Impact of Macroeconomic Variables on Nifty Returns in India

Rajesh Jayakar Pai,
Assistant Professor, Christ University Institute of Management (CUIM), Bangalore, Karnataka, India

Dr. S. Kareemulla Basha,
Associate Professor, The New College, Chennai. E-mail: Kareemullahbasha@gmail.com

Stock markets play a significant role in any economy. Besides being the barometer of economic performance, they convey a lot about the sentiments of domestic as well as foreign investors. Owing to the significance and dynamism of stock markets, it has always attracted the attention of researchers across the world. Equally significant is the fact that the empirical evidences generated from such studies have hardly been consistent. Hence, this provides further room to explore the relationship between various macro-economic variables and the stock market returns. Besides other variables as Real GDP, Inflation (CPI), Interest rates (90-days T-Bill rate), IIP and FIIs, I am trying to assess the impact of certain unique variables as unemployment, Crude oil prices, Foreign Exchange rate (INR – USD), Gold prices on the National Stock Exchange of India (NSE). Using the Augmented Dickey-Fuller (ADF) Test, ARIMA and Granger Causality tests we have tried to find the short-term, long-term and causal (unidirectional and bidirectional) relationships between variables. The data set used in the study includes monthly data collected over a period of 10 years from May 2002 to April 2013. Granger Causality test has been employed to reveal whether variables are depending on stock market or vice versa.

The outcome of the study is expected to contribute further to the understanding of the behavior of stock market in response to the changes in the variables included in the study. This will serve as a guiding light to investors, speculators, arbitragers, policy makers along with the researchers who might want to carry the study further on the behavior of stock markets.

Key Words: Stock Market, Macro-economic variables, Crude Oil, Gold Prices.

INTRODUCTION

The stock market is refers to an organized exchange where shares of stock are traded. The movement of stock market depends on the coherent well as the no coherent performance of the investor. The stock market is very important to both industry point of view and investors point of view. Macro economic variables will have force over the stock market. So, study of finding the relation among stock market and the economic variables is very important. This study will help researchers, educationists, investors, policy makers. In this paper importance is given for pre dominant macro variables which affect the stock markets in large and these are GDP, CPI, PPI (Product Price Index), Employment indicators, Personal income, Trade Balance, IIP, retail sales, exchange rates, interest rates etc. This study is conducted to study the relationship between the macroeconomic variables and stock market index (NSE index). 40 research articles related to this topic have been reviewed to understand the topic. This will help in knowing the current scenario of stock market fluctuations with respect to macroeconomic variables and datas at large are collected from proquest and other databases

LITERATURE REVIEW

D.V.Lokeswar Reddy (2012) examined Real GDP, Interest rate and Inflation rates are impacting Stock prices of citied companies from 1997-2009 by using Regression analysis. The analysis says that the variables are showing 95.6% of deviation in stock prices. Whenever the interest rate are decreased, stock prices are increased and In case of Real GDP, direct relationship with stock market.

P.Bhanu Sireesha (2013) has taken macro economic variables like GDP, inflation, IIP, Money supply, exchange rates, money supply(M3), FIIs against monthly average closing values of 20 years from Jan
1993 to Dec 2012 Nifty. She has used Linear Regression model and stepwise regression method is used for multi-collinearity between variables. GDP has shown positive impact, M3 supply will have negative impact, FIIs shows randomness effect, DIIs will offer Partial hedge on the Stock market. Naresh Chandra Sahu and Deepinder H.Dhiman (2011) felt there is no causal relationship between the stock market indicator (BSE) and Real GDP. These two are co-related to each other highly. The boom of the stock market is not helping the real economy growth. The method used is correlation and Ganger Causality Regression Technique. Augmented Dickey Fuller unit Root test is used to verify the stationary of the series and data from 1981 to 2006 annual data.

Dr. Naliniprava Tripathy (2011) found that according to Granger-Causality test indicates that there is a confirmation of Bidirectional relationship among Interest rate and Stock market, Exchange rate and Stock market, International market and BSE Volume, Exchange rate and BSE volume and according to Breusch-Godfrey Correlation LM test, occurrence of efficient market is at weak-form. The data is collected from Jan 2005 to Feb 2011.

Dr. Aurangzeb (2012) examined the relationship between the key macroeconomic factors and progress of South Asian Stock Markets and found that Interest rates are showing the downbeat impact on stock market due to increase in the interest rate will show negative trend in the investment in stock market by using Multiple Regression Analysis.

