

Relationship Between Indian Banking Sector and Indian Stock Market- An Empirical Study

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ABSTRACT

Undoubtedly, it can be said that banking sector is one of the rapidly rising sectors among all the sectors in an economy with respect to today's era. Therefore, in this study, the relationship between some Banks and Stock Market is analyzed with respect to India. The study attempts to answer one critical question i.e. whether the development in banks and stock markets are positively related in India or not? and what is the cause and effect relationship between both? For the purpose of analysis, stock prices are taken from the official website of National Stock Exchange (NSE). Nifty 50 is taken as the measure of stock market indices and Nifty Bank index is taken as a measure of the performance of banking sector. The period of analysis is from April 1st 2007 to April 31st 2018. Unit-root test and granger causality test are used in order to arrive at the conclusions. The empirical results show that the two variables are non-stationary in nature and there exists a negative relationship between banks and stock markets in India. The results further suggest that banking sector acts as one of the cause for the developments in Stock Market in India.

Keywords: Stock Index; Granger-Causality Test; Unit-Root Test; Co-Integration Test; Nifty 50; Nifty Bank.

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INTRODUCTION

The stock market of every country plays a vital role in the development of the economic growth of that country. Moreover, it has an impact on every existing sector within that economy. Sometimes, it is also proved by researchers that a well-functioned stock market will certainly be having a vibrant economy. Further, the linkages between the stock market and banking sector is one of the utmost areas in economics and finance for a long time but the direction of causality is of huge concern in order to prove that whether developed stock market causes a developed banking sector or vice-versa. This discussion is not only a matter of intellectual curiosity but it forms a part of a significant policy concern as well. As banking is one such industry without which once economy cannot think of its survival. At every point of time we all need the services of a Bank. So with the help of the present study let us see that what is the role of a Banking industry in the development of Stock Market or is it the Stock Market which is flourishing the Banking sector? Some researchers are of the view that efficacious banking sector precedes efficacious and advanced stock markets while others are of the opinion that well-performing stock market nurtures the growth and profit incentives in banks. Therefore, we have two different set of thoughts. Some argues that a progressive stock market will boost savings and investments that would further lead to an accelerated rate of growth in banking sector. Another set of thought is of the opinion that expansion and opportunities in the banking sector leads to well-evolved stock markets and finally, a third group of studies proves that causality runs in both the directions i.e. development in stock market causes growth in banking sector and vice versa. So, before beginning our research, let us discuss what do we mean by a stock market and why there is the need for having a stock market for the performance of economy as a whole? For which Stationarity of the data is also tested.

NOW WHAT IS STATIONARITY?

Stationary data means that it is constant throughout the study and if the data is found to be non-stationary that means, the given data set is not constant over the time period studies or there are very much fluctuations in the data. The non-stationary data is also known as the unit root data or the data has a unit root. For the purpose of analysis, normally researchers transform the non-stationary data into stationary one but in the process of transformation,

there are chances that the data may lose some of its properties. Therefore, if the data is non-stationary then there is a need to test the relationship between the variables, so, for this co-integration testing is applied. Further co-integration can be tested by two methods i.e. Engel Granger Test of Co-integration and Johnson Co-integration Test. If there are two variables which needs to be study then Engel Granger Test of Co-integration is used and in case the variables are greater than two then Johnson Co-integration Test is followed.

STOCK MARKET

Stock Market is a platform or is a market where long term financial instruments like bonds, equities, mutual funds and derivative instruments are traded. It balances the demand for infrastructure which is required in order to sell and buy the processes and other allied activities.

Financial assets that are traded in Stock Market are generally in long term securities (securities whose maturity period is more than one year). Stocks, Bonds, Warrants, Mutual Funds, and other derivative instruments (options, futures, etc.) form a part of the financial instruments that are traded over the stock market.

Investors with surplus incomes can invest their money in one or the other form of financial asset available with stock market and hence their money will come in circulation.

NEED FOR STOCK MARKET

Below stated are some of the reasons which highlights why an investor or economy as a whole needs stock market:

1. It **serves as a liaison between the Savers and the Investors** by mobilizing ideal savings and diffusing them in productive investment. Thereby, balancing the surplus and the deficit.
2. Provides **encouragement to Savings** by offering good returns.
3. Also provides an **urge to invest**.
4. Allocates the resources rationally, i.e., by balancing the surplus and the deficit and thereby Promotes the Economic Growth.
5. A well functioned stock market also **reduces the inflation** rate by

providing the capital to the borrowers at competitive rates.

6. Provides overall **benefits to the investor** in many ways like:
 - a. brings buyers and sellers together and thus ensures the marketