

“Analysis of Impact of Gross Domestic Products (GDP) on Stock Market Movement in India”

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ABSTRACT: *This paper covers the financial system with two main components GDP and Stock Exchange. It means these two variables one is studying (Independent) variable (GDP) and Stock Market Dependent Variable. The Researcher has collected Data from secondary sources like website and Stock Market because of the study based on secondary information available an online source. The Financial system is important to control the economy of any country, so every country has to focus on it. The Researcher has the main objective to know; to know the impact of GDP on the stock market as a macroeconomic variable, to find out the relationship between gross domestic products (GDP) and stock market movement in India, to know the impact of gross domestic products (GDP) on the stock market movement in India. The Researcher has used Statistical tools for testing hypotheses like Descriptive statistics, the Co-relation, and simple Regression analysis. Through this study, the researcher has concluded a strong relationship between GDP and SENSEX because the co-relation result is 0.965768, and the correlation between GDP and NIFTY 50 is 0.970837. The conclusion of the study on the basis result of co-relation, we can say that there is a strong relationship between GDP and the Stock Market Movement in India including based on the result of the regression, we can say that there is an impact of GDP on Stock Market Movement in India. This result shows that any change in the GDP is reflected in the stock market of India. On the basic finding of this study, we interpret that GDP as other macroeconomic variable impacts on the stock market of India. So it is a broader scope for the other researcher to carry forward study by using another macro as well as microeconomic factors.*

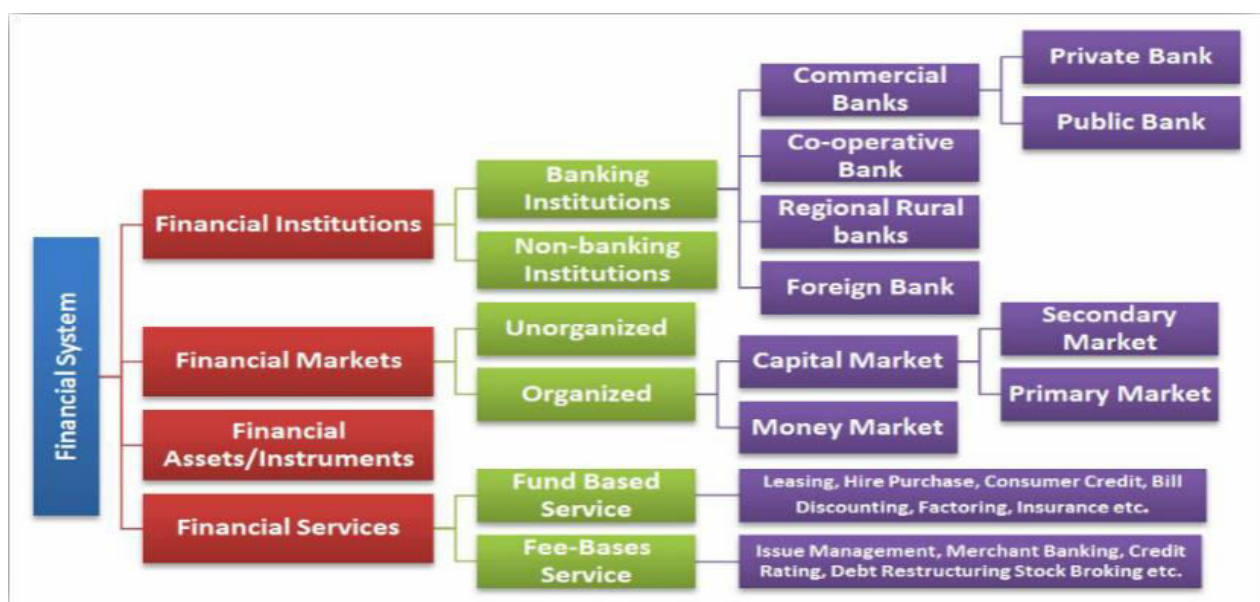
KEYWORDS: GDP, Financial System, Co-relation, Regression, SENSEX AND NIFTY 50

INTRODUCTION:

Gross Domestic Product (GDP) is the whole monetary or market price of all the finished goods and services produced within a country's borders during a specific period. As an extensive measure of overall domestic production, it functions as a comprehensive scorecard of the country's economic health. An IMF publication states that, / "GDP measures the price of ultimate goods and services that vestige is bought by the last word user produced during a country during a given period (say 1 / 4 or a year)." (Chappelow, J., 2019). An economic

system plays an important role in the economic process of the country. It intermediates between the flow of funds belonging to those that save a neighbourhood of their income and people who invest in productive assets. It mobilizes and usefully allocates scarce resources of a country. An economic system is an abstruse, well-integrated set of sub-systems of the financial organization, market, instrument, and services that facilitate the transfer and allocation of funds, efficiently and effectively. The Indian financial system can also be broadly classified into the formal (organized) financial system and informal (unorganized) system. The financial system comes under the preview of the Ministry of Finance (MoF), the Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), and other regulatory bodies. (Chen, J., 2019) Though GD is usually calculated on an annual basis, it can be calculated every quarter as well. In India, for example, the government releases an annualized GDP estimate for each quarter and also for an entire year. Most of the individual data sets also will tend in real terms, meaning that the info is adjusted for price changes, and is, therefore, net of inflation. (CHAPPELOW, Gross Domestic Product-GDP, 2019) (Chappelow, J., 2019)

Figure: 1.1 Financial Systems



(Sources: <https://www.investopedia.com/terms/f/financial-system.asp>)

REVIEW OF LITERATURE:

Attahir, B. A. (2016) has analyzed the Economic Growth Impact of Indian Stock Market: An Econometric Investigation. Data on the variables were sourced from the Handbook of Statistics on Indian Economy, 2014, and International Bank for Reconstruction and Development Indicators. The data are in the annual series and were collected for the period

1982 to 2013. The objective of the study is to look at the short run and end of the day impacts of stock exchange development on the economic process of India. The study adopted the Vector Error Correction Model (VECM) methodology in estimating the long-run and short-run relationship among the Variables. The study started by testing for stationary of the data, and when variables were found to be stationary only after taking their first difference, the Johansen Co-integration test was adopted to determine whether or not the variables have a long-run relationship. Having found the variables to be Co-integrated, the VECM model was run where the short-run relationship among the variables and short-run dynamics of the model were estimated. As a further tool of analysis, impulse response function (IRF) was also adopted by the study. The findings of the study showed the stock market to have a negative effect on economic growth in the long run, while in the short run, it is found to have a positive effect on the economic growth of India. The short-run impact can be attributed to it being a source of finance to enterprises, but however, the long-run negative impact of stock market development can be viewed from the angle of its high level of volatility and casino-like operation which entails a lot of speculative activities. (Attahir, 2016)

Charles, T. C., Vasso, P. L., & Timothy, S. F. (2012) have analyzed Stock Prices and Output Growth: An Examination of the Credit Channel. The researchers have collected data from the U.S. Department of Commerce, Bureau of Economic Analysis; Board of Governors of the Federal Reserve System; and New York Stock Exchange. The main objective of the study is when stock market values fall; we know it means investors expect lower economic growth in the future. But can stock exchange declines actually affect future growth? There is some evidence that they will through the credit channel. The researchers conclude that This Economic Commentary has reviewed the reasons why stock prices and real GDP may be correlated. In doing so we have emphasized that firms' balance-sheet effects may be important in understanding output growth. To understand this channel we sometimes treated stock price changes as occurring for some exogenous reason, like the bursting of a stock market bubble, and examined why this would affect investment and output. Of course, stock price changes very rarely occur without a change in some fundamental economic variables. Reality is probably going a synthesis of both scenarios: Future GDP growth affects current stock prices, and this alteration available prices affects future GDP growth. Most people view the credit channel as explaining how the feedback effects. (Charles, Vasso, & Timothy, 2002)

D. V. Lokeswar, R. (2012) has analyzed the impact of inflation and GDP on stock market returns in India. The researchers have collected Information regarding inflation, GDP, Stock market returns, and interest rates from the websites of the Ministry of finance, economic

survey of India, BSE India, and RBI. Books will be referred to support the formation of certain conceptual definitions and depth knowledge of the subject. Journals, Magazines, and newspapers are going to be wont to accumulate the newest information about the variable under study within the research. Interviews with experts will be undertaken if necessary to tap the unknown facts and figures of what I think might have been missing in the data. The main objective of the study is to study the relationship between stock market returns with respect to inflation, GDP, and interest rates and to find the strength of the relation between stock exchange returns with reference to inflation and GDP. The researcher will also use regression, correlation to find out the nature and strength of the relationship between the variables under study. An important finding is that the explanatory variables within the model end in a 95.6% influence on the stock prices of quoted companies for the amount 1997-2006. It also provides preliminary evidence regarding the relative importance of the explanatory variables on stock prices of quoted companies. Specifically, the findings suggest that RDGP was the foremost important variable influencing stock prices. Conclusively, the government should implement policies that will reduce the rate of inflation and poverty line through infrastructural development and improved standard of living. Also, interest rates should be made moderate in order to encourage investment and transactions in the stock market. (D. V. Lokeswar, 2012)

Kishorsinh, N. C., & Mahendrakumar, T. S. (2018) have analyzed the Impact of Gross Domestic Products (GDP) on Stock Market Returns in India. The researchers have collected data from the official website of BSE (Bombay Stock Exchange). Data on GDP growth rate is collected from World Bank Reports and other websites, World data bank, etc. The main objective of the study is Analysis the impact of GDP Growth rate on Stock Market Returns. The researchers have used GDP as an independent variable and stock market as a dependent variable. The researchers have used Descriptive tools of statistics, Karl Pearson Correlation, and Regression Analysis for the test of the hypothesis. The Study on Impact of BSE SENSEX Index on GDP growth rate shows that the SENSEX Index of BSE is significantly affected by the growth rate of GDP. BSE SENSEX Index is increased, and then the growth rate in GDP is also increased. Correlation between both variables is critical i.e. 0.0937 shows the positive relationship. Specifically, the findings suggest that role of the stock market (BSE SENSEX Index) is one of the most important influencing factors of GDP and vice versa. So, the GDP is predictable variables for Indian stock market returns. Conclusively, the government should try to maintain the growth rates of GDP and liquidity in the primary, secondary, and derivatives markets of the stock market. (Kishorsinh & Mahendrakumar, 2018)

PROBLEM OF THE STUDY:

The stock exchange may be a general term wont to ask an organized exchange where shares of stock are traded. The movement of the stock market depends on the rational as well as the irrational behaviour of the investor. The most imposing role of the stock market is to work as a relationship between savers and borrowers. This helpful for the generation of saving form the huge group of small savers and these savings can be an investment in profitable means. The stock market engaged the reallocation of money from the different firms of the economy. Investors consider macroeconomic variables when they value stocks. Interest rates, exchange rate, inflation, GDP are very important among these macroeconomic variables which affect the performance of the stock market. A number of studies are conducted to work out the connection between the macroeconomic variable and stock prices within the past. The findings of these studies show that there is a strong relationship between the macroeconomic variables and stock prices. Some studies showed no relationship between the economies and therefore the financial markets of less developed countries, like Asian markets, Fung and Lie (1990) explained this by saying that “macroeconomic factors can’t be reliable indicators for stock exchange price movements within the Asian markets due to the lack of stock markets to completely capture information about the change in macroeconomic fundamentals.”

There are many debatable opinions on the relationship between the GDP and stock market movement. Hence a study will be undertaken to observe the impact of GDP on stock market movement and the relationship between GDP and stock market movement.

Therefore, the statement of the problem for this research is...

OBJECTIVES OF THE STUDY:

Specifically, these are the main objectives of the study

1. To find out the relationship between gross domestic products (GDP) and stock market movement in India.
2. To know the impact of gross domestic products (GDP) on the stock market movement in India.
3. To know the impact GDP on the stock market as a macroeconomic variable.

HYPOTHESIS OF THE STUDY:

- **Alternative Hypothesis (H1)**
- **Null Hypothesis (H0)**

Hypotheses are as under;

- H_1 = There is a significant relationship between GDP and the Stock market movement.
- H_0 = There is no significant relationship between GDP and Stock market movement.
- H_1 = There is a significant relationship between GDP and SENSEX.
- H_0 = There is no significant relationship between GDP and SENSEX.
- H_1 = There is a significant relationship between GDP and NIFTY 50.
- H_0 = There is no significant relationship between GDP and NIFTY 50.
- H_1 = There is an Impact of GDP on SENSEX.
- H_0 = There is no impact of GDP on SENSEX.
- H_1 = There is an Impact of GDP on NIFTY 50.
- H_0 = There is no impact of GDP on NIFTY 50.

METHODOLOGY USED BY THE RESEARCHER & RESEARCH DESIGN:

Title of the study

“Analysis of Impact of Gross Domestic Products (GDP) on Stock Market Movement in India”

Period of the study

This study used the quarterly data of GDP, BSE SENSEX, and NSE NIFTY 50 index from the first quarter of 2011-2012 to the second quarter of 2019-2020.

The researcher has used in the study probability sampling method, data collected from the website of Reserve Bank of India, Bombay Stock Exchange and National Stock Exchange and statistical tools used by the researcher like descriptive tools of statistics, Karl Pearson’s Simple Correlation and Simple linear regression model to analyzed secondary data which was collected from various website. (Priti & P.K., 2017) (Deepak & Neena, 2011)

DATA ANALYSIS:

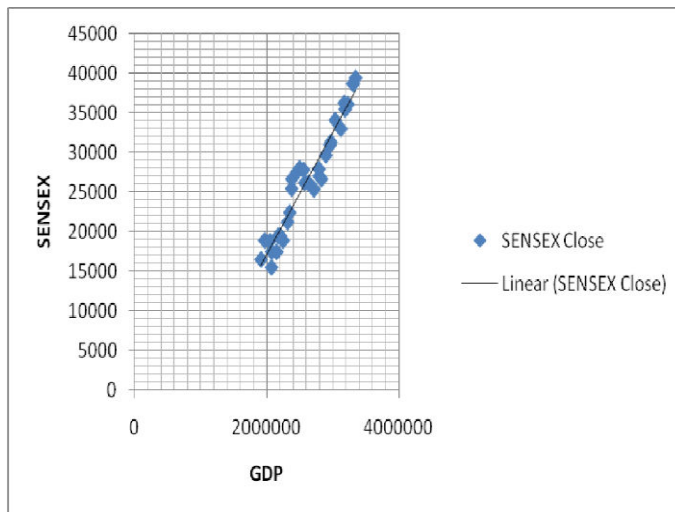
Table No.1.2: Data of GDP and SENSEX for Correlation

| YEARS | QUARTERS | GDP | SENSEX | YEARS | QUARTERS | GDP | SENSEX |
|---------|----------|---------|----------|---------|----------|----------|----------|
| 2011-12 | Q1 | 1969132 | 18845.87 | | Q3 | 2637004 | 26117.54 |
| | Q2 | 1913207 | 16453.76 | | Q4 | 2716448 | 25341.86 |
| | Q3 | 2073896 | 15454.92 | 2016-17 | Q1 | 2797534 | 26999.72 |
| Q4 | 2150712 | 17404.2 | Q2 | | 2791258 | 27865.96 | |
| 2012-13 | Q1 | 2074589 | 17429.98 | | Q3 | 2832025 | 26626.46 |
| | Q2 | 2047909 | 18762.74 | | Q4 | 2898152 | 29620.5 |
| | Q3 | 2177528 | 19426.71 | 2017-18 | Q1 | 2962815 | 30921.61 |
| | Q4 | 2246251 | 18835.77 | | Q2 | 2974645 | 31283.72 |

| | | | | | | | |
|---------|----|---------|----------|---------|----|---------|----------|
| 2013-14 | Q1 | 2206230 | 19395.81 | | Q3 | 3039403 | 34056.83 |
| | Q2 | 2193897 | 19379.77 | | Q4 | 3127303 | 32968.68 |
| | Q3 | 2314941 | 21170.68 | 2018-19 | Q1 | 3190452 | 35423.48 |
| | Q4 | 2348579 | 22386.27 | | Q2 | 3178747 | 36227.14 |
| 2014-15 | Q1 | 2377154 | 25413.78 | | Q3 | 3231406 | 36068.33 |
| | Q2 | 2379356 | 26630.51 | | Q4 | 3306332 | 38672.91 |
| | Q3 | 2457010 | 27499.42 | 2019-20 | Q1 | 3348005 | 39394.64 |
| | Q4 | 2498612 | 27957.49 | | Q2 | 3316377 | 38667.33 |
| 2015-16 | Q1 | 2560191 | 27780.83 | | | | |
| | Q2 | 2578225 | 26154.83 | | | | |

(Sources: Wikipedia, Investopedia, Websites of NSE and BSE etc)

Figure 1.2: Co-relation chart and Interpretation



Interpretation

Calculated value of co-relation between GDP and SENSEX is 0.965768, so we can interpret that there is strong positive relationship between these two variables. Here we can say if GDP increase in that case our SENSEX is also increase because of that result of co-relation.

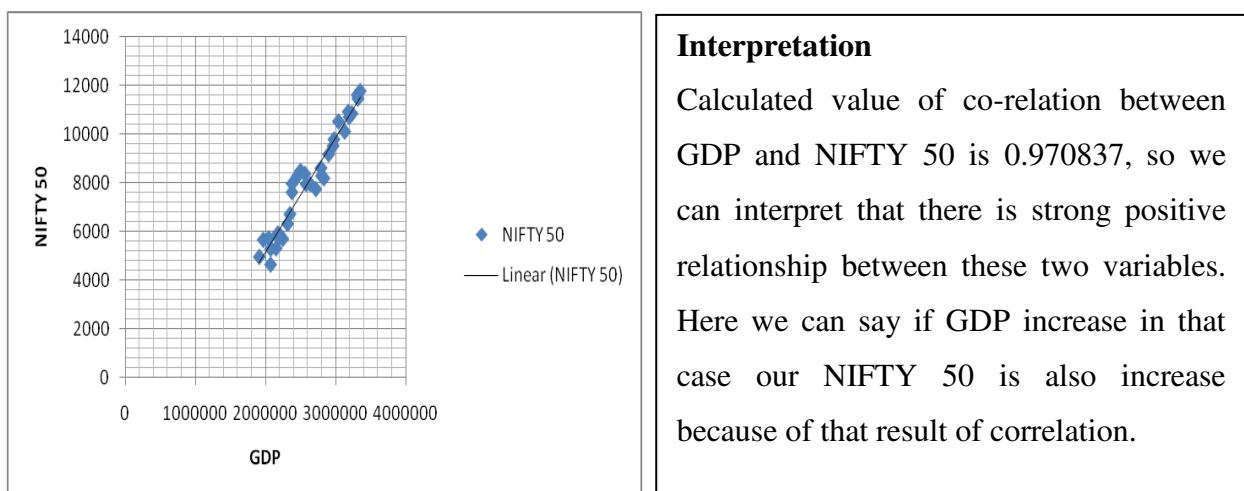
Table No.1.3: CO-relation Between GDP and NIFTY 50

| YEARS | QUARTERS | GDP | NIFTY50 | YEARS | QUARTERS | GDP | NIFTY50 |
|---------|----------|---------|---------|---------|----------|---------|---------|
| 2011-12 | Q1 | 1969132 | 5647.4 | | Q3 | 2637004 | 7946.35 |
| | Q2 | 1913207 | 4943.25 | | Q4 | 2716448 | 7738.4 |
| | Q3 | 2073896 | 4624.3 | 2016-17 | Q1 | 2797534 | 8287.77 |
| | Q4 | 2150712 | 5295.55 | | Q2 | 2791258 | 8611.15 |
| 2012-13 | Q1 | 2074589 | 5278.9 | | Q3 | 2832025 | 8185.8 |
| | Q2 | 2047909 | 5703.3 | | Q4 | 2898152 | 9173.75 |
| | Q3 | 2177528 | 5905.1 | 2017-18 | Q1 | 2962815 | 9520.9 |
| | Q4 | 2246251 | 5682.55 | | Q2 | 2974645 | 9788.6 |
| 2013-14 | Q1 | 2206230 | 5842.2 | | Q3 | 3039403 | 10530.7 |
| | Q2 | 2193897 | 5735.3 | | Q4 | 3127303 | 10113.7 |

| | | | | | | | |
|---------|----|---------|---------|---------|----|---------|----------|
| | Q3 | 2314941 | 6304 | 2018-19 | Q1 | 3190452 | 10714.3 |
| | Q4 | 2348579 | 6704.2 | | Q2 | 3178747 | 10930.45 |
| 2014-15 | Q1 | 2377154 | 7611.35 | | Q3 | 3231406 | 10862.55 |
| | Q2 | 2379356 | 7964.8 | | Q4 | 3306332 | 11623.9 |
| | Q3 | 2457010 | 8282.7 | 2019-20 | Q1 | 3348005 | 11788.85 |
| | Q4 | 2498612 | 8491 | | Q2 | 3316377 | 11474.45 |
| 2015-16 | Q1 | 2560191 | 8368.5 | | | | |
| | Q2 | 2578225 | 7948.9 | | | | |

(Sources: Wikipedia, Invest opedia, Websites of NSE and BSE etc)

Figure 1.3: Correlation Chart



SIMPLE LINEAR REGRESSIONMODEL

Regression analysis between GDP and SENSEX Hypothesis of the study

Table No.1.4: Result of Impact of GDP on SENSEX

| Variable | R ² | Equation | P. value | Seg ^t 5% | H0(Accept/Reject) |
|----------|----------------|------------------|-------------|---------------------|-------------------|
| SENSEX | 0.93 | Y=0.015-13852.9x | 4.40084E-08 | 0.05 | Rejected |

Interpretation

Regression Analysis between GDP and BSE SENSEX Index shows there is a positive significant correlation between these two Variables. From the above ANOVA table f cal-value (443.53) is more than the f tabulated value (2.55676E-20). So, we fail to accept the null hypothesis at 5% level of significance. We can say that there is an impact of GDP on the BSE SENSEX Index. As per the above table, we observe that the p-value (4.40084E-08) in the ANOVA table is less than 0.05 at the level of 5% significance. Therefore the H0 (null hypothesis is) rejected. So we conclude that there is a significant impact of GDP on the BSE SENSEX index.

Figure 1.4: Regression Results

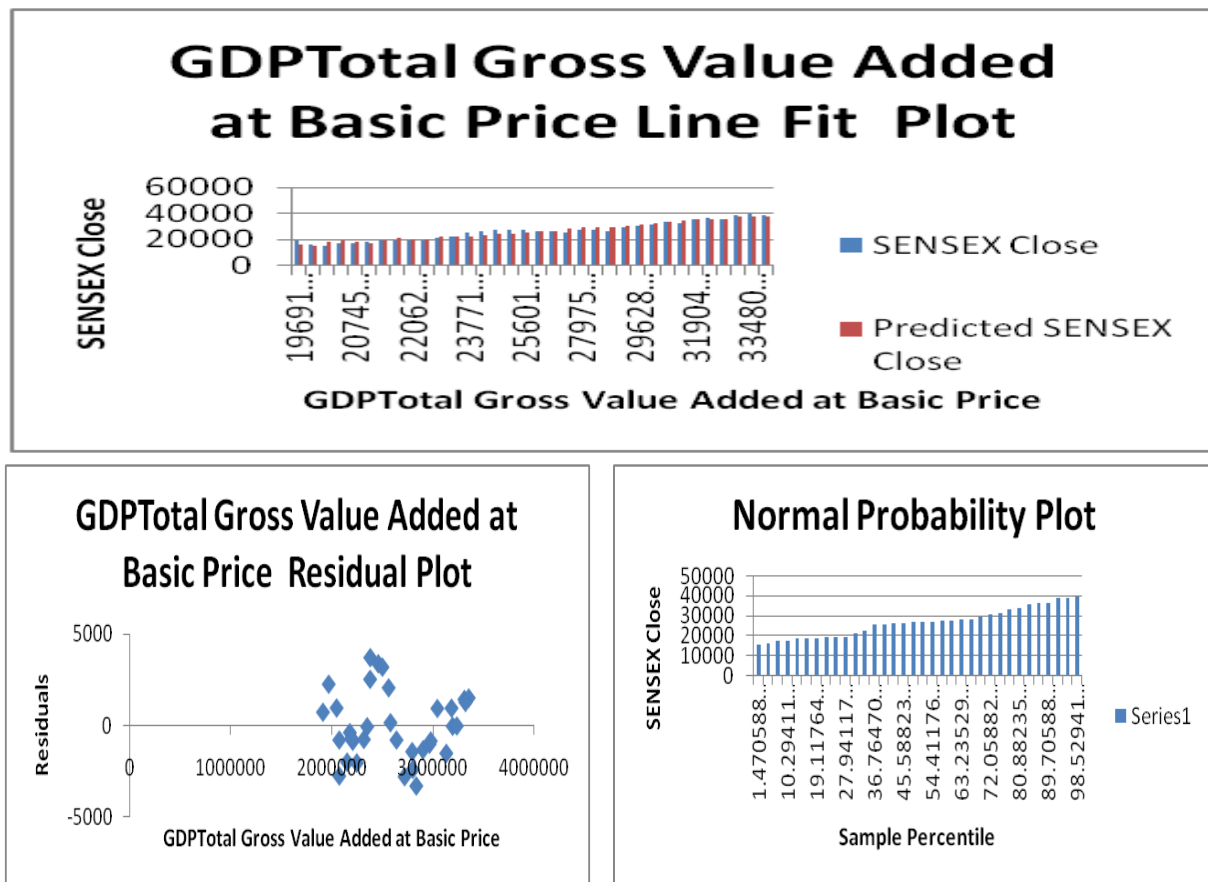


Table No.1.5: Result of Impact of GDP on NIFTY 50

| Variable | R ² | Equation | P. value | Seg ^t 5% | H0(Accept/Reject) |
|----------|----------------|----------------------|----------|---------------------|-------------------|
| NIFTY 50 | 0.94 | $Y=0.004727-4314.2x$ | 5.35E-09 | 0.05 | Rejected |

Interpretation:

Regression Analysis between GDP and NSE NIFTY 50 Index shows there is a positive significant correlation between these two Variables. From the above ANOVA table f cal-value (524.7529) is more than the f tabulated value (2.04E-21). So, we fail to accept the null hypothesis at 5% level of significance. We can say that there is an impact of GDP on the NSE NIFTY 50 Index.

As per the above table, we observe that p-value (5.35E-09) in the ANOVA table is less than 0.05 at the level of 5% significance. Therefore the H0 (null hypothesis is) rejected. So we conclude that there is a significant impact of GDP on the NSE NIFTY 50 index.

Table No.1.5: Result of Impact of GDP on NIFTY 50

Table No.1.5: Result of Impact of GDP on NIFTY 50

| Variable | R ² | Equation | P. value | Seg ^t 5% | H0(Accept/Reject) |
|----------|----------------|----------|----------|---------------------|-------------------|
|----------|----------------|----------|----------|---------------------|-------------------|

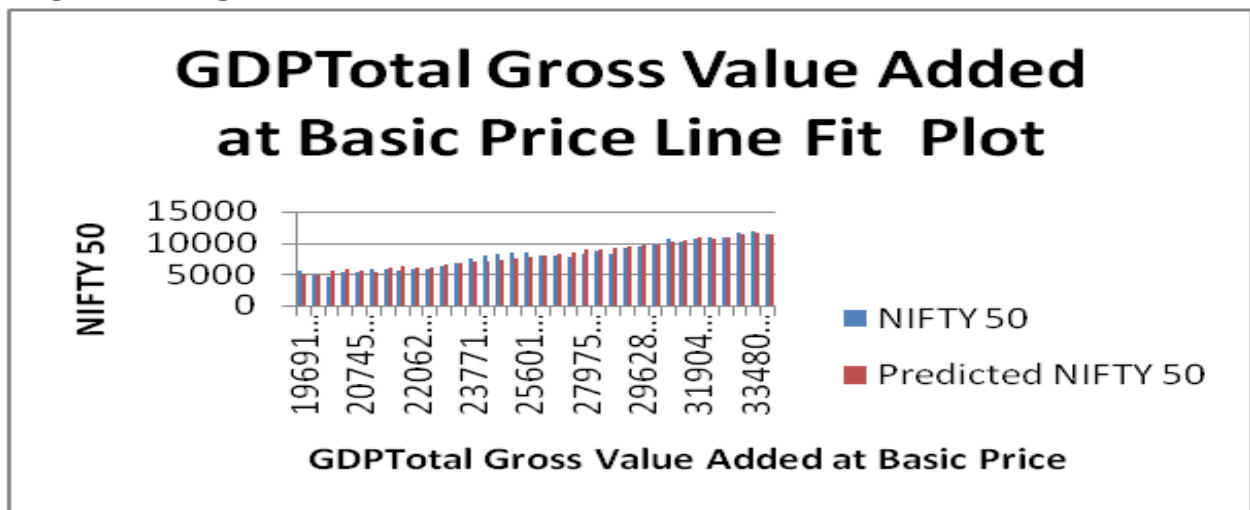
| | | | | | |
|----------|------|----------------------|----------|------|----------|
| NIFTY 50 | 0.94 | $Y=0.004727-4314.2x$ | 5.35E-09 | 0.05 | Rejected |
|----------|------|----------------------|----------|------|----------|

Interpretation:

Regression Analysis between GDP and NSE NIFTY 50 Index shows there is positive significant correlation between these two Variables. From the above ANOVA table f cal-value (524.7529) is more than the f tabulated value (2.04E-21). So, we fail to accept the null hypothesis at 5% level of significance. We can say that, there is an impact of GDP on NSE NIFTY 50 Index.

