A Comprehensive Study of Performance of Indian Automobile Industry - A stock Market Perspective

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Introduction

The report **by CRISI (2013) says** that automobile industry is expected to grow at an increasing pace after looking at the past performances in years and also with the help of the data analysis. But there are concerns arising due to the increasing prices of the fuels which could hamper the growth and this presents the uncertainty. Automobile is anything that has an engine and runs on wheels and facilitates travel on the road. Over the years, automobiles have been used and evolved in order to help in road travel. It has helped people in reducing the time and place utility and enabled thing that were once impossibility. Roads have the biggest network than any kind of transportation and this is one reason why the use of automobiles for road has been increasing. Indian stock market had witnessed the highest benchmark in 2008 but after that due to global crisis i.e. U.S. Market crash, FII started withdrawing the funds which led the market crashed to historical low. In this study an attempt has been made to study the performance of selected leading auto sector stocks in the Indian capital market since year 2009 to year 2013 to find out the health and performance of Indian automobile sector. The paper has been divided into following sections –

Section I …… Literature overview
Section II …… Research Methodology
Section III…… Limitation of the study
Section IV …… Indian Automobile Sector
Section V…….. Indian Stock Market
Section VI…….. Data analysis & Interpretations
Section VII……. Conclusion and suggestions

Section I *Literature overview*

As per a report by **KPMG** (Becker, 2013)[1], the Indian automobile is poised to start an exciting phase of growth. A number of action points have also been given in the survey report which gives ideas to the automakers as to how to capitalize on the emerging scenarios in the future. Another report by **Velury Vijay Bhasker (2013)[2]** says that Indian Automobile Industry is globally one of the largest industries and a key sector of the Economy and that with the increasing number of foreign companies in the Indian market, the amount of employment have and will continue to increase significantly. It has attempted to study the FDI in this sector and how the government should work to increase this sectors efficiency. The work by **Mahipat Ranawat and Rajnish Tiwari (2013)[3]** traces the evolution of the automotive industry from its beginning to the present day and identifies the important policies made by the Indian

government. They also studies the influence of important policies on the development of the industry. The study by **Dr. Govind Shinde and Dr. Manish Dubey (2013)**[4] analyzed the industry for the period of 2005 to 2010 and say that the Indian automobile industry has been able to sustain during the tough time of the recession and have had record breaking sales growth. The research article by **Hemal Pandya and Hetal Pandya (2013)** [5] also talks in the same tone as the previous researcher. The project by A**ngel Broking** (Kumar, 2013)[6] have given useful information for the investors and the points they should keep in mind when investing in the automobile market. The case study made by **Madhuri Saripalle (2013)**[7] finds that speed of knowledge assimilation is more important in the liberalized policy regime vis-à-vis protection when knowledge assimilation per se was a more important economic goal with respect to the Indian automotive industry. **A report by RNCOS (2006)**[8] has also analyzed the automobile industry for the period of 2005 to 2010 and give points to help explore the opportunities that the automobile sector presents. The research paper by A. **Dharmaraj and Dr. N. Kathirvel (2013)**[9] analyze the financial performance of selected Indian automobile companies and appreciate the increasing growth rate and the performance it has shown in the recent past and says that the companies are strong financial and have a good potential to grow in the future. **(Valentinia, 2002) (Dhole, june, 2013) (Shinde, 2011)**[10] All in all, the automobile sector is an interesting part of the economy and its study could give us some great insights for the upcoming scenario of the industry. This is considering the great deal of financial strength and also after the analysis of the past trends of the automobile industry. The study that is being undertaken will also work on the same notes and try to affirm the claims of the other researches.

Section II *Research Methodology*

The present study is descriptive study. The analysis is based on Secondary data collected from various organizational databases, websites, newspapers and other necessary official records, books & magazines. Monthly closing prices have been taken for technical analysis purpose from year 2009 to 2013. Statistical measures like mean, deviation, correlation moving averages have been used to find out the conclusion. Besides Tables & Charts are used to present and analyze data. The aim of this research is to know the financial performance of the companies and the industry as a whole. Stock market has been the focus of study for many of the researches and this research based on the secondary data would try and find out the trends prevailing in the automobile industries. The companies taken into consideration for the research are:-

- Mahindra and Mahindra Limited
- Maruti Suzuki India Ltd
- Tata Motors Limited

The data analysis has been done using the top down approach and following are the subheadings used for the data analysis:-

Economic analysis.-Following annual indicators have been used for year 2009 to year 2013

- GDP Analysis
- Inflation rate Analysis
- Unemployment rate
- FDI Flow

Industry analysis - Following indicators have been used :-

- FDI Inflow in automobile sector and sub sectors
- Annual Automobile Sales
- Annual growth rate

Company analysis - Research using the calculation of financial ratios and/or complex forecasting of profits, cash flows and dividends. Analysis gives a basis for the valuation of shares and decisions on when to buy, sell and hold shares. The main tools used for company analysis is the ratio analysis.

Technical analysis - A method of evaluating securities by analyzing statistics generated by market activity, such as past prices and volume. Technical analysts do not attempt to measure a security's intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity. Technical analysts believe that the historical performance of stocks and markets are indications of future performance. The paper also has used the historical data and following tools have been applied:-

- Closing prices movement
- Moving averages
- Correlation using graphs
- Risk and return analysis

Scope of the research - The research will help in knowing about the trends in the values of the stock prices of the three major four wheel vehicle producers of India. It will thus be giving knowledge to the readers of the research about the direction of these companies' shares. The research will also be giving information and inferences as to how the balance sheets of these companies look like and how these companies are different from each other. Thus a helper to those who are going to risk their money at the hands of these automobile producers. The trends of the companies will also be compared to the industry as a whole and try to draw anything that would help in understanding this industry better. 12

Objectives -The following are the objectives of the paper

1. To understand the economic indicators supporting Indian automobile.

2. To evaluate and analyze the growth and trends of the automobile sector.

3. To analyze the financial performance of selected automobile companies in the Indian automobile sector.

4. To analyze and compare the performance of the index securities of the leaders in the various segments of the automobiles.

5. To find out the extent of relationships between automobile sector index with the market index.

Section III *Limitation of the study*

1. The study is on past performance of stocks, and the data, since secondary suffers from the limitations of secondary data

2. Risk-Return is calculated by using statistical tools, it may not be accurate.

3. Risk and Return is affected by various factors, and a study of all these factors in depth is difficult due to time constraint. Very few factors have been taken into consideration.

4. The measurements have been influenced by extreme values and may not show the useful results to draw any inferences.

5. Market forces are influenced by a number of factors which cannot be quantified and thus the research is limited to the numbers available.

Section IV *Indian Automobile Sector*

The first car ran on India's roads in the year 1897. Until the 1930s, cars were imported directly, but it was a very small numbers. Automotive industries main emergence in India was in the year 1940s. Hindustan was launched in 1942 and its long time competitor Premier in 1944. These two built GM and Fiat products respectively. Mahindra & Mahindra was established in 1945 by two brothers, and it began the assembly of Jeep CJ-3A utility vehicles. Post-independence, in 1947, the Government of India and the private sector made efforts to create an automotive component manufacturing industry to supply to the automobile industry. In 1953 an import substitution program was launched to enable the import of fully built-up cars. The Hindustan Ambassador dominated India's automotive market from the 1960s till the mid-80s. However, the growth was relatively slow in the 1950s and 1960s due to nationalization and the license raj which was hampered the Indian private sector in many ways. After 1970 the automotive industry started to grow and it was mainly driven by tractors, commercial vehicles and scooters but cars

were still a major luxury item. In the late 1970s price controls were lifted, inserting a competitive element into the automobile market. In the 1980s, the automobile market was dominated by Hindustan and Premier, who sold superannuated products with fairly limited numbers. During the eighties, a few competitors began to arrive in the market. Eventually after liberalization multinational automakers, such as Suzuki and Toyota of Japan and Hyundai of South Korea, were allowed to invest in the Indian market ultimately leading to the establishment of an automotive industry in India. Maruti Suzuki was the first and the most successful of these new entries in the automotive industry beginning in the 1980s. As India began to liberalize there in 1991, a number of foreign firms initiated and joint ventures with existing Indian companies. The variety of options to choose from to the consumer began to multiply in the nineties, whereas before there had usually only been one option in each price class. By the year 2000, there were 12 large automotive companies in the Indian market and most of them were offshoots of global companies. Exports were slow to grow and sales of small numbers of vehicles to tertiary markets and neighboring countries began early, and in 1987 Maruti Suzuki shipped 480 cars to Hungary. After some growth in the mid-nineties, exports once again began to drop as other countries companies were better than Indian manufacturers. This was not to last as today India manufactures low-priced cars for markets across the world. As of 18 March 2013 global brands such as Proton Holdings, PSA Group, and Geely Holding Group have plans for India due to the global economic crisis. The automobile industry of India is one of the largest when compared to the world market. Every household now has a vehicle and Indian is a home to 40 million passenger vehicles proving that the automobile industry has been able to provide the suitable match of vehicle for this large population of India. Automobile vehicles can be categorized into the following types:-

- Four wheelers
- Three wheelers
- Two wheelers

India's passenger car and commercial vehicle manufacturing industry is among the top ten in the world with an annual production of more than 3.9 million units in 2011 and in 2012, 4.15 million vehicles. According to recent reports, India has overtook Brazil to became the sixth largest passenger vehicle producer in the world and it grew by 16 to 18 per cent to sell around three million units in the course of 2011-12. India is also Asia's fourth largest exporter of passenger cars in 2011, behind Japan, South Korea, and Thailand. Previously, in India, the automobile industry has had one of the fastest rates of growth but recently the growth rate has declined to stagnant to negative. But regardless of this fact, more than 3.7 million automotive vehicles were produced in India in 2010 (an increase of 33.9%), making India the second (after China) fastest growing automobile market in the world in that year. According to the

Society of Indian Automobile Manufacturers, annual vehicle sales are projected to increase to 4 million by 2015 to which the previous projections were 5 million. In 2011, there were 3,695 factories of the auto industry which were producing automotive parts in all of India. The average firm made US$6 million in annual revenue with a profit of close to US$400 thousand.

Introduction to the Companies -

i) **Tata Motors Ltd**.- Tata Motors Limited (formerly TELCO, short for Tata Engineering and Locomotive Company) is an Indian multinational automotive manufacturing company headquartered in Mumbai, Maharashtra, India and a subsidiary of the Tata Group. Its products include passenger cars, trucks, vans, coaches, buses, construction equipment and military vehicles. It is the world's seventeenth-largest motor vehicle manufacturing company, fourth-largest truck manufacturer and second-largest bus manufacturer by volume. Founded in 1945 as a manufacturer of locomotives, the company manufactured its first commercial vehicle in 1954 in collaboration with Daimler-Benz AG, which ended in 1969. Tata Motors entered the passenger vehicle market in 1991 with the launch of the Tata Sierra, becoming the first Indian manufacturer to achieve the capability of developing a competitive indigenous automobile. In 1998.

ii) **Mahindra and Mahindra Ltd.-**Mahindra & Mahindra was set up as a steel trading company in 1945 in Ludhiana as Mahindra & Mohammed by brothers K.C. Mahindra and J.C. Mahindra and Malik Ghulam Mohammed. After India gained independence and Pakistan was formed, Mohammed immigrated to Pakistan. The company changed its name to Mahindra & Mahindra in 1948. It eventually saw business opportunity in expanding into manufacturing and selling larger MUVs, starting with assembly under license of the Willys Jeep in India. Soon established as the Jeep manufacturers of India, the company later commenced manufacturing light commercial vehicles (LCVs) and agricultural tractors. Today, Mahindra & Mahindra is a key player in the utility vehicle manufacturing and branding sectors in the Indian automobile industry with its flagship UV Scorpio**.**

iii) **Maruti Suzuki Ltd.-**Maruti Suzuki India Limited, commonly referred to as Maruti and formerly known as Maruti Udyog Limited, is another automobile manufacturer in India. It is a subsidiary of Japanese automobile and motorcycle manufacturer Suzuki. As of November 2012, it had a market share of 37% of the Indian passenger car market. About 35% of all cars sold in India are made by Maruti. The company is 54.2% owned by the Japanese multinational Suzuki

Motor Corporation per cent of Maruti Suzuki. The rest is owned by public and financial institutions.

Section V *Indian Stock Market*

A stock market or equity market is the place where of buyers and sellers of stocks meet and enter in to transactions for the shares of different companies. They trade in securities listed on a stock exchange as well as those traded privately A stock exchange is a form of exchange which provides a platform for the stock brokers and traders to trade stocks, bonds, and other securities. Apart from this, Stock exchanges also provide facilities for issue and redemption of securities and of other financial instruments, and capital events including the payment of income and dividends on the same platform. In India, there are 23 stock exchanges. National stock exchange and Bombay stock exchange are the most prominent and rest are the regional exchanges. Stock exchange informs about the prices for the shares of the companies listed on them to the investors so as to facilitate them in investing. A number of automobile industries have been listed on these stock exchanges over the years and their stock prices are calculated every day and trading happens.

Section VI *Data analysis & Interpretations*

In data analysis top down approach has been used i.e. Fundamental analysis from economic to company analysis and then technical analysis.

A. Fundamental Analysis

1- Economic analysis-The economy of India is the tenth-largest in the world by nominal GDP and the third-largest in the terms of the purchasing power parity (PPP). The country is one of the G-20 major economies and also a member of BRICS. The Indian economy slowed to around 5.0% GDP growth for the 2012–13 fiscal year compared with 6.2% in the previous fiscal. According to Moody's, the growth rate of India would be 5.5% in 2014-15.Following is the graph depicting the movement of the GDP growth of India.

i) GDP Growth rate

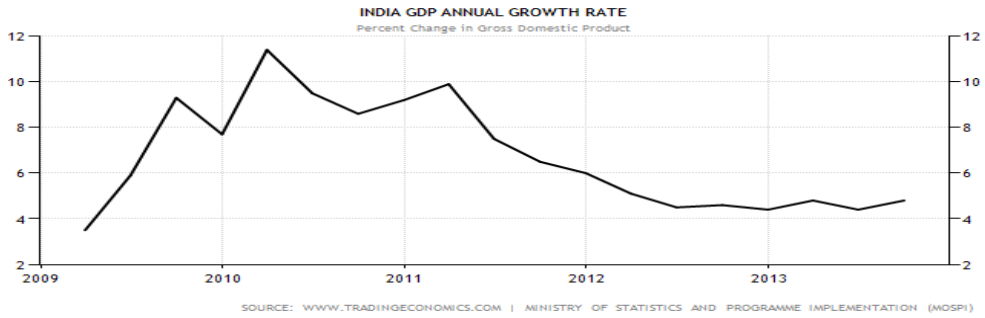

Figure 1 Movement of the GDP growth of India

There is a dip shown during the period of the world economic slowdown during 2008 to 2009. India also suffered, but unlike many other countries, India did quite well and recovered quickly but then took to decline since then. Slow pace of GDP affects negatively all the industries and auto sector is not an exception. Average GDP was from 8% to 10% in the year 2006 to 2010 and it was the period for the Indian automobiles sector as well but unfortunately after 2010 there has been a sharp decline in GDP falling to 4%. The reason for slow growth rate has been many e.g. lack of political stability, high interest rate, high import duty, and high inflation rate.

ii) Inflation rate

The inflation rate in India is being shown in the following graph:-

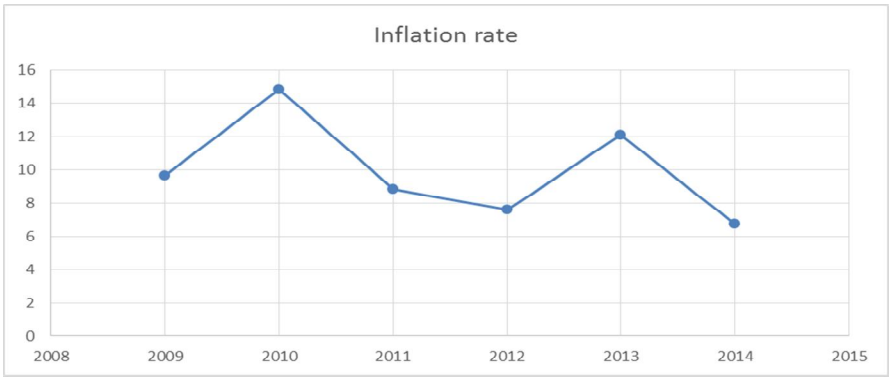

Figure 2 Inflation rate in India. Source: www.global-rates.com

The rate has always been above the comfort level but recently has shown some signs to come down. The biggest contributor to this rate is the inflation in the food grains which are increasing at a drastic level. High inflation coupled with high growth rate makes positive impact on the economy but the recent years the real GDP which is nominal GDP loss inflation has been negative.

iii) **Unemployment** -The unemployment graph goes like follows:-

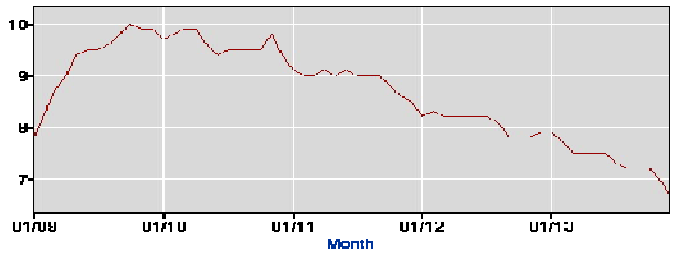

Figure 3 Unemployment Rate. Source: (macrotrends.net, 2014)

As per the graph the unemployment levels of India currently is 6.6% of the total population. The graph also shows the period of 2008 where the economic slowdown happen. Unemployment levels was raised to 10% and has been in the recovery period since then. This is unlike some other countries where the level was higher than what India suffered. After the unemployment, we have the FDI figures in the India. Following is the table showing the detailed numbers:-

iv) FDI Flow –

Table 1 Equity FDI Inflow to India

(Percent)					
Sectors	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**
Sectoral shares (Percent)					
Manufactures	17.6	19.2	21.0	22.9	32.1
Services	56.9	41.2	45.1	32.8	30.1
Construction, Real estate and mining	15.5	22.4	18.6	26.6	17.6
Others	9.9	17.2	15.2	17.7	20.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Equity Inflows (US$ billion)					
Manufactures	1.6	3.7	4.8	5.1	4.8

Services	5.3	8.0	10.2	7.4	4.5
Construction, Real estate and mining	1.4	4.3	4.2	6.0	2.6
Others	0.9	3.3	3.4	4.0	3.0
Total Equity FDI	**9.3**	**19.4**	**22.7**	**22.5**	**14.9**

In the financial year 2006 to 2007, the service sector has shown the maximum level of the FDI flowing in. now however, the field is more equally distributed. Manufacturing sector has taken a slight lead on the maximum level of FDI. The inflow has also increased over the years but a dip recently in the year 2011.

2- Industry Analysis -The industry in focus is the automobile industry of India. The industry has had one of the fastest rates of growth but recently the growth rate has declined to stagnant to negative. But regardless of this fact, more than 3.7 million automotive vehicles were produced in India in 2010 (an increase of 33.9%), making India the second (after China) fastest growing automobile market in the world in that year. According to the Society of Indian Automobile Manufacturers, annual vehicle sales are projected to increase to 4 million by 2015 to which the previous projections were 5 million.

i) **FDI Flow in Auto Sector** - Following is the FDI inflowing into India in the automobile sector from various countries

Table 2 Amount of FDI Inflow in Auto Sector (from January, 2000 to December, 2011)

Ranks	Country	Amount of FDI Inflows		% age with FDI inflows
		Rupees in Cr.	US in million	
1	Japan	7,668.35	1,677.27	25.41
2	USA	3,930.12	856.44	12.97
3	Netherlands	3,485.64	777.40	11.78
4	Italy	2,982.66	691.74	10.48
5	Mauritius	2,936.92	652.30	9.88
	Total	21,003.69	4,655.15	70.52

Source: www.dipp.nic.in

As per the table, we can see that Japan is the leading contributor to the FDI inflow into India. With companies like Suzuki and Toyota, japan is leading the way. USA has the second rank in this regard with their giant Ford Motors.

Table 3 Sub Sectors of FDI inflows (from January, 2000 to December, 2011)

Sub Sectors of FDI inflows	Amount of FDI inflow		%age with total FDI inflows
	Rupees in Crores	US $ in million	
Automobile industry	7,505.54	1,625.66	0.98
Passenger cars	14,200.99	3,158.02	1.91
Auto ancillaries/parts	3,664.26	809.46	0.49
Others (transport)	4,528.17	1,007.98	0.61
Total	29,898.95	6,601.12	3.98

www.dipp.nic.in

Passenger Vehicles segment grew at 4.66 percent during April-March 2012 over same period last year. Passenger Cars grew by 2.19 percent, Utility Vehicles grew by 16.47 percent and Vans by 10.01 percent during this period. In March 2012, domestic sales of Passenger Cars grew by 19.66 percent over the same month last year. Also, sales growth of total passenger vehicle in the month of March 2012 was at 20.59 percent (as compared to March 2011). For the first time in history car sales crossed two million in a financial year.

ii) Sales Volume -

Table 4 Segment-wise sales volumes

Segments	Domestic	Exports	Total
FY09	1552703	335729	1888432
FY10	1951333	446145	2397478
FY11	2501542	444326	2945868
FY12	2629839	508783	3126855
FY13	2686429	554686	3184525

Source: dipp.nic.in

The table above shows the sales volumes in the automobile sector over the years. The increase has been positive and increasing every year and this is an encouraging sign for the automobile producers of

India. Both exports and domestic sale have increased over the years. Thus people are getting richer and willing to spend it on the commercial vehicles thus the industry is flourishing.

iii) Growth rate of Indian auto sector -

Table 5 Year on year growth % of Indian automobile industry.