Aggarwal Priyanka & Manish Manoj Kumar (2012) study concentrated on the relationship between the macroeconomic indicators i.e., FIIs, Gold Price, Fiscal Deficit, Exchange rate, IIP & Inflation and stock prices in India and US in which competence of the Indian Stock market. They found that the Indian and US nifty 50 movement is 96.8% variation due to the macroeconomic variables. downbeat relationship between Nifty with WPI and USA Interest rates by using Modern Non-Linear Techniques.

Nathan Taulbee has main concentrated on the study of the impact of Real GDP, Unemployment, Fisher effect on S&P 500. He used Generalized Least Squares Models. With this study he found that the economic indicators impact will be also dependents upon the industry because there are four major industries like Cyclical Industry, Defensive Industry, Growth Industry and interest –sensitive. GDP has the positive impact on the stock market. Unemployment rates will decrease the performance of the stock market. In this situation Defensive industries will perform well.

Karam Pal and Ruhee Mittal has studied 56 quarterly data from 1995 to 2008 of BSE sensex and inflation, Treasury Bill rate, Exchange rate and S&P CNX Nifty data. By using Root Test, Co-integration Test and Error Correction Mechanism (ECM), they said that the Skewness and Kurtosis shows that there is a lack of symmetry in the distribution. Inflation is affecting the stocks of the both. GDS will not have considerable affect on the stock markets.

Rosy Kalra(2012) studied that the multiple correlation is also showing significant relationship among the macroeconomic variables. There is considerable reliance among the most of the chosen variables. The macroeconomic variables, GDP and oil rate are found not to be significant in any multiple regressions, i.e., Sensex is not found not to be dependent on these variables in any of the multiple regression models.

Atuyuki Naka, Tarun Mukherjee and David Tufte (2007) says that the relationships among IIP,MI and S&P 500 were not statistically significant. Stock returns are positively related to inflation and money growth and consistent with economic theory. Stock returns are negatively correlated to budget deficits, trade deficits, both small term interest rates and long term interest rates are having negative impact on stock returns these results bought down by using VEM (Vector Error Correlation Model).

Buyuksalavarci, Ahmet (2010) examined the causal relationships between macroeconomic variables & stock prices in Turkey by means of long-run Granger non-causality test and says that past stock
price significantly changes with the exchange rate and IIP at a 5% level of significance and 10% level of significance for stock prices to gold price, money supply and rate of inflation change for the data from March 2001 to June 2010.

Brad Cornincioli and Illinois Wesleyan (1996) has examined affiliation between the stock prices and economy. This study said that stock prices are the leading indicator for the Economy.

Deepti Gulati and Monika Kakhani(2012) has looked through the data of 2004 to 2012 of Sensex and Nifty 50 along with the INR/$ exchange rate and said that in long run there is no link between stock market and exchange rate by using Granger Causality and Correlation method.

Serpil Tukyilmaz and Mesut Bahbey (2013) studied relationship between exchange rate, interest rate and stock market by using Bekk-Mgarch model with a sample of 7 years data from 2002-2009 and concluded that the old and current news related to any of these will have impact on the returns.

George Filis (2009) has used VAR method to find out the relationship between Stock market, IIP and CPI in Greece with the data from 1996-2008. The study says that IIP has shown Positive impact, CPI has negative impact on stock market returns.

RESEARCH METHODOLOGY
Research methodology means the design of the study method and method by which data is composed for a research project. It contains the outline for the compilation, measurement and analysis of data to accomplish the objectives of a research project. To determine the relationship between the macroeconomic variables and stock market index and also to reveal whether variables are depending on stock market or vice versa. The key variables under investigations are

- **Real GDP (Gross Domestic Product):** This data is taken for year basis from the RBI site from 2003 to 2013
- **Inflation (CPI – Consumer Price Index):** For the Inflation, there are two variables i.e., CPI and WPI. But India is following the CPI so, This study is consists of CPI Year on year basis monthly from 2003 April to 2013 August i.e., around 126 samples from inflation.eu website.
- **Interest rates (91days T-Bills):** For Interest Rates T-Bills rate is taken from 2003-2013 about 126 samples from Reserve Bank Site.
- **M3 Money supply:** M3 money supply gives the overall money flow in the market so, for this variable also 126 sample monthly is collected from 2003 April to 2013 August. It is collected from Trading Economic website.
- **IIP (Index of Industrial Production):** IIP index is taken from Ministry of Statics and programme implementation (mospi) database.
- **Exchange Rate (INR-USD):** Exchange rate of (INR-USD) is collected from 2003 april to 2013 August monthly from Exchange rate of UK website.
- **FII:** FII is calculated and taken from Economic times month wise from 2003 April to 2013 August.
- **Gold Prices:** Gold prices are taken from 2003 April to 2013 August monthly i.e., around 126 samples. The data is in INR/Oz. This data is collected from Y-charts Website.
- **Crude oil:** Crude oil data is taken from 2003 April to 2013 August from indexmundi
- **Unemployment rate:** Unemployment rate is taken from the economics website from 2003 to 2013 yearly basis. Unemployment rate is expressed in terms of %.

**Dependent Variable:**

- **NSE stock market Index:** Nifty stock index is taken from the nseindia website. The data is collected monthly from 2003 April to 2013 August.

OBJECTIVES OF THE STUDY
To know the association between each of the macroeconomic variable and NSE stock market Index.

To design a model to identify the relationship among macro economic variables and NSE stock market Index.

To analyze the impact of each macroeconomic variable on the NSE stock market Index.

To create awareness to investors about the Stock market performance with respect to changes in macro economic variables.

Nature of the study:

- The study carried out is descriptive in nature to understand the analysis in a better way.
- The research will use causality test, regression to find the nature and relationship between variables taken and NSE stock market index.
- The data set used in the study includes monthly data collected over a period of 10 years from May 2002 to April 2013.

Tools used for the Collection of Data:

- Information regarding macroeconomic variables is collected from the websites of RBI, Ministry of Finance, Trading economics, Economic survey of India and Data Portal by GOI.
- NSE Stock Market Index data is taken from NSEindia.com.

HYPOTHESIS

3.6.1. Hypothesis for find relationships between variables and NSE stock market Index:

1. Null Hypothesis (H0): There is no relation between Real GDP and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between Real GDP and NSE stock market Index.

2. Null Hypothesis (H0): There is no relation between Inflation (CPI based) and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between Inflation (CPI based) and NSE stock market Index.

3. Null Hypothesis (H0): There is no relation between Interest rates (91-days T-Bills rate) and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between Interest rates (91-days T-Bills rate) and NSE stock market Index.

4. Null Hypothesis (H0): There is no relation between M3 Money supply and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between M3 Money supply and NSE stock market Index.

5. Null Hypothesis (H0): There is no relation between IIP (Index of Industrial Production) and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between IIP (Index of Industrial Production) and NSE stock market Index.

6. Null Hypothesis (H0): There is no relation between Exchange Rate (INR-USD) and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between Exchange Rate (INR-USD) and NSE stock market Index.

7. Null Hypothesis (H0): There is no relation between FIIs and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between FIIs and NSE stock market Index.

8. Null Hypothesis (H0): There is no relation between Gold prices and NSE stock market Index
   Alternate Hypothesis (H1): There is significant relation between Gold prices and NSE stock market Index.

9. Null Hypothesis (H0): There is no relation between Crude oil prices and NSE stock market Index
Alternate Hypothesis (H1): There is significant relation between Crude oil prices and NSE stock market Index.

10. Null Hypothesis (H0): There is no relation between Unemployment and NSE stock market Index

Alternate Hypothesis (H1): There is significant relation between Unemployment and NSE stock market Index.

RESEARCH METHODOLOGY

In this paper we discuss about the model the results and interpretation. For this project ADF test to find Stationary or unit root, Granger Causality Test for finding causal relationship between the variables and ARIMA to finding the forecasting of the stock index. Monthly data is taken from April 2003 to September 2013 of the variables. The variables considered for these are M3(Money supply, Interest rate (T-Bill Rate), IIP, Real GDP, Foreign exchange rate (USD-INR), Crude oil price, Gold prices, FII, Inflation rate (CPI), Unemployment rate and Nifty index. These values are taken from RBI official site, Indexmudi, Nseinda, Commodities – Data portal india, Trading Economics websites.

ADF TEST:

Before proceeding to know the association between the variables and stock index we have find the stochastic properties of the variables. So, we are using Augmented Dickey Fuller (ADF) unit root test on the data to assess the stationarity. Stationarity is necessary in case of the data belongs to those which are changing often due to seasonality or other factors. The data is said to be stationary when mean, autocorrelation, variance etc., are stable over a period of time. Finding Unit Root for the data will avoid the false results.

The equation for the ADF test is

\[ \Delta y_t = \alpha + \beta_1 t + \beta_2 t^2 + \gamma y_{t-1} + \theta_1 \Delta y_{t-1} + \ldots + \theta_p \Delta y_{t-p+1} + \epsilon_t \]

Where

\( \alpha = \) constant
\( \beta_1, \beta_2 = \) coefficient of time trend and coefficient of squared time trend.
\( \Delta = \) Differential operator
\( \epsilon_t = \) Erroneous term

The hypothesis of the Augmented Dickey-Fuller Test :

H0 : \( \gamma = 0 \), Null Hypothesis i.e, \( y_t \) has a unit root
H1 : \( \gamma < 0 \), Alternate Hypothesis i.e., \( y_t \) does not have unit root.

In this Test we will compare the absolute values of ADF statistics value and test critical value (ie., test critical value depends on no, of observations and level of significance i.e., 1%, 2%, 5% etc., ).

If Absolute ADF statistics value < Test Critical value then the \( y_t \) is a stationary to order zero i.e, I(0). If the above statement is false then ADF is conducted on the first difference of \( y_t \) i.e, \( \Delta y_t \). in this case also ADF statistics value is checked if it doesn’t satisfies the condition then it is performed on second difference. Once we know whether the data is stationary then we proceed further to test whether there exist any causality between the independent and dependent variable by Granger Causality Test.

In case of Dickey Fuller Test, there may generate a problem of autocorrelation. To undertake autocorrelation problem, Dickey Fuller have developed a test called Augmented Dickey Fuller Test Stated below equation (1, 2 and 3).

\[ \Delta y_t = \beta_1 + ZY_{t-1}+ai+et \quad \text{for} \quad \text{Equation 1 > Intercept only} \]
\[ \Delta y_t = \beta_1 + B2t+ZY_{t-1}+ai+et \quad \text{for} \quad \text{Equation 2 > Trend and Intercept} \]
\[ \Delta y_t = ZY_{t-1}+ai+et \quad \text{for} \quad \text{Equation 3 > None ( No Trend , No Intercept)} \]

Hypothesis :

Null Hypothesis H0: Variable is not stationary or got unit root

Alternative Hypothesis H1 : Variable is stationary or not got unit root.

To make variable fixed, we should go for first differencing or second differencing.

To say a variable data is stationary, the data should have probability of less than 0.05 for all the three equation i.e., Intercept, Intercept and trend, and , None. If incase of not getting stationary then increase the lag number. To reject null hypothesis , the absolute test statistics is more than critical value.
(absolute) and accept the alternative hypothesis. But if the test absolute statistics value is lower than the absolute critical value then we can not discard null hypothesis so, we have to accept the null hypothesis. Mostly we will check the 5% critical value. The probability value should be less than the 0.05%. The first coefficient of the variable also should be negative.

**CPI – 1 difference**

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(CPI(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-10.01786</td>
<td>-2.884856</td>
<td>-0.901388</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-9.976196</td>
<td>-3.446464</td>
<td>-0.901372</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-10.03077</td>
<td>-1.943427</td>
<td>-0.898823</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table: 5.1.: shows the ADF output of CPI for unit root in first Difference**

**Crude oil – 1 difference**

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-7.261035</td>
<td>-2.884856</td>
<td>-0.603616</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-7.251192</td>
<td>-3.446464</td>
<td>-0.605862</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-7.1317400</td>
<td>-1.943427</td>
<td>-0.586246</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table: 5.2.: shows the ADF output of Crude oil prices for unit root in first Difference**

**FII – Linear**

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(FII(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-7.666649</td>
<td>-2.884665</td>
<td>-0.652188</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-7.688663</td>
<td>-3.446168</td>
<td>-0.657137</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-7.382482</td>
<td>-1.943406</td>
<td>-0.618203</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table: 3. shows the ADF output of FII for unit root in Linear**

**Gold Prices – 1 difference**

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-10.74644</td>
<td>-2.884856</td>
<td>-0.972217</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-10.77066</td>
<td>-3.446464</td>
<td>-0.978302</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-10.13073</td>
<td>-1.943427</td>
<td>-0.908692</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table: 4: shows the ADF output of CPI for unit root in 1st Difference**

