



An Empirical Study of Relationship between Market Index and Auto Sector Index.

1. Dr.Rajani

PhD, Faculty of commerce, Dayalbagh Educational Institute (Deemed to be University), Agra

Abstract: This research summarizes the relationship between market index and Auto Sector index. For analyzing the market index with the auto index, NIFTY50 INDEX has been taken as a market indicator (independent variable) and NIFTY AUTO INDEX has been taken as Automobile Sector Index (dependent variable). The duration of the study was taken eighteen years from January 2003 to December 2022. The relationship evaluated between. And to examine the relationship between the overall market index and the automobile sector index, correlation and regression has been applied through E-views12 to know the relationship between the market index and the automobile sector index. The Granger causality test has also been applied to check the interrelationship between these two variables. The purpose of applying the granger causality test was to know whether the interrelationship between these two variables was bidirectional or unidirectional. Keywords: Nifty Fifty Index, Nifty Auto Index, Correlation, Regression, Granger Causality Test. The study conclude that nifty Auto index has strong positive relationship with nifty fifty index , regression test result revels fluctuation of nifty fifty index has impacted the functioning of nifty auto index and granger causality test shows existence of long term bidirectional causality between variables

Key Words: Nifty Fifty Index, Nifty Auto Index, E-Views, Granger causality Test

I. INTRODUCTION

With continues growth and expansion of growing opportunities ,our Indian economy has been considered to became third largest economy in world in few years .and the growth of the economy is highly correlated or depend up on the performance of stock market.in India we have the oldest stock market which is called (Bombay stock exchange)BSE. Stock market is a place registered company's got chance to raise funds to expand their business or give contribution in the growth of economy. Now days stock market position gets more clear and strong in terms of saving investors from fraud and from any kind of scam that has happened in past .when many fraud brokers take the money of innocent investors by doing false marketing or by spreading rumors about market position but this all has stopped now due to digitalization of every step of share buying and selling activity. In the growth of stock market automobile industry play a very impotent role. Our automobile industry is the main pillars in the growth of Indian capital market as well as Indian economy. Indian auto sector contribution in national GDP is 2.77% in 1992-1993 but it is 7.1% in 2023.for future perspective India wants its auto industry to double its in size like15 lakh crores by 2024. Automobile industry contribution for the growth of Indian economy has been done by many categories like as 7.1% contribution GDP, 37 million jobs are generated, 40% share in global research and development and 4.7% share in India's export. Automobile industry differs from other industry of India in so many terms. Thus, it creates a great prospect for investors & market players in terms of getting good return.

i. Nifty Fifty Index

Nifty fifty indexes came into operations on 20 April 1996. Nifty fifty Index represents weighted average of largest fifty Indian companies listed on the national stock exchange. NSE indices own the Nifty Fifty and manage all its operations. Top thirteen sectors of the Indian economy have been covered by the Nifty Fifty index and Nifty Fifty index offers a large managed exposure to the Indian investor in one portfolio, Nifty Fifty has allotted a weighted to all the thirteen sectors in which automobile sector has 5.84% weightage.

ii. Nifty Auto Index

Nifty Auto index is a tool of performance measure for automobile industry as automobile sector plays a pivotal role in the growth of the Indian economy. Nifty auto index includes stocks of those companies which operate in automobile sector. From automobile sector top 15 stocks of different companies comes under Nifty auto index. Nifty Auto index predicts the behavior and movement of the automobile companies on the basis of their stocks returns.

II. REVIEW OF LITERATURE

- This research paper "An empirical study of relationship between market index and auto sector index" has been analyzed by taking nifty fifty indexes as market index and nifty auto index as auto index. The research examined the long-term equilibrium relationship between nifty fifty index and nifty auto index through the application of regression, correlation and granger causality test.