Segments	Domestic	Exports	Total
FY09	0.2%	53.7%	6.8%
FY10	25.7%	32.9%	27.0%
FY11	28.2%	-0.4%	22.9%
FY12	5.1%	14.5%	6.5%
FY13	2.2%	9.0%	3.3%
FY14e	3 to 4%	9.0%	4.0%

Source: dipp.nic.in

3-Company Analysis-Company Analysis consists of measuring its performance and ascertaining the cause of this performance. When some companies have done well irrespective of economic or industry failures, it implies that there are certain unique characteristics for this particular company that had made it a success. The identification of these characteristics, whether quantitative or qualitative, is referred to as company analysis.

i) Tata Motors Ltd.

Key Ratios:-

Table 6 Tata Motors Ratios

Ratio	Mar 09	Mar 10	Mar 11	Mar 12	Mar 13
Adjusted EPS	17.93	24.91	30.87	5.76	2.28
Adjusted Cash EPS	35.94	45.56	52.31	10.82	7.98
Dividend Per Share	6.00	15.00	20.00	4.00	2.00
Dividend Payout (NP)	34.52%	44.28%	80.96%	117.83%	213.77%
Total Debt/Equity	1.06	1.12	0.73	0.56	0.74
Long Term Assets to Total	0.71	0.75	0.72	0.70	0.75
Current Ratio	0.84	0.62	0.73	0.62	0.64

Source: (Money.rediff.com, 2014)

The Dividend Payout ratio to the adjusted EPS has been increasing annually with an increasing rate. This is a very encouraging site for the potential investors and also for the current investors. A good Payout ratio would mean that the investors will be benefited in the short term as well. The EPS has fallen in the last two years and thus is due to the fact that there was a stock split in the year 2011. The debt to equity ratio has come down after the first two years and this means more debt was employed. This is good in the terms that more of the cheaper source of finance has been used by the company and this will in turn help the shareholders as their earnings will increase in the years to come. The current ratio graph of TATA Motors is been stable in all these years but the concern is that it is fairly below the comfort level which is 1.33. Each year the company is not succeeding in lifting this figure above the threshold of 1.00. Investors would be concerned due to these figures as the current liabilities of the company are being handled by the long term assets of the company. This is never favorable for any company even if you have deep pockets. This could also be positive as the company may not be keeping their stocks for long periods and thus the current assets are low.

ii) Maruti Suzuki Ltd.

Key Ratios:-

Table 7 Maruti Suzuki Ratios Source: (Money.rediff.com, 2014)

Ratio	Mar 09	Mar 10	Mar 11	Mar 12	Mar 13
Adjusted EPS	42.81	83.15	79.21	56.60	79.19
Adjusted Cash EPS	67.26	111.70	114.30	96.00	140.80
Dividend Per Share	3.50	6.00	7.50	7.50	8.00
Dividend Payout (NP)	9.70%	8.09%	11.00%	15.39%	11.82%
Total Debt/Equity	0.07	0.06	0.01	0.07	0.07
Long Term Assets to Total	0.59	0.76	0.62	0.63	0.70
Current Ratio	1.53	1.02	1.58	1.33	1.17

The dividend payout percentage is having its ups and downs. It's been on a rise from the year 2010 to the year 2012 but has recently taken a dip in the year 2013. The payout has been low when compared to the TATA's which are paying a large chunk of the NP as dividend. The most amazing figures in the Maruti Suzuki ltd are the numbers in the total debt to equity column. The company has kept its debt to below 10% of the equity that is being invested. This is very encouraging for the shareholders as they

know that the income generated will not be wasted in paying out the interest component of the debt. The earning per share has maintained a pretty even scale and has not been fluctuating in the last five years.

The two dips in the years 2009 and 2012 could be accounted to the development expenses that were made by the company. Otherwise the company has done a great job in maintaining its EPS. The current ratio of the Maruti Suzuki ltd has shown a decreasing trend in the recent period from the year 2011 to the 2013. But the company is doing comparatively better than the Tata's who have a ratio below 1 for all these years. The company should be happy about the condition but should also be work on keeping the ratio above the desired level of 1.33 for the times to come.

iii) **Mahindra and Mahindra Ltd**.

Key Ratios:-

Table 8 Mahindra and Mahindra Ratios (Money.rediff.com, Mahindra and Mahindra ratios, 2014)

Ratio	Mar 09	Mar 10	Mar 11	Mar 12	Mar 13
Adjusted EPS	35.41	36.19	41.45	45.13	53.13
Adjusted Cash EPS	46.10	42.74	48.19	54.51	64.71
Dividend Per Share	10.00	9.50	11.50	12.50	13.00
Dividend Payout (NP)	37.29%	29.87%	30.15%	30.17%	26.57%
Total Debt/Equity	0.83	0.46	0.22	0.26	0.21
Long Term Assets to Total	0.63	0.61	0.65	0.64	0.64
Current Ratio	1.06	1.11	0.97	0.99	1.02

The dividend payout of the Mahindra and Mahindra ltd has been consistent as compared to the other firms and has been moving around the 25% to 35% figures. This is very encouraging for the investors. The recent trend though is of decreasing payout ratio. This is a little negative but could be due to the fact that the company is planning for an expansion. And the investors would get a capital gain with some sacrificing of the dividend. A positive trend can be seen in the increase of the earning per share. Investors love the companies who can display such a sight in the graphs of an important element. Thus a positive trend and the company should take steps to keep this going. Another great sight for an investor is to see the debt equity go down as the years pass. This says that the company has less and less fixed interest payment obligations and the profits will be available for the shareholders. It could also mean that the company can retain more of the revenues leading to a better position in the future to expand. The

current ratio can be seen taking a dip in the year 2010-2011. This could be due to some inefficiency in the management of the working capital. But still it is on a steady rise and this is good for the company. Recently it has crossed the mark of 1.00 and increasing. Anything above 1.00 is good but the company can still work on improving it.

B- Technical analysis

Technical analysts do not attempt to measure a security's intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity. Technical analysts believe that the historical performance of stocks and markets are indications of future performance.

i) Closing prices movement comparisons

Following is the graph showing the movement of the closing stock prices of Tata motors ltd for the past five years on the monthly basis.

a) Tata Motors Ltd.

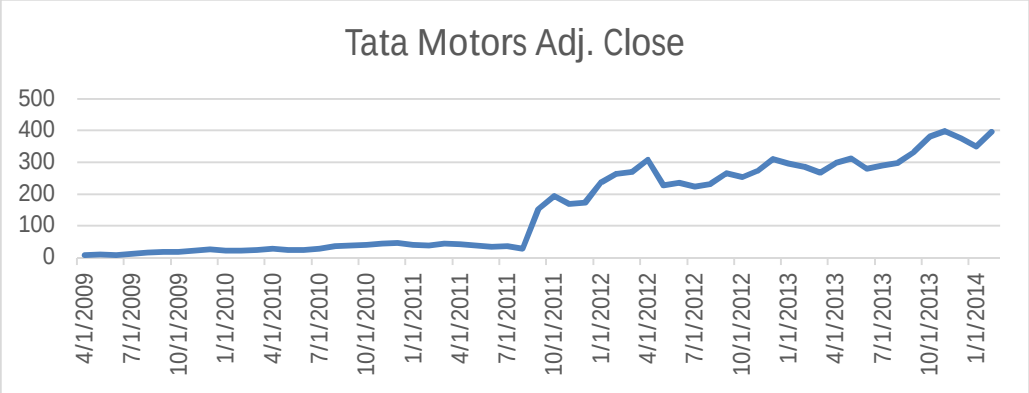

Figure 4 Tata Motors Adj. Close (in.finance.yahoo.com, Tata Motors Ltd Stock, 2014)

The stock prices have been taken after the time of the slowdown after 2008. As per the graph, you can see that the stock struggled from the period of 2009 to 2011. After that period the stock has been on the rise since. A quick jump in the mid of 2011 has been followed by an increasing trend in the graph. The investors have been on the lookout for the Tata motors stock as shown by the graph and this increasing trend will encourage more and more investors to take a look at the Tata motors stock.

b) Maruti Suzuki Ltd.

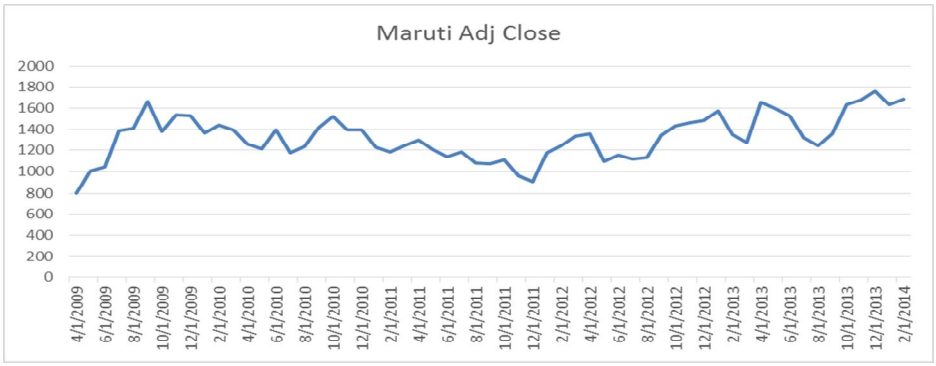

Figure 5 Maruti Adj. Close (in.finance.yahoo.com, maruti suzuki stock, 2014)

The closing prices of the Maruti Suzuki ltd have been consistent over the years and that is the reason why we see the above graph. An increase was seen in the period from 2009 to 2010. This is the period when the market was recovering from the depression of 2008. Maruti is thus been seen recovering in that period

c) **Mahindra and Mahindra Ltd.**

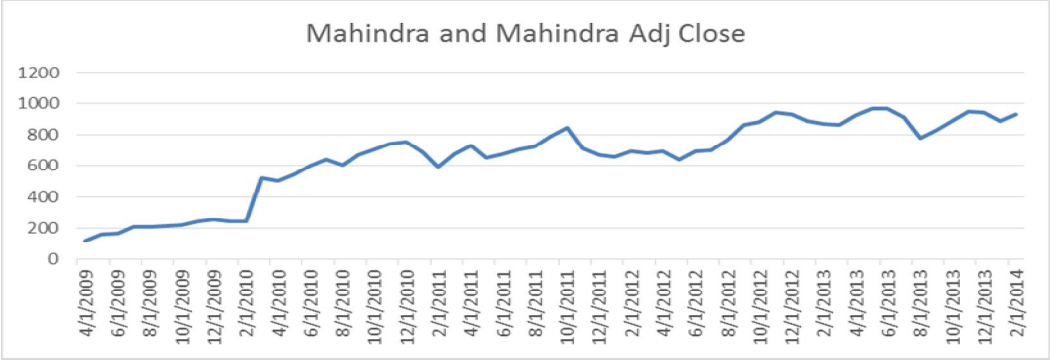

Figure 6 Mahindra and Mahindra Adj. Close (in.finance.yahoo.com, mahindra and mahindra stock, 2014)

The graph for the Mahindra's has shown a clear upward movement trend over the years. This could be accounted to the gradual growth and innovation of the company. Any investor would be happy by seeing the above graph and would be willing to risk their money with such a company. The company should keep this up and work on improving the prices.

ii) Moving averages comparison

a) Tata motors ltd

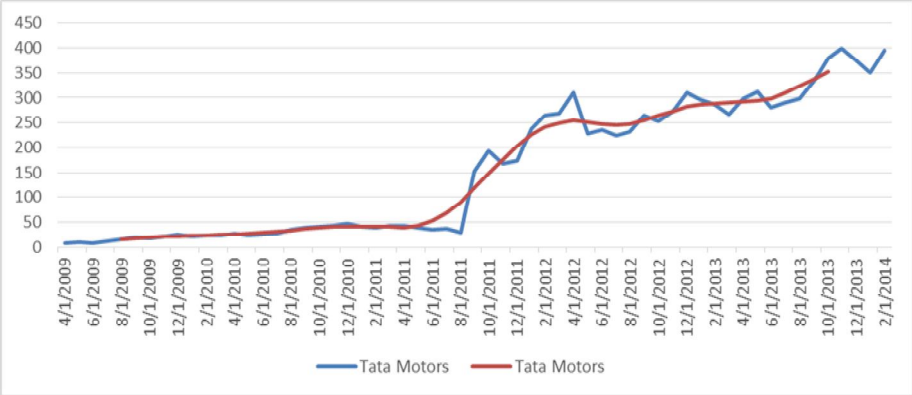

Figure 7 Tata Motors Moving Average

The rise in the prices has been great for the Tata motors after the period of mid-2011. It has been on the increasing trend ever since. Investors and stakeholders will feel pleased by seeing this graph.

b) **Maruti Suzuki ltd**

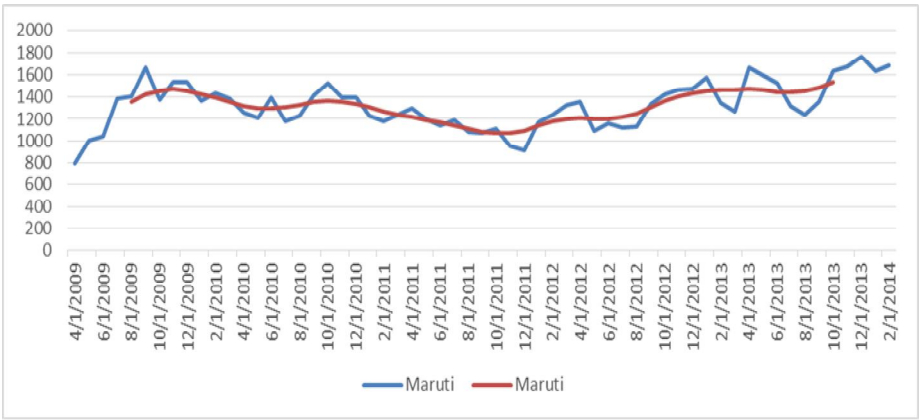

Figure 8 Maruti Suzuki Ltd. Moving Average

The ups and down of the Maruti index are visible in the moving average. We can see the dip in the price in the period of October 2011. The recovery after that has also been clearly depicted in the graph through the moving averages.

c) Mahindra and Mahindra

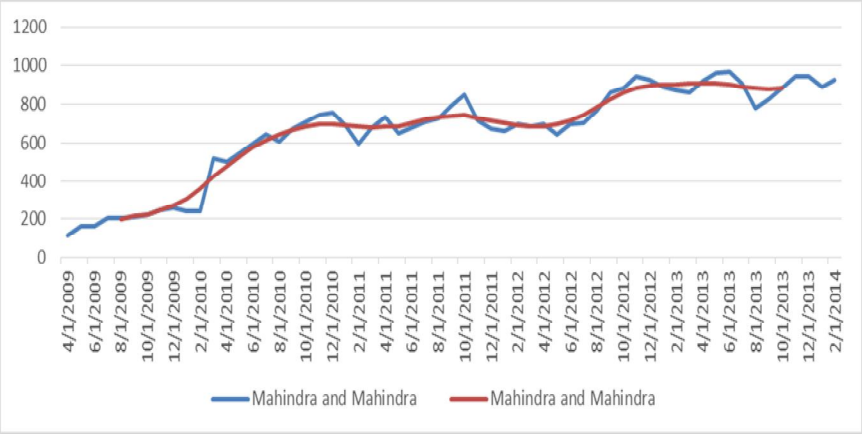

Figure 9 Mahindra and Mahindra Ltd Moving Average

The moving average of the Mahindra and Mahindra ltd shows us the story as to how the company has been having the increasing price index over the period of time.

d) Combined graph Moving Averages -

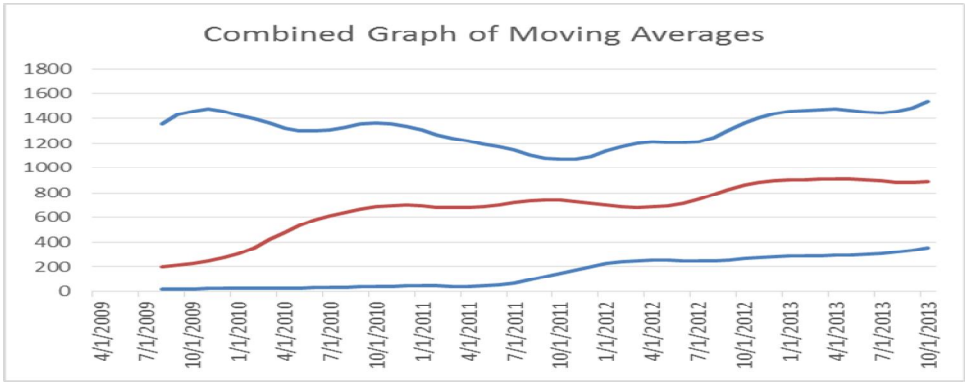

Figure 10 Combined Graph of Moving Averages

The above is the graph shows the movements of the moving averages of the three companies. The top line represents the movement of the Maruti Suzuki. In the middle there is the Mahindra and Mahindra ltd index moving average. Below them is the Tata motors ltd. The movements can be inferred in a better manner using the moving averages.

iii) Correlation using graphs

(a)- Correlation between auto indexes with Sensex

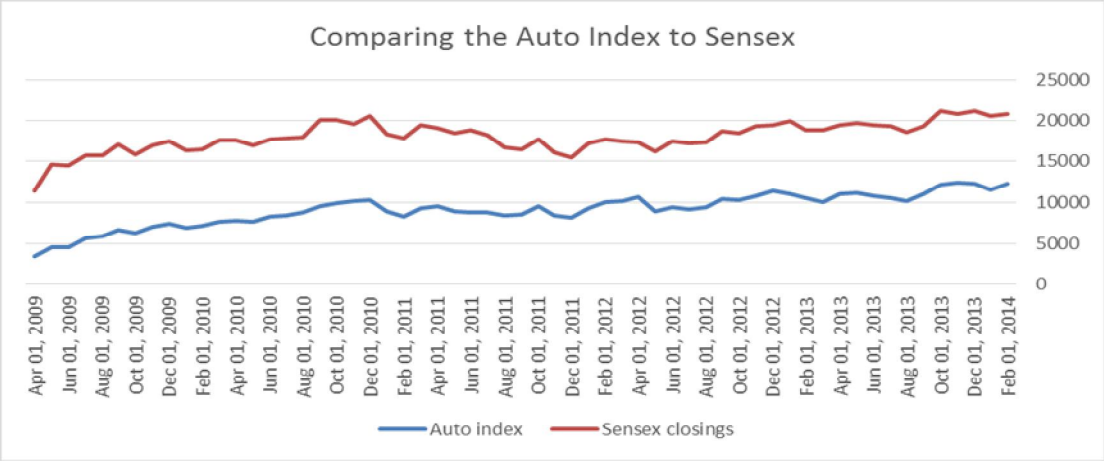

Figure 11 Comparing the Auto Index to Sensex (in.finance.yahoo.com, s and p bse sensex, 2014)

The movement of the indexes has been very similar and positively related. A dip in the Sensex is also reflected in the auto index and vice versa. The correlation coefficient between Auto Index and **Sensex is 88.77%** which is very high. In the graph also has shown the same and the coefficient has proven the same.

