International Journal of Scientific Research and Management
(IJSRM) ||Volume||5||Issue||02||Pages||5163-5169||2017||
Website: www.ijsrm.in ISSN (e): 2321-3418

A Study on Stock Market Development and the Economic Growth, an Evidence From India

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Abstract
This paper examines to find out the relationship between BSE and economic growth in India. Using the main macro economic variables, GDP Rate, Inflation Rate, and Exchange Rate. Using quarterly data over the period from 1995-2015, 20 years data. We analyze the data using unit root test has used to stationary properties of the data serious, Granger causality is to study the causality running from independent variable to dependent variable .and multiple regression studies how independent variable affect the dependent variable. The result is GDP stationary at the level, and other data is stationary on the 1st difference and is suitable for further analysis. In Granger causality but there is the unidirectional relation with BSE To Exchange Rate.

Key words: Stock Market Development; Economic Growth; Unit Root Test; Granger Causality Test; Multiple Regression

Introduction

Experts believe that two main components of economy and stock market are supposed to grow complimentary rather than being supplementary in nature. This studies primarily aims relationship between stock market development and economic growth in India at the inter relationship between the macro economics variables like GDP, Inflation, Exchange rate and stock market development is expected to bring greater benefit to the society. We Used this study 20 years quarterly basis data 1995-2015, 80 variables. Stock market helps the society by creating a situation where servers and needier meet and exchange their financial assets for their developments. Which helps the economy of the country this study establish the relationship between the main macroeconomic viz. inflation, GDP, foreign exchange, indicators and stock market development in India and this paper indicates how the macroeconomics indicator that determines the of stock market development in India.

Literature Review

Fama (1981, 1982) empirically find that stock returns are negatively affected by both expected and unexpected inflation .later Marshall (1992) also finds that adversely affecting inflation on stock return is generated by real economic fluctuations, by monetary fluctuations in both real and monetary variables.Bahmani and Sohrabian (1992) established bidirectional causality between the US stock market and the exchange rate of home currency. However, co- integration analysis failed to identify any long run relationship between the two variables.

Mukherjee and Naka (1995) applied Johansen's (1998) VECM to examine the relationship between the Japanese Stock Market and, inflation rate, exchange rate money supply, real economic activity, call money rate and long-term government bond rate. They found that a co-integrating relation existed and that stock market contributed to this relation. Maysami and Koh (2000) examined the stock market relationships of macroeconomic variable of Singapore and

founded thatmoney supply growth, inflation, changes in short- and long-term interest rate and fluctuations in exchange rate formed a co-integrating relation with fluctuations in Singapore's stock market . Later another study was done by Abdalla and Murinde (1997) investigated the intersections between stock prices and exchange rates in the emerging financial markets of India, Korea, Pakistan India, Korea, and the Philippines. And results show unidirectional causality from exchange rates to stock market in all countries which they taken as sample, except the Philippines, where they found the stock price lead the exchange rate.Later, Kwon and Shin (1999) resulted the Korean stock exchanges are co integrated with some macroeconomic variables. For the study, they applied Engle-Granger co integration and the Granger causality tests .However, using the Granger-causality test on macroeconomic variables and the Korean stock index, the study resltedas the Korean stock index wasn't a leading indicator for such macro economic variables.

Ibrahim (1999) also investigated the dynamic interactions between the Kuala Lumpur Stock Exchange Composite Index, and seven macroeconomic variables (CPI, money supply , industrial production index ,M1 and M2, credit aggregates foreign reserves and exchange rate) and find that informational inefficiency of Malaysian stock market.

Another study in this field was done byPethe and Karnik (2000), examined the way in which stock price indices were affected by and had affected other major macroeconomic variables in India. The study reported weak causality running from IIP to share price indexes but not the other way it holds the view that the state of economy had affected stock prices.Naka,Mukherjee and Tufte (2001) analyzed long-term equilibrium relationships of BSE Sensex and the selected macroeconomic variables. The study employed a VECM to avoid potential misspecification biases that might result from the use of a more conventional VAR modeling technique. They are found that the five variables were co integrated and exists the three long-term equilibrium relationships among the variables. This study suggested that domestic inflation was the most severe deterrent of Indian stock markets volatility and domestic output growth rate is thepredominant driving force.

