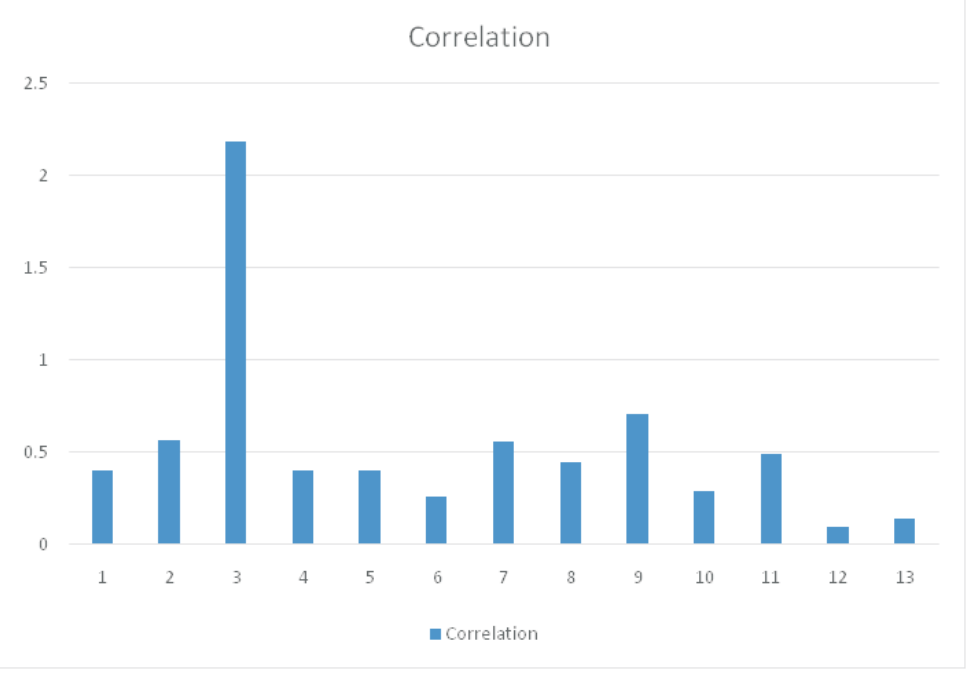
TABLE 2
CORRELATION BETWEEN COMPANIES AND NIFTY AUTO INDEX

Sl. No	Name of the Company	Correlation
1	Apollo Tyres Ltd.	0.399686232
2	Ashok Leyland Ltd.	0.564752501
3	Bharat Forge Ltd.	2.186231
4	Bosch Ltd.	0.402554
5	Eicher Motors Ltd.	0.399303
6	Exide Industries Ltd.	0.259261
7	Hero MotoCorp Ltd.	0.556512
8	MRF Ltd.	0.449517
9	Maruti Suzuki India Ltd.	0.712149
10	Motherson Sumi Systems Ltd.	0.291521
11	TVS Motor Company Ltd.	0.494634
12	Tata Motors Ltd.	0.093945
13	Mahendra and Mahendra	0.1415105
Correlation of Nifty is 1 for all the above thirteen companies is same according to the above table		

Source: Compiled and Calculated.

The Correlation of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 0.3996, Ashok Leyland Ltd is 0.5647, Bharath Forge Ltd is 2.1862, Bosch Ltd is 0.4025, Eicher Motors Ltd is 0.3993, Exide industries Ltd is 0.2592, Hero Motors Corp Ltd is 0.5565, MRF Ltd is 0.4495, Maruthi Suzuki India Ltd is 0.7121, Mothers Sumi System Ltd is 0.2915, Tata Motors Company Ltd is 0.0939 and TVS Motors Ltd is 0.4946. Nifty Return is same for all companies i.e., 1.

GRAPH 2
CORRELATION BETWEEN COMPANIES AND NIFTY AUTO INDEX



The above correlation Graph represents the companies like Apollo tyres, Bosch Ltd, Eicher Motors, Exide Industries Ltd, MRF Ltd, Motherson Sumi System Ltd, Tata Motors Ltd are the companies which are showing less degree of Correlation with Compare with Ashok Leyland Ltd, Hero Motors Corps Ltd , Maruthi Suzuki India Ltd are having moderate degree of correlation in respect to other companies which are listed in Nifty Auto Index, yet Bharath Forge Ltd Company have a high degree of Correlation which shows a positive return in the further years.

STANDARD DEVIATION

Standard deviation is a measure of the dispersion of a set of data from its mean. The more spread apart the data, the higher the deviation. Standard deviation is calculated as the square root of variance. In finance, standard deviation is applied to the annual rate of return of an investment to measure the investment's volatility. Standard deviation is also known as historical volatility and is used by investors as a gauge for the amount of expected volatility.

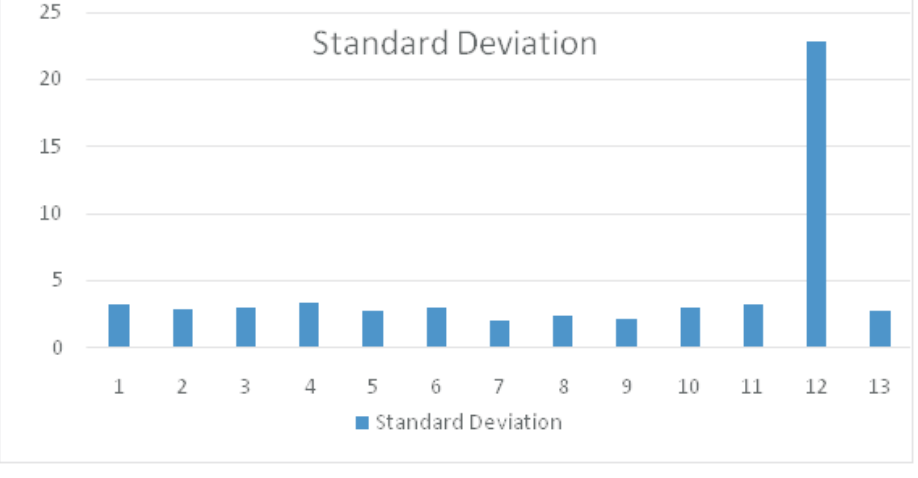
TABLE 3
STANDARD DEVIATION OF COMPANIES ON NIFTY AUTO INDEX

Sl. No	Name of the Company	Standard Deviation
1	Apollo Tyres Ltd.	3.291883642
2	Ashok Leyland Ltd.	2.895684761
3	Bharat Forge Ltd.	2.984745
4	Bosch Ltd.	3.368827
5	Eicher Motors Ltd.	2.735024
6	Exide Industries Ltd.	2.977435
7	Hero MotoCorp Ltd.	2.018298
8	MRF Ltd.	2.413941
9	Maruti Suzuki India Ltd.	2.148875
10	Motherson Sumi Systems Ltd.	3.069229
11	TVS Motor Company Ltd.	3.260672
12	Tata Motors Ltd.	22.83668
13	Mahendra and Mahendra	2.75094
Standard Deviation of Nifty is 1.4987 for all the above thirteen companies is same according to the above table		

Source: Compiled and calculated.

The above Standard Deviation of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 3.2918, Ashok Leyland Ltd is 2.8956, Bharath Forge Ltd is 2.9847, Bosch Ltd is 3.3688, Eicher Motors Ltd is 2.7350, Exide industries Ltd is 2.9774, Hero Motors Corp Ltd is 2.0182, MRF Ltd is 2.4139, Maruthi Suzuki India Ltd is 2.1488, Mothers Sumi System Ltd is 3.0692, Tata Motors Company Ltd is 22.836 and TVS Motors Ltd is 3.2606. Nifty Return is same for all companies i.e., 1.4987.

GRAPH 3
STANDARD DEVIATION OF COMPANIES ON NIFTY AUTO INDEX



Graph of Standard Deviation represents that the all the company which are listed in the Nifty Auto Index are higher than the Nifty Returns and all Companies are having less Volatile in comparison of other company. But, Tata Motors Ltd having a higher Volatile in its nature.

VARIANCE

Variance is a measurement of the spread between numbers in a data set. The variance measures how far each number in the set is from the mean. Variance is calculated by taking the differences between each number in the set and the mean, squaring the differences (to make them positive) and dividing the sum of the squares by the number of values in the set.

TABLE 4
VARIANCE OF COMPANIES ON NIFTY AUTO INDEX

Sl. No	Name of the Company	Variance
1	Apollo Tyres Ltd.	10.83649791
2	Ashok Leyland Ltd.	8.384990237
3	Bharat Forge Ltd.	8.908702
4	Bosch Ltd.	11.349
5	Eicher Motors Ltd.	7.480355
6	Exide Industries Ltd.	8.865121
7	Hero MotoCorp Ltd.	4.073406
8	MRF Ltd.	5.827113
9	Maruti Suzuki India Ltd.	4.617666
10	Motherson Sumi Systems Ltd.	9.420168
11	TVS Motor Company Ltd.	10.63198
12	Tata Motors Ltd.	521.514
13	Mahendra and Mahendra	7.56767
Variance of Nifty is 2.2463 for all the above thirteen companies is same according to the above table		

Source: Compiled and calculated.