- ✦ Pramod Kumar Naik (2013) analyzes the stock market respond to economic fundamentals by taking time series data from India. For analyzing impact of macroeconomic variables on stock market behavior, data for study has been taken on monthly basis. Macroeconomic variables namely industrial production index, inflation, money supply, short-term interest rate, exchange rate and stock market index and tools used to study variables are johansen co-integration, vector error correlation model and Granger causality. The study concludes that impact of money supply and industrial production has positive impact as compared to inflation which has negative impact on stocks prices. Also interest rate & exchange rate are found irrelevant in the estimation of stock price.
- ✦ Baranidharan Subburayan (2020) analyzed the effect of volatility exchange rate on BSE (BOMBAY STOCK EXCHANGE) sectorial indecies. The present study used data from 2014 to 2018 to analyze the volatility of exchange rate by using tools like descriptive statistics ,regression correlation Johnson co –integration test and GARCH () model. The research concludes that there exists a long term relationship between exchange rate and price movement which affects the Indian stock market. Through descriptive statistics jarque bera value it can be said that data does not show normality. GARCH model application shows presence of high volatility in BSE sectorial Indices. Study also suggests any fluctuation in exchange rate negatively affect the stock prices of BSE.
- ✦ Pramod Kumar Naik and Puja Padhi (2012) do the research to analyze the impact of macroeconomic fundamentals on stocks prices reinvested: evidence from Indian data. Data for research has been taken from (1994:4-2011:06) to examine the long term relationship between stock market index (BSE SENSEX) and macroeconomic variables name as whole sale price Index, money supply, treasury bills rates and exchange rates. The result of the study concludes that stock market Index and macro-economic variables have existence of long term equilibrium between them.
- ✦ Marisetty Nagendra and Dr. Haritha analyzed the NSE NIFTY and its correlation with sectorial indexes by using statistical tool correlation and by taking data from (2006 -2010). This study includes total even sectorial indexes name as, Auto index, Bank Index, FMCG Index, Energy Index, IT Index, Metal Index, Pharma Index. From the study it can be concluded that NSE NIFTY influence the performance of other sectorial indexes but PHARMA and FMCG are less influence than other sectors indexes.
- ✦ Kokila Kalimuthu and Shaik Saleem (2023) research for the linkage between festivals and stock market returns: A study of Indian stock market to do the research secondary data has been taken from (January 2016 –December 2021). Tools used for the study are descriptive statistics and paired t-test to study the after and before effect of festivals on return of sectorial indexes and at last granger causality test applied to check the directional behavior of different indexes return towards festivals. According to the study conclusion Ramadan and Diwali are the two main festivals that have positive impact on Nifty fifty and other sectorial indexes and maximum selling and buying of product has also been done during these festivals that give positive boost to the stock market.
- ✦ Vijay Victor, Dibin K K, Menu Bhaskar and Farheen Naz (2021) investigate the dynamic interlink ages between exchange rates and the NSE NIFTY index. Further study 13 years of data has been taken from September 2005 to 31 December 2018 for analysis daily exchange rates has been considered name as USD, EUR, CNY, JPY, and GBP to INR along with daily movement of NSE NIFTY 50. Long –run and short-run linkage between NSE NIFTY and exchange rates has been analyzed by using integration, Granger Causality Test and VAR model. Research concludes that long run equilibrium exist between exchange rates and NIFTY FIFTY and granger causality test result indicate a bidirectional causality between the variables. The result implies that variations are most happened in short run as compared to long-run so investors are advised to have watch on variation cautiously if they want to invest for short period .
- ✦ Dr.Rupinder Katoch and Arpit Sidhu revisiting the relationship between NIFTY 50 Index and macroeconomic variables in India: A Partial equilibrium Approach. Study used ARDL (auto regressive distributed lag order) and granger causality test to examine the effect of macroeconomic variable on stock price movement of NIFTY Fifty Index and for this 12 years date have been collected from (2006 to 2018). Research used total industrial production, consumer price index, money supply in the narrow sense, interest rate, export import ratio and exchange rate. At last this revisiting causal relationship study conclude that in a short run these macroeconomic variable have no bidirectional relationship with each other and less variation exists in movement of stocks price for short run. But consumer price index has no causal relationship with movement of stocks price as compared to other macroeconomic variable in short run.
- ✦ Dr. U. Raghendra Prasad (2016) examines the relationship between Nifty Fifty and selected shares in NSE. Selected share in NSE are TCS, Reliance, HDFC Bank, ITC. Selected companies share price has been taken from (2012-2016) on daily basis and to analyze data coefficient of correlation statistical tool has been used .This study conclude that HDFC Bank, TCS, Reliance have strongly positive correlated with NIFTY FIFTY except ITC which have moderate positive relationship.