The pervious literatures shows that the how stock market relates to the macro economic variables. And it stating that no much more studies done in the background of India as a highly developing country. This study bridging the gap between the relationship of Indian stock market and the macro economic variables of the country

Methodology Of The study

To achieve the stated objective stock market data are collected from RBI and BSE website, and the Testing is done by various classifications like stock market development comparison of stock market variables and macroeconomic variables and interrelation between stock market development and macro economic variables. The principle method is employed to analyze time series behavior of the using Granger casualty test. To examine the long term and short term inter relationship between stock market development and macroeconomic variables we used multiple regression to check the how much independent variable explains the dependent variable. To test employed stationary of data series, Augmented Dickey-Fuller (ADF) test, and Philips-Perron test is done, and Granger causality test is formulated to see the short –run adjustment towards the long-run equilibrium..

Analysis and interpretation of the study

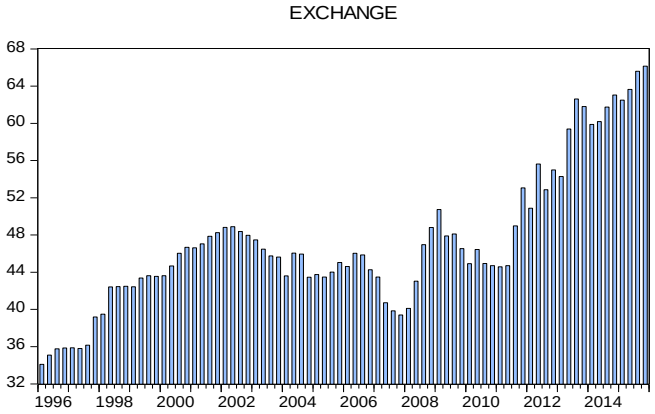

Figure : 1 exchange of INR /USD

Figure 1.shows that there was an upward movement in the exchange rate for the last 20 years from 1995 to 2015. The average value of exchange rate for 20 years was 45.90875. The exchange rate was low during 2007-2008. It happened because of deep recession and high inflation

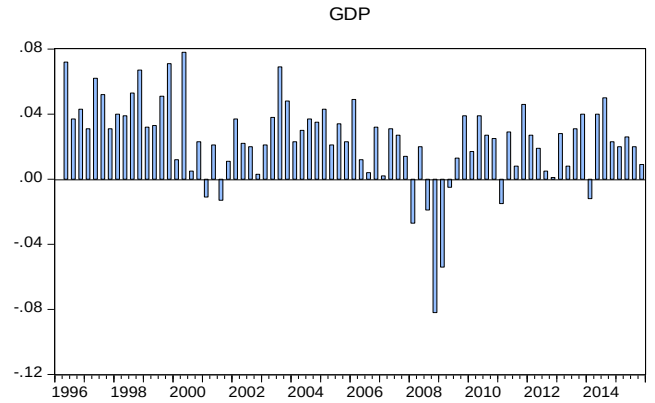

Figure : 2

The movement of GDP was in a stagnant in the beginning stage. From the year 1995- 2000 it showed an increased rate GDP. It was due to the impact of the industrial revolution of 1991. Then it considerably decreased to the extent of -1 in 2001from 2.3 in 2000.

Upward direction and the average value of GDP rate for 20 years was 2.422500.During the year of 2008 GDP rate showed a sudden fall from a GDP rate of 2 to -1.9 and then to -8.2. It happened because of the deep recession and high inflation. The GDP rate can act as an indicator of the health of the economy.

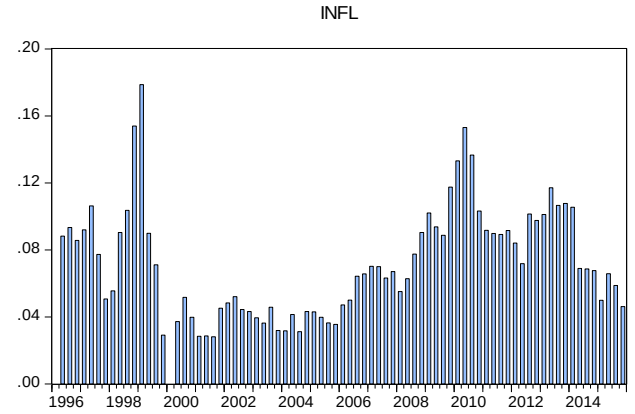

Figure: 3 Inflation Rate of India

It shows the data for inflation rate for the last 20 years from 1995 to 2015. The average value of inflation rate for 20 years was 7.165443. In 1998 inflation rate showed at a rate of more than 15 percent. Effect of the financial crisis (2008) caused the inflation rate to spur its deviation. Between 2008 and 2010 the inflation rate increased dramatically. Current situation of inflation in India is acceptable in the sense it goes at a rate of 6.5 percent.