The above Variance of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 10.8364, Ashok Leyland Ltd is 8.3849, Bharath Forge Ltd is 8.9087, Bosch Ltd is 11.349, Eicher Motors Ltd is 7.4803, Exide industries Ltd is 8.8651, Hero Motors Corp Ltd is 4.0734, MRF Ltd is 5.8271, Maruthi Suzuki India Ltd is 4.6176, Mothers Sumi System Ltd is 9.4201, Tata Motors Company Ltd is 521.514 and TVS Motors Ltd is 10.6319. Nifty Return is same for all companies i.e., 2.2463.The table represents that Variance of Automobile Companies Listed on Nifty Auto Index i.e., Apollo Tyres, Ashok Leyland Ltd, Bharath Forge Ltd, Bosch Ltd, Eicher Motors Ltd, Exide Industries Ltd, Hero Motor Corp Ltd, MRF Ltd, Maruthi Suzuki India Ltd, Mother son Sumi Ltd, TVS Motors Company Ltd these company having the variance more than Nifty Return which tells the company having less variability

when it compared to Tata Motors Ltd, which is having higher Variability.

TABLE 5
CO VARIANCE OF COMPANIES ON NIFTY AUTO INDEX

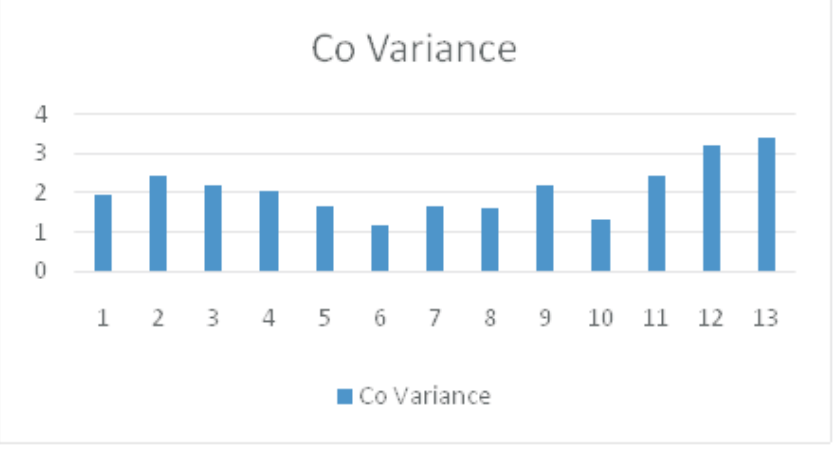
Sl. No	Name of the Company	Co Variance
1	Apollo Tyres Ltd.	1.971785815
2	Ashok Leyland Ltd.	2.450141529
3	Bharat Forge Ltd.	2.186231
4	Bosch Ltd.	2.031818
5	Eicher Motors Ltd.	1.636235
6	Exide Industries Ltd.	1.156544
7	Hero MotoCorp Ltd.	1.68281
8	MRF Ltd.	1.625754
9	Maruti Suzuki India Ltd.	2.2012789
10	Motherson Sumi Systems Ltd.	1.340545
11	TVS Motor Company Ltd.	2.416422
12	Tata Motors Ltd.	3.214303
13	Mahendra and Mahendra	3.398026
Co Variance of Nifty is 2.2455 for all the above thirteen companies is same according to the above table		

Source: Compiled and Calculated.

Analysis

The above Correlation of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 1.9717, Ashok Leyland Ltd is 2.4501, Bharath Forge Ltd is 2.1862, Bosch Ltd is 2.0318, Eicher Motors Ltd is 1.6362, Exide industries Ltd is 1.1565, Hero Motors Corp Ltd is 1.6828, MRF Ltd is 1.6257, Maruthi Suzuki India Ltd is 2.2012, Mothers Sumi System Ltd is 1.3405, Tata Motors Company Ltd is 3.2143 and TVS Motors Ltd is 2.4164. Nifty Return is same for all companies i.e., 2.2455.

GRAPH 4
CO VARIANCE OF COMPANIES ON NIFTY AUTO INDEX



The Graph of Co Variance represents that the companies are fluctuating in with comparison to the nifty Returns. Which shows the volatility in between the different companies listed Auto Nifty Index. However Tata motors having higher Co Variance which shows the higher Volatility in its nature.

BETA

Systematic Risk refers to that portion of variability in return which is caused by the factors affecting all the firms. It refers to the fluctuations in return due to general factors in the market such as money supply, inflation, economic recessions, interest rate policy of the government, political factors, tax reforms, credit policies etc. which is represented by the symbol (β). The Beta (β) of all the individual securities were computed with the help of the following formula using excel function.

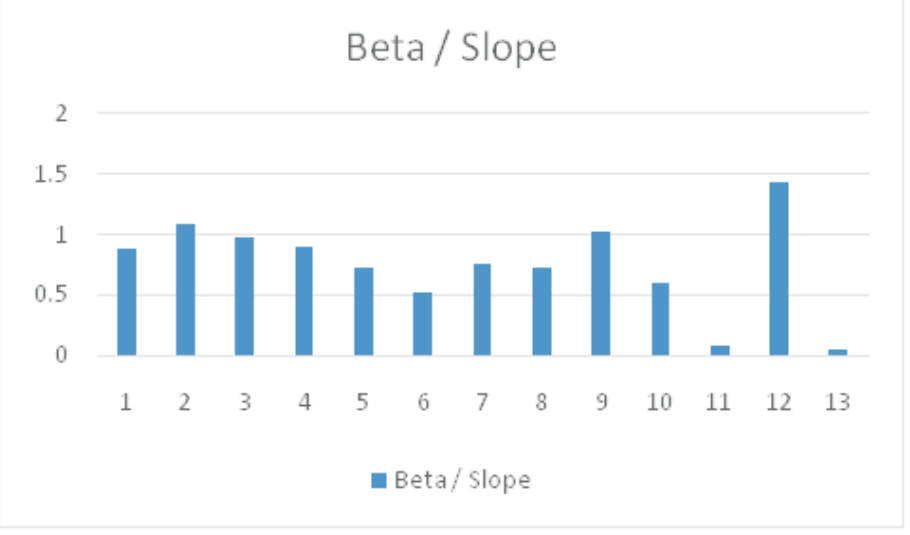
TABLE 6
BETA / SLOPE OF COMPANIES ON NIFTY AUTO INDEX

Sl. No	Name of the Company	Beta / Slope
1	Apollo Tyres Ltd.	0.877623741
2	Ashok Leyland Ltd.	1.091110025
3	Bharat Forge Ltd.	0.973584
4	Bosch Ltd.	0.90482
5	Eicher Motors Ltd.	0.728657
6	Exide Industries Ltd.	0.515038
7	Hero MotoCorp Ltd.	0.749398
8	MRF Ltd.	0.723989
9	Maruti Suzuki India Ltd.	1.021037
10	Motherson Sumi Systems Ltd.	0.596979
11	TVS Motor Company Ltd.	0.076094
12	Tata Motors Ltd.	1.43141
13	Mahendra and Mahendra	0.04458
Beta/Slope of Nifty is 1 for all the above thirteen companies is same according to the above table		

Source: Compiled and Calculated.

The above Correlation of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 0.3996, Ashok Leyland Ltd is 0.5647, Bharath Forge Ltd is 2.1862, Bosch Ltd is 0.4025, Eicher Motors Ltd is 0.3993, Exide industries Ltd is 0.2592, Hero Motors Corp Ltd is 0.5565, MRF Ltd is 0.4495, Maruthi Suzuki India Ltd is 0.7121, Mothers Sumi System Ltd is 0.2915, Tata Motors Company Ltd is 0.0939 and TVS Motors Ltd is 0.4946. Nifty Return is same for all companies i.e., 1.

GRAPH 5
BETA / SLOPE OF COMPANIES ON NIFTY AUTO INDEX



The above Graph of Slope represents companies like Apollo tyres, Bharath Forge Ltd, Bosch Ltd, Eicher Motors Ltd, Exide Industries Ltd, Hero Motor Corp Ltd, MRF Ltd, Motherson Sumi System Ltd, TVS Motors are the companies is less than 1 i.e., (< β) which shows the company having less risk, companies like Maruthi Suzuki Ltd, Tata Motors having higher than Beta i.e., 1 (>β) which states the company is earning higher risk and return.