III. NEED OF THE STUDY

It has been observed that past researches were based on the relationship and impact of macroeconomic variables with sectorial indexes and BSE SENSEX stocks prices. The bunch of these studies were conducted in India as well as foreign, to investigate the impact and spillover effect of macroeconomic variable by taking sectorial indexes name as Bank Index, FMCG Index, IT index, Metal Index, Pharma Index except Nifty Fifty and Nifty Auto. As we all know NIFTY Fifty index represent 50 stocks portfolio and it also include stocks of Auto Sector. So this study will analyze the relationship, impact and granger causality direction between NIFTY Fifty and NIFTY Auto index. Therefore this study will be helpful to know whether long term relationship exists between these two variables or whether nifty Fifty Index ups and down have impact on Nifty Auto Index and this study will also reveals that what kind of directional relationship exist between Nifty Fifty and Nifty Auto. And this study will also help investor to whether to consider or not the variation of Nifty Fifty Index before investing in Nifty Auto Sector's Automobile companies.

IV. OBJECTIVE OF THE STUDY

- ✦ To study the relationship between market index and auto sector index.
- ✦ To identify the impact of Nifty Fifty Index on Auto sector Index.
- ✦ To examine Granger cause between Nifty Fifty Index on and (Nifty Auto Index).

V. RESEARCH METHODOLOGY

Sample Size

✚ Nifty Fifty as market Index and Nifty Auto to as an Auto index represented and selection have been done.

Duration of the Study

✚ For the study data from January 2003 to December 2022 has been taken.

Data Used For Study

✚ Stocks prices of Nifty Fifty and Nifty Auto has been collected on monthly basis from National Stock Exchange (NSE) official website.

Tools for Analysis

✚ This study used correlation, Regression and Granger causality Test to analyse the data.

Correlation Analysis: Correlation analysis is used to quantify the degree to which two variables are related with each other. It's a statistical method to review the possible linear relationship between dependent and independent variables which are continuous in nature.

Regression Analysis

In this chapter, the statistical tool Regression has been applied for analyzing the impact of the Nifty50 Index on the Nifty Auto Index. The values of the Nifty50 Index and Nifty Auto Index are based on closed prices. A regression test has been applied for analyzing the impact of the independent variable (Nifty50Index) on the dependent variable (Nifty Auto Index) and observing how significant a difference was made in the dependent variable due to the change in the independent variable.

Granger causality Test

Pair-wise granger causality test applied to the Nifty 50 Index and Nifty Auto Index to analyze the causal relationship and identify the direction of influence. The Granger causality test is hypothesized to know the causal relationship between selected.

VI. NULL HYPOTHESES

H₀₁: There is no significant relation between overall market index and automobile sector index

H₀₂: There is no significant Impact of Nifty Fifty Index on the Nifty Auto Index

H₀₃: Nifty Fifty prices does not Cause the Price of Nifty Auto Index.

H₀₄: Nifty Auto Index price does not Cause the Price Nifty Fifty Index.

VII. ANALYSIS AND INTERPRETAION

Correlation Analysis

H₀: There is no significant relation between overall market index and automobile sector index

Table.1.1: Correlation of Nifty 50 with Nifty Auto

Adjusted R- square	0.618874			
(F-statistics)	393.9614			
Prob.	0.000000			

(Source: Researcher Computation over E-Views 12)

Interpretation

The above table comprises Regression analysis for Nifty Auto Index and Nifty Fifty, in which nifty auto is taken as the dependent variable, and Nifty Fifty took as the independent variable for analyzing the relationship between Market Index and Nifty Auto. The value of the Adjusted R-square is 0.618 which indicates a 61.8 % Change in the dependent variable due to a change in the independent variable. It can be said that the Nifty Auto Index's price is significantly affected by the Nifty50 Index's price. The P-value is 0.00 which is less than 0.05 level of significance, signifying rejection of the Null Hypothesis, thus it observed that, there is a significant impact of Nifty Fifty Index on Nifty Auto Index for the selected period of the study.