**IIP – 2 difference**

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(FII(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-9.932888</td>
<td>-2.887425</td>
<td>-16.31627</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-9.890808</td>
<td>-3.450436</td>
<td>-16.32118</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-9.979269</td>
<td>-1.614834</td>
<td>-16.30827</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table: 5: shows the ADF output of IIP for unit root in 2nd Difference**

**INR/USD – 1 difference**

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-10.74644</td>
<td>-2.884856</td>
<td>-1.007744</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-10.99925</td>
<td>-3.446464</td>
<td>-1.044789</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-10.71108</td>
<td>-1.943427</td>
<td>-0.997782</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table: 6: shows the ADF output of INR/USD for unit root in 1st Difference**

**Interest rate – 1 difference**
Table: 7: shows the ADF output of Interest rate for unit root in 1st Difference
M3 Money Supply – 1 difference

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-7.979692</td>
<td>-2.884856</td>
<td>-16.10369</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-7.968516</td>
<td>-3.446464</td>
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</tr>
<tr>
<td>None</td>
<td>-8.687262</td>
<td>-1.943427</td>
<td>-12.75767</td>
<td>0.000</td>
</tr>
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</table>

Table: 8: shows the ADF output of M3 Money supply for unit root in 1st Difference
Real GDP growth rate – 1 difference

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-11.8143</td>
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<td>-1.003260</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-11.10320</td>
<td>-3.446464</td>
<td>-1.000946</td>
<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-11.09054</td>
<td>-1.943427</td>
<td>-1.00000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table: 9: shows the ADF output of Real GDP growth rate for unit root in 1st Difference
Unemployment rate – 1 difference

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-11.04999</td>
<td>-2.884856</td>
<td>-1.000419</td>
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</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-11.00557</td>
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<tr>
<td>None</td>
<td>-11.09054</td>
<td>-1.943427</td>
<td>-1.00000</td>
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Table: 10: shows the ADF output of Unemployment rate for unit root in 1st Difference
Nifty Index – 1 difference

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>T-statistic</th>
<th>Test critical value 5%</th>
<th>Coefficient of D(crudeoil(-1))</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-9.040971</td>
<td>-2.884856</td>
<td>-0.806242</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept, Linear Trend</td>
<td>-9.037840</td>
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<td>0.000</td>
</tr>
<tr>
<td>None</td>
<td>-8.895620</td>
<td>-1.943427</td>
<td>-0.788098</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**FINDINGS:**
- All the variables data is stationary, it is found by ADF test.
- CPI, INR/USD, M3 money supply, does granger cause Nifty.
- Nifty does granger cause crude oil, IIP, Interest rate, Real GDP.
- FII has bidirectional causality with the Nifty.
- Unemployment rate and Gold prices doesn’t cause nifty and vice versa.
- The best suitable model for this data is ARIMA. The MAPE value is 3.879 which is the accuracy of this method to build fine time series values in trend.
- Normalized BIC is more than 10 which says that very strong model is developed with these finite set of values.
- The variables are have 96.2% impact on the Nifty and majority these variables dictate the impact and macroeconomic indicators like Crudeoil, M3 money supply, IIP and Real GDP are having positive correlation with Nifty.
Gold price, interest rate, Unemployment rate are negatively correlated with Nifty.
INR/USD exchange rate is highly negatively correlated where as Real GDP has highly positively correlation with Nifty index. Nifty Index forecasting is done which is showing an upward trend.

CONCLUSION:
This study is done to know the causal relationship and impact of the macroeconomic variables on the stock market. In this study IIP, CPI, Interest rate, Real GDP, FII, M3 money supply, Crude oil, Gold prices, INR/USD exchange rate, Unemployment rate are examined carefully for over 10 years data from April 2003 to August 2013 upon Nifty. From study of output some variables are not causing causal relation with nifty except CPI, INR/USD and M3 money supply. But Nifty does cause some variables like IIP, Real GDP, Crude oil. FII causes Nifty and vice versa is also proved valid. Gold prices, Unemployment rate are not having causal relation with nifty neither way. From ARIMA output, the study says that the model is suitable for this data is Integrated Moving Average ARIMA model and also tells that there is 98.2% of variance can be forecasted from the independent variables taken into account. The model is very strong. According to the data considered Crude oil, M3, IIP and Real GDP are positively correlated and Real GDP is very strongly positively correlated where as INR/USD Exchange rate, Unemployment rate, Interest rates are strongly negative correlated with Nifty Index.

BIBLIOGRAPHY