ALPHA

A measure of performance on a risk-adjusted basis. Alpha, often considered the active return on an investment, gauges the performance of an investment against a market index used as a benchmark, since they are often considered to represent the market's movement as a whole. The excess returns of a fund relative to the return of a benchmark index is the fund's alpha. The abnormal rate of return on a security or portfolio in excess of what would be predicted by an equilibrium model like the capital asset pricing model (CAPM).

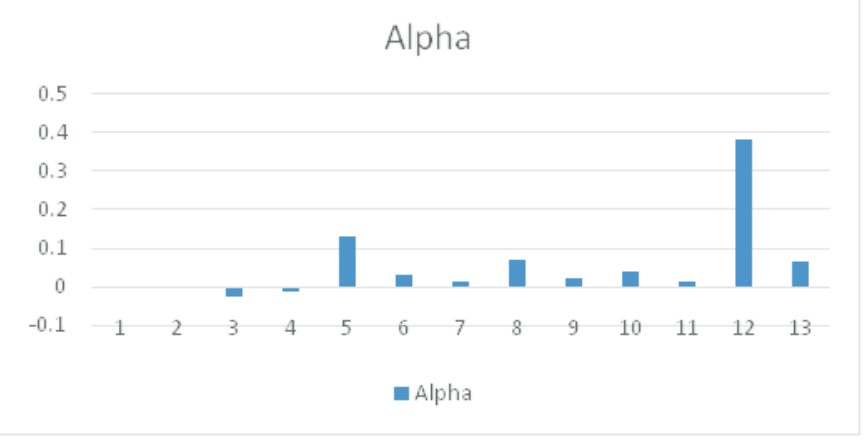
TABLE 7
ALPHA OF COMPANIES ON NIFTY AUTO INDEX

Sl. No	Name of the Company	Alpha
1	Apollo Tyres Ltd.	0.00087033
2	Ashok Leyland Ltd.	0.000992262
3	Bharat Forge Ltd.	-0.02623
4	Bosch Ltd.	-0.01426
5	Eicher Motors Ltd.	0.130596
6	Exide Industries Ltd.	0.028757
7	Hero Moto Corp Ltd.	0.01344
8	MRF Ltd.	0.069912
9	Maruthi Suzuki India Ltd.	0.022711
10	Motherson Sumi Systems Ltd.	0.037661
11	TVS Motor Company Ltd.	0.011295
12	Tata Motors Ltd.	0.383897
13	Mahindra and Mahindra	0.0635424

Source: Compiled and calculated.

The above Correlation of Automobile Companies Listed on Nifty Auto Index states that Apollo Tyres Ltd is 0.3996, Ashok Leyland Ltd is 0.5647, Bharath Forge Ltd is 2.1862, Bosch Ltd is 0.4025, Eicher Motors Ltd is 0.3993, Exide industries Ltd is 0.2592, Hero Motors Corp Ltd is 0.5565, MRF Ltd is 0.4495, Maruthi Suzuki India Ltd is 0.7121, Mothers Sumi System Ltd is 0.2915, Tata Motors Company Ltd is 0.0939 and TVS Motors Ltd is 0.4946. Nifty Return is same for all companies i.e., 0.

GRAPH 6
ALPHA OF COMPANIES ON NIFTY AUTO INDEX



The above Graph Alpha represents that the companies which are listed in the Nifty Auto Index like Apollo Tyres Ltd, Ashok Leyland Ltd, Eicher Motors Ltd, Exide Industries Ltd, Hero Motors Ltd, MRF Ltd, Maruthi Mother son Sumi System Ltd, TVS Motors Company, Tata Motors Ltd are having higher Alpha having positive in its nature, however the companies like Bharath Forge Ltd, Bosch Ltd which is Having negative returns.

CONCLUSION

This research made an attempt to know as to return and risk associated with selected securities which are listed in Nifty Auto Index as on May 1st 2016 at NSE stock market. Choosing a sample companies of 16 companies which are listed at in Automobile Industry. Where the companies are measured its risk and return factors by implementing various tools like mean return, Correlation, Co Variance, Alpha, Beta. Which shows the fluctuation of the return in different companies in different measurement, which helps to the investors to analyse the risk factor and the return factors which are favourable to the investment. Their findings indicates that the beta is still useful to measure for portfolio managers in making the optimal investment decisions. In this study we also examine the fluctuation of companies for a study of 11 years into consideration. Contrary to this, in the current research it is observed that the companies with high risk profile can yield results only when the market is favorable. On the other hand it is the lower profile companies which could perform well particularly during the period when market is unfavorable.

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