Regression Analysis

H₀: There is no significant Impact of nifty Fifty Index on the Nifty Auto Index

Table 1.2: Regression Output Table

Variable	Coefficient	Standard Error	t- Statistics	Prob.
C	815.4140	531.0710	1.535414	0.012
NIFTY50PRICE	1.184370	0.059671	19.84846	0.0000
R-Square	0.620449			

	NIFTY50	NIFTY AUTO
NIFTY50	1.0000	0.78768
Nifty Auto	0.78768	1.0000

(Source: Researcher Computation over E-views 12)

Interpretation

The above table comprises the value of Correlation. The table shows a correlation between the Nifty50 Index and the Nifty Auto Index with a value of 0.787 indicating that Nifty Auto Index is highly positively correlated with Nifty50 Index.

Granger Causality Test Analysis

Table 1.3: Pairwise Granger Causality Test

Pairwise Granger Causality test	F- Statistic	Probability	Null hypothesis status
Null Hypotheses			
NIFTY 50 price does not Cause the Price of NIFTY AUTO INDEX	2.05491	0.0035	Rejected P- value <0.05
NIFTY AUTO price does not Cause Price NIFTY 50	2.7961	0.0412	Rejected P- value <0.05

(Source: Researcher Computation over E- views 12)

Interpretation: In the Above table of the Granger Causality test it is observed that the Nifty 50 Price has a significant impact on the Price of Nifty Auto. The p-value is 0.0412 for the Nifty auto index and the significant probability is 0.035 for the Nifty 50, in both pairs, significant p-values are less than 0.05 so null hypotheses are rejected. At last, it can be concluded that the Nifty Auto price is much affected by the Nifty50 price and there is a presence of Granger cause in both cases. Granger causality test shows the presence of **Bidirectional causality**.

Table1. 4: Composite Correlation of Nifty Auto Index with Selected Automobile Companies

	Nifty Auto Price	Ashok Leyland	Bajaj	Hero	Eicher	M_m	Maruti	Tata	Tvs
Niftyautoprice	1	0.907	0.934	0.973	0.937	0.959	0.912	0.734	0.613
Ashok_leyland	0.9077	1	0.878	0.902	0.960	0.892	0.948	0.535	0.673
Bajaj	0.9343	0.878	1	0.957	0.914	0.938	0.904	0.622	0.755
Hero	0.9736	0.902	0.957	1	0.928	0.957	0.906	0.693	0.641
Eicher	0.9375	0.960	0.914	0.928	1	0.888	0.970	0.567	0.736
M_m	0.9596	0.892	0.938	0.957	0.888	1	0.869	0.725	0.574
Maruti	0.9120	0.948	0.904	0.906	0.970	0.869	1	0.445	0.810
Tata	0.7346	0.535	0.622	0.693	0.567	0.725	0.445	1	0.042
Tvs	0.6130	0.673	0.755	0.641	0.736	0.574	0.810	0.042	1

(Source: Researcher Computation through MS-Excel)

Interpretation

The above table comprises of correlation of Nifty Auto with selected Auto Companies, Hero Motors has a highly correlated value of 0.97 with Nifty Auto whereas Mahindra And Mahindra has a 0.95 correlation with Nifty Auto, followed by Eicher and Bajaj Auto have 0.937 and 0.934 respectively, Ashok Motors has a correlation value of 0.90 although Tata Motors has 0.73 positive correlation while TVS Motor has very least correlation value of 0.61 among selected Auto companies

VIII. CONCLUSION

After applying Regression Model, it is found in the Relationship between the Market Index and with Auto Sector Index in which Nifty50 is taken as Market Index and Nifty Auto is taken as Auto Index, it can be said there is a strong relationship between the Market indexes with Auto sector Index. There is a parallel trend found that the Nifty auto sector follows with Market Index (Nifty Auto) it can be Upward or downward by the increase in price or decrease in price. The P-value is 0.00 which is less than 0.05 level of significance, signifying rejection of the Null Hypothesis, thus it observed that, there is a significant impact of Nifty Fifty Index on Nifty Auto Index for the selected period of the study. Nifty Fifty and Nifty Auto have strong positive relationship .Bidirectional causality found between these two variables due to their significance p-value which is less than 0.05 levels indicate that there were presences of long term equilibrium between variables. Investor can invest in auto sector without any hesitation for long-term but for short-run they need to follow the ups –downs of Nifty fifty Index. Table 4.4 which shows the composite correlation of Nifty Auto Index with Selected Automobile Companies reveals strong positive relationship of Nifty Auto Index performance depends up on working performance of Automobile sector.

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