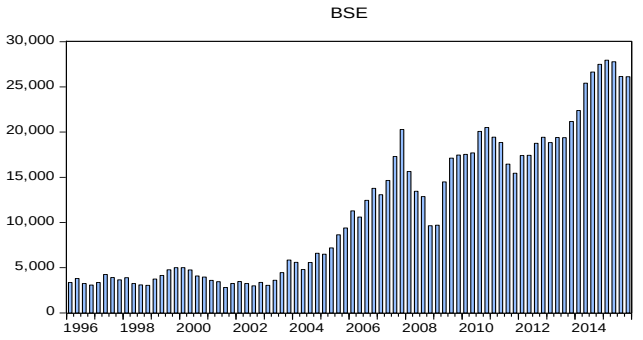

Figure : 4

Figure: 4The shows that there was an upward movement in the Sensex value for the last 20 years. The average value of Sensex for 20 years was11331.20. From 1996 to 2014 there is no more changes but 2004 to 2007 the Sensex showed an increasing tendency and then there was a sudden fall in the value of Sensex in the year 2008. This happens because of the global financial crisis

Discriptive Statistics

Table no : 1

	BSE SENSEX	INFLATION	FOREX	GDP
Mean	11331.20	7.165443	47.21502	2.422500
Median	9522.620	6.760000	45.90875	2.700000
Maximum	27957.49	17.87000	66.15370	7.800000
Minimum	2811.600	2.110000	34.11000	-8.20000
Std. Dev.	7925.420	3.358309	7.530897	2.596394
Skewness	0.531619	0.691932	0.829700	-1.047407
Kurtosis	1.964633	3.452363	3.289922	6.108417
Jarque-Bera	7.341535	6.977389	9.458878	46.83499
Probability	0.025457	0.030541	0.008831	0.000000
Sum	906495.7	566.0700	3777.202	193.8000
Sum Sq. Dev.	. 4.96E+09	879.7026	4480.438	532.5595
Observations	80	79	80	168

Table 1.is about the descriptive statistics. Which is basic statistics?The maximum is the largest, value of the variable. Here the maximum BSE index 27957.49, inflation 17.87000, Forex market 66.15370 and GDP rate 7.800000 Mean - This is the arithmetic mean across the observations. It is the most widely used measure of central tendency. It is commonly called the average. The mean is sensitive to extremely large or small values. Here the average is made 11331.20 inflation 7.165443, forex 47.21502 and GDP 2.422500Std. - Standard deviation is the square root of the variance. Standard deviation used measures the spread of a set of observations. The larger the standard deviation is, the more spread out the observations std deviation is BSE 7925.420 inflation 3.358309, forex 7.530897and GDP 2.596394 Skewness - Skewness measures the degree and direction of asymmetry. The asymmetric distribution such as a normal distribution has a skewness of 0, and distribution that is skewed to the left, e.g. when the median is greater than the mean, has a negative skewness. Here mean is less than median so it has negative skewness. KurtosisThe kurtosis value of the both variables are less than 3 indicating a platykurtic which means both the distribution have lower, wider peak around the means and thinner tails Here mean and the median is showing the average score for BSE Index 11331.20, CPI-7.165443, FOREX-47.21502, GDP-7.099228. Normality is tested with the Jarque-Bera test and finds that the data are normality at 1% level for all the variables.

Augmented Dickey-Fuller(ADF)

Table 2.

	ADF				**Pp**			
	At level		**1st difference**		**At level**		**1st difference**	
	T-Stat	**P-Value**	**T-Stat**	**P-Value**	**T-Stat**	**P-Value**	**T-Stat**	**P-Value**
BSE SENSEX	-0.3479	0.9118	-6.682	0.000	0.1021	-0.102	-6.604	0.000
GDP	-5.6921	0.000	-14.59	0.0001	-5.7596	0.000	-25.79	0.0001
Exchange Rate	-0.1479	0.9397	-8.5023	0.000	-0.1756	0.9363	-8.502	0.000

Inflation	1.7569	0.3989	-7.6736	0.000	-2.5369	0.1108	-7.396	0.000

Table 2 presents the results of unit root test for ADF. From the table, it is evident that all the variables except GDP rate rejected the null hypothesis of unit root process or nonstationary at levels. The absolute value is significantly higher than the critical values. And these variables become stationary at the 1st difference at 5% significance level.GDP rate stationary at level After evaluating the presence of unit root, the order of further analysis. All the variables are non-stationary in there level forms Except GDP, GDP rate stationary At level, other variables stationery in there the first difference, Phillips–Perron Test is also done to check the stationary and non-stationary status of data and is giving the same result as the ADF test.

Granger casualty test

Co- integration articulate about the relationship but not the direction of causal relationship between the variables. If the variables are found to be co- integrated, it indicates that there must be Granger causality in at least one direction. Granger causality test can be performed using Wald statistics.

Tablw no. 3

NULL HYPOTHESIS	P VALUE	f-statistic	RELATIONSHIP
INFLATIONI does not Granger Cause BSE BSE does not Granger Cause INFLATION	0.3884 0.3243	0.9580 1.143	No relation
EXCHANGE does not Granger Cause BSE BSE does not Granger Cause EXCHANGE	0.06273 0.0062	2.8765 5.4494	unidirectional
GDP does not Granger Cause BSE BSE does not Granger Cause GDP	0.1994 0.2836	1.6484 1.2821	No relation

Granger causality is done to see the causality running from independent variable to dependent variable The figure in the table is the p-values of f distribution for The Granger causality. In above figure shows that there is unidirectional relation with: BSE to Exchange rate,Bse index and inflation, GDP and BSE are having no relationship and the short run casualty,

Multiple Regression

Variables	Coefficient	t-Statistic	Prob.
EXCHANGE	**722.3841**	**8.739277**	**0.000**
GDP	**-18610.99**	**-0.792041**	**0.4308**
INFL	**66633.42**	**3.735004**	**0.0004**

The above results show that the most influencing variable in the BSE is inflation rate (66633.42232). It means that there is a positive relationship between BSE index and inflation. For every increase one point on Inflation Rate, BSE index is increased by 66633.42232 points. Also, it comes under one percent significant level, because the sig value is 0.0004, i.e., 1% level. Likewise, the exchange has the coefficient value of 722.384051 That means, for every increase of one point on the exchange, 722.384051 point increases the dependent variable (BSE). It also reveals the positive relationship between BSE and exchange rate. And the another variable is that GDP. GDP rate shows a coefficient of -18610.99. It means that one point changes in GDP effect -18610.9932 points in BSE. So, it has negative or no direct relationship BSE and GDP.

Findings

The main aim of the study is to find out the relationship between BSE and economic growth. The variables used in the study are Gross Domestic Product to define economic development and the variables like Inflation, GDP, exchange rate, The data collected was tested for stationary using an econometric tool called unit root test. The result was, GDP stationery at level and other data is stationary on the 1st difference and is suitable for further analysis. To find out the casual relationship between the variables, granger casualty test was done, and it has been found that, But there is the unidirectional relation with BSE To Exchange Rate and Inflation, GDP.Inflation, exchange rate affects BSE index. BSE does not have an impact on GDP.

Conclusion of the study

This study performed necessary analyses to answer the research question of whether some of the identified macroeconomic factors can influence the Indian stock market BSE. The macroeconomic variables are represented by the, GDP rate, inflation, exchange rate; Indian stock market is represented by BSE INDEX. Quarterly data for a time span of 20 years (from 1995 – 2015) was considered. The paper employed Unit root test, and Granger causality test, to examine such relationships. The results are interesting and useful in understanding the Indian stock market BSE INDEX movement according to the economic variable. By overall analysis and sectoral analysis, it can be concluded that our all the variables relatively stationary according to unit root test. And according to Granger casualty test BSE and Exchange Rate having the short run relationship.

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