As per the above table we observe that p-value (5.35E-09) in ANOVA table is less than 0.05 at the level of 5% significance. Therefore the H0 (null hypothesis is) rejected. So we conclude that there is a significant impact of GDP on NSE NIFTY 50 index.

Figure 1.5: Regression Result



MAJOR FINDINGS:

Correlation between GDP and SENSEX

The calculated value of the correlation between GDP and SENSEX is 0.965768, so we can interpret that there is a strong positive relationship between these two variables. Here we can say if GDP increase in that case our SENSEX is also increasing because of that result of correlation.

Correlation between GDP and NIFTY 50

The calculated value of the correlation between GDP and NIFTY 50 is 0.970837, so we can interpret that there is a strong positive relationship between these two variables. Here we can say if GDP increase in that case our NIFTY 50 is also increased because of that result of correlation.

Regression analysis between GDP and SENSEX

Regression Analysis between GDP and BSE SENSEX Index shows there is a positive significant correlation between these two Variables. From the ANOVA table f , the cal-value is more than the f tabulated value. So, we fail to accept the null hypothesis at 5% level of significance. We can say that there is an impact of GDP on the BSE SENSEX Index.

As per the regression analysis, we observe that the p-value in the ANOVA table is less than 0.05 at the level of 5% significance. Therefore the H_0 (null hypothesis is) rejected. So we conclude that there is a significant impact of GDP on the BSE SENSEX index.

Regression analysis between GDP and NIFTY 50

Regression Analysis between GDP and NSE NIFTY 50 Index shows there is a positive significant correlation between these two Variables. From the ANOVA table f , the cal-value is more than the f tabulated value. So, we fail to accept the null hypothesis at 5% level of significance. We can say that there is an impact of GDP on the NSE NIFTY 50 Index.

As per the regression analysis, we observe that the p-value in the ANOVA table is less than 0.05 at the level of 5% significance. Therefore the H_0 (null hypothesis is) rejected. So we conclude that there is a significant impact of GDP on the NSE NIFTY 50 index.

CONCLUSION AND UTILITY:

This study is conducted to “Analysis of Impact of Gross Domestic Products (GDP) on stock exchange Movement in India”. The main objective of the study is to find out the relationship between gross domestic products (GDP) and stock market movement in India and To know the impact of gross domestic products (GDP) on the stock exchange movement in India. For the fulfilment of the research objective, the data of GDP collected from the website of Reserve Bank of India (RBI) and data of SENSEX and NIFTY 50 collected from the websites of the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE).

So, final conclusion of the study on the basis result of co-relation we can say that there is a strong relationship between GDP and Stock Market Movement in India, and on the basis of the result of the regression, we can say that there is an impact of GDP on Stock Market Movement in India. This result shows that any change in the GDP is reflected in the stock market of India. On the basic finding of this study, we interpret that GDP as a macroeconomic variable impact on the stock market of India.

So it is a broader scope for the other researcher to carry forward study by using another macro as well as microeconomic factors.

SIGNIFICANCE OF THE STUDY:

The significance of the study is as follows:

1. To improve the knowledge of the GDP and Indian stock market.

2. Through this study know about how to do analysis and interpretation.
3. The study helps to find out the impact of GDP on the stock market movement in India.
4. This study through know the relationship between GDP and stock market movement in India.

LIMITATION OF THE STUDY:

1. The study is limited to nine years.
2. The studies are restricted to only data between 2011-12 to 2019-20 as compared to population, the sample size is small. Hence, on the basis of this study, generalization cannot be made.
3. The study is mainly based on secondary data taken from published data on websites. The reliability and finding are contingent upon the published data.
4. There are many other factors that also affected the stock market movement.

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