(b)-Correlation between individual stock with auto index

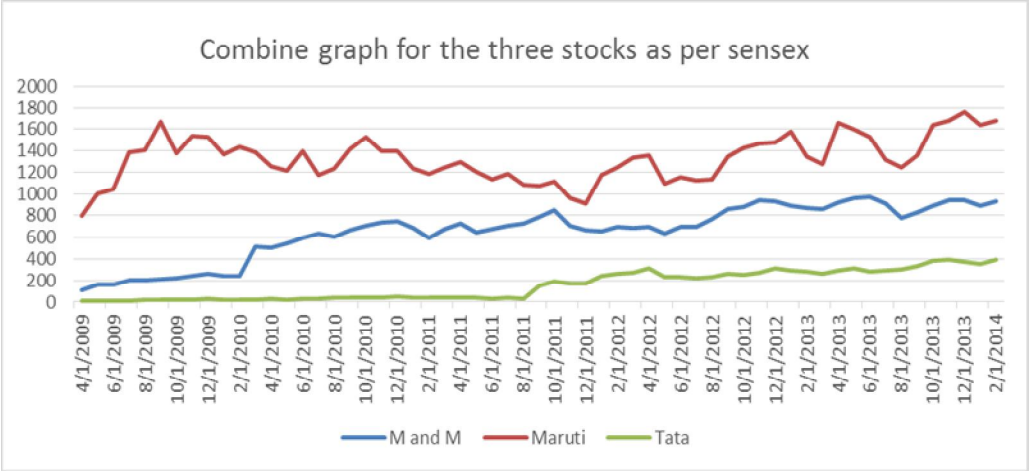

Figure 12 Combine graph for the three stocks

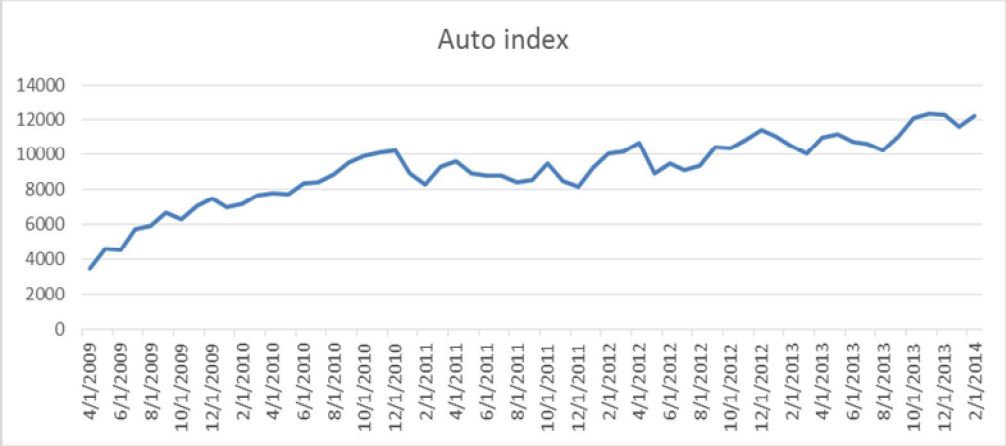

Figure 13 Auto index (Investing.com, 2014)

Above are the graphs showing the stock movement of the three stocks along with the auto index. With the naked eye, Correlation Coefficients for the above graphs movements:-

Correlation is the tool for finding the similarities in the movements of the stock indexes. In the paper we have five indexes (three companies and an auto plus Sensex index). Following are the findings of the same:-

- Correlation between Auto Index and **Tata Motors is 79.98%** which is very high and shows that the Tata motors stock index is very similar to the auto index and the movement of one can be predicted by using the other.

- Correlation between Auto Index **and Maruti is 53.41%. This** is fairly high but not as good as the Tata index. This medium correlation shows that Maruti is not sharing the movements of the auto index.

- Correlation between Auto Index and M **and M in 92.87%. This** is the highest level of correlation coefficient out of the three and talks about high positive similarities in the movements of the two indexes. With a good level of confidence, one can talk about the movements of one by looking at the other index.

iv) Risk and return analysis (Volatility analysis)

Risk & Return analysis attempts to analyze the performance of the company's index with the help of averages, variations, deviations and may other tools. Following are the analysis of the three companies at hand.

a) Tata Motors Ltd.

Following is the table showing the annual average log return, the variance of the return and the standard deviation:-

Table 9 Tata Motors Volatility Analysis

Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Average	11.01%	4.89%	15.11%	-0.05%	3.57%
variance	3.00%	1.47%	27.40%	1.69%	0.69%
SD	17.33%	12.10%	52.34%	13.00%	8.30%

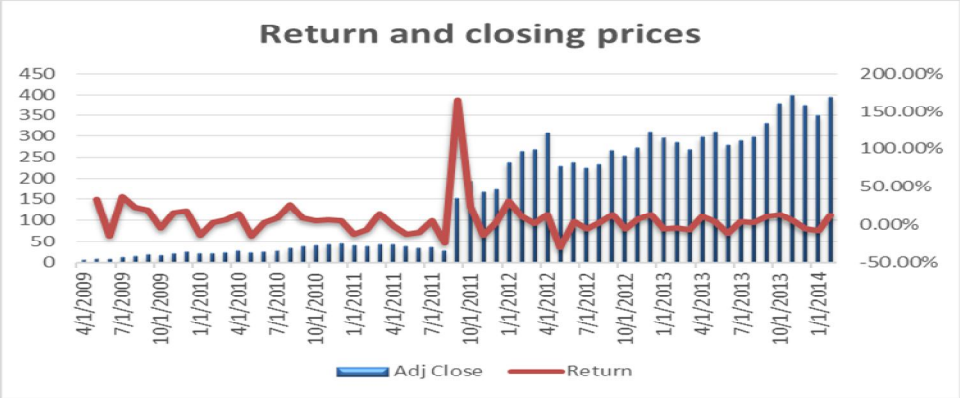

Figure 14 Return and closing prices Tata Motors

The graph for the log return has been on a single line but there is the mammoth town in the middle of the graph. This is the time when the stock for the Tata motors shot up. The shareholders of this time were great gainers. The times before that were of great deviation and after the event, the deviations have been coming down. The return following the tower have been less but less varying.

Table 10 Tata Motors Volatility Analysis 2

The Data for 5 years together	
Average	6.89%
Variance	35.99%
SD	59.99%

The combined data for the Tata motors has been one of concern. The return is more than the other but the variations have been huge. Majority of the investors would not be interested in putting their money into a stock that is that high on standard deviation. A concern for the company that needs to be taken care of.

b) Maruti Suzuki Ltd.

Following is the table showing the annual average log return, the variance of the return and the standard deviation:-

Table 11 Maruti Suzuki Volatility Analysis

Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Average	5.04%	-0.95%	0.60%	-0.39%	2.55%
variance	1.98%	1.13%	1.21%	1.14%	1.43%
SD	14.07%	10.63%	10.98%	10.70%	11.98%

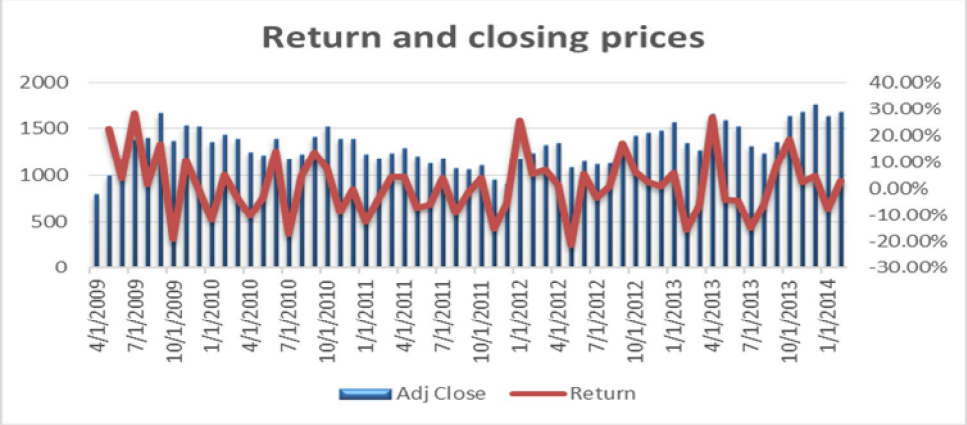

Figure 15 Return and closing prices Maruti Suzuki

The return graph for the Maruti Suzuki Ltd is showing a lot of variations and ups and downs over the years. There have been no extreme situations where we see a tower but the general variations are on the higher note. The standard deviations over the years have also been higher than the Mahindra and Mahindra ltd. This just tells the investors about where to invest and where the risk is high.

Table 12 Maruti Suzuki Volatility Analysis 2

The Data for 5 years together	
Average	1.29%
Variance	7.16%
SD	26.77%

The five year data shows that an average of 1.29% return has been given by the stock of Maruti Suzuki ltd. The standard deviation for the same has been 26.77% which is a bit lower than the Mahindra and Mahindra stock.

c) Mahindra and Mahindra

Following is the table showing the average log return, the variance of the return and the standard deviation:-

Table 13 Mahindra and Mahindra Volatility Analysis

Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Average	13.64%	2.18%	0.10%	1.91%	0.70%
variance	5.66%	0.80%	0.73%	0.40%	0.51%
SD	23.79%	8.96%	8.53%	6.36%	7.16%

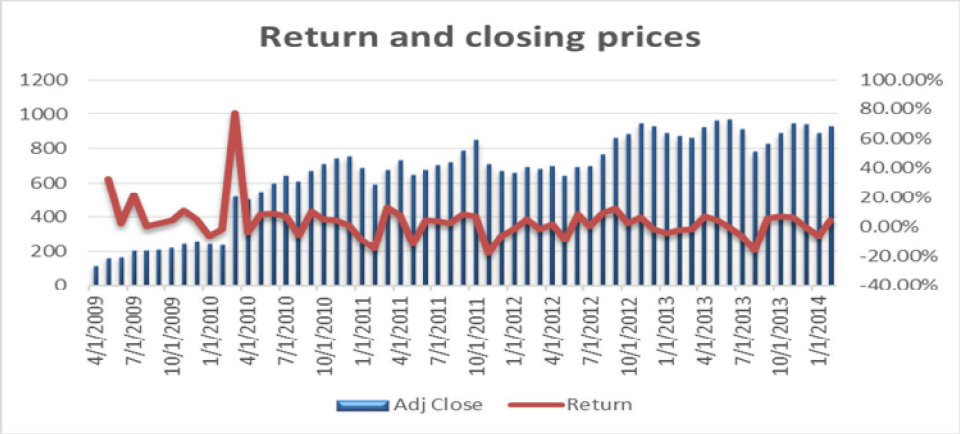

Figure 16 Return and closing prices Mahindra and Mahindra

The graph above shows the closing prices along with the returns. We can see a tower in the return line in the year 2010. This tells that the investors at that point had a great gain on their stock. Otherwise the

stock has given nominal returns to the investors over the years. The deviation in the returns can be seen as maximum in the year 2009 to 2010. Other than that the variation has been constant over the years.

Table 14 Mahindra and Mahindra Volatility Analysis 2

The Data for 5 years together	
Average	3.59%
Variance	9.51%
SD	30.85%

The combined data shows that the company has given an average 3.59% return to the investors over the last five years. The standard deviation for the years has been 30.85%.

Comparative figures -The comparisons of return figures of the three stocks:-

Standard Deviations Table -

Table 15 Standard Deviations Table Combined

Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
SD of Maruti	14.07%	10.63%	10.98%	10.70%	11.98%
SD of M and M	23.79%	8.96%	8.53%	6.36%	7.16%
SD of Tata	17.33%	12.10%	52.34%	13.00%	8.30%

The stocks of Mahindra and Mahindra have shown the lowest standard deviations over the years. In the year 2009 to 2010, they have the highest variation but after that, all the years their standard deviation has been the minimum. Tata's stock has had the most variation in these years. This has been the case for all the years but a special mention has to be given to the year 2011 to 2012. That was the year when the company had the tower in the log returns graph. Maruti stock has shown the most consistent stock out of the three.

Average Return Table -

Table 16 Return Averages table Combined

Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Average for M and M	13.64%	2.18%	0.10%	1.91%	0.70%
Average for Maruti	5.04%	-0.95%	0.60%	-0.39%	2.55%
Average for Tata	11.01%	4.89%	15.11%	-0.05%	3.57%

The above table is showing that the shareholders of the Tata stocks has had the most return over the years followed by the Mahindra and Mahindra investors. The least return has been seen by the stockholders of the Maruti. It also shows that the people who had invested in these three companies in the year 2009 to 2010 were big earners. The returns of all the three companies are high in that year. The graph also shows that the Tata shareholders had the greatest return in the year 2011 to 2012.

Section VII Conclusion and suggestions

The automotive industry in India is one of the larger markets in the world. It had previously been one of the fastest growing globally, but is currently experiencing flat or negative growth rates. India's passenger car and commercial vehicle manufacturing industry is the sixth largest in the world, with an annual production of more than 3.9 million units in 2011. ***In 2009*** year featured the lows in terms of GDP growth rate and unemployment. All of the three companies indexes have shown a period of recovery from the turmoil's of 2008 and same is with the auto and Sensex index. The return in this period has been very low and fluctuating ***.In 2010*** the GDP was in a recovering stage and same is the case with the auto and BSE index. This has been the period of extra ordinary returns to the shareholders of the three companies as the stock have gone up significantly and lead to abnormal price movement. ***In 2011*** GDP was at the peak of its performance and so have been the other indexes. The unemployment rate has also been at its best in years and the FDI inflow has also been great and the returns have been growing and gaining consistency. ***In 2012*** Economic analysis tells that decline in GDP started and also the unemployment rate. The company stocks have also taken a slight dip and this has been consistent with the auto index and the Sensex. ***In 2013*** The growth in GDP is very low but there are signs of recovery. All other indexes have been doing well and have not shown any signs of decline. The returns have been consistent as ever and this is a positive sign for the times to come. Another finding is that the FDI inflow into India for the automobile sector is mainly for the Passenger cars. Passenger cars have the majority of investment of the foreign companies and this is expected to be so in the future as well. The sales volumes are also on the rise for the Indian auto producers. Company analysis for Tata motors is saying that they will attract investors with the help of their dividend pay-out percentages .Their EPS is showing a negative trend but the dividend pay-out is on the rise. Company analysis highlights the fact that Maruti Suzuki rarely use the debt component in the financing of their operations. All the income is for the shareholders or for retaining. They need to be concerned about the decreasing current ratio. Company analysis also tells that Mahindra and Mahindra ltd are on the right track. Their debt equity is decreasing every year, EPS is increasing every year and they have a dividend pay-out that would attract any investor. The technical analysis tells that automobile sector and the BSE index i.e. Sensex are correlated and

movements of one can be used to predict the movement of the other. The auto sector's performance is directly related to the economic trends in the country. Another finding is that the Mahindra and Mahindra are the most correlated to the auto index than the other two companies

Suggestions:- . Auto industry thus present a good opportunity for the investors especially in the form of Mahindra and Mahindra ltd. Major Indian producers like Tata's and Maruti may be doing good in the form of numbers in sales but will face great competition in for of Mahindra and Mahindra. Mahindra and Mahindra has a great position on the stock market and will attract investors and this could lead to expansion and growth. Thus the Tata's and Maruti need to take care of their stock and work on its consistency. This would help them attract more investors and grow in this growing economy of India. Increasing demands and sales numbers of Indian auto bring many opportunities for these players if they are up to grab it.

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Annexures
LIST OF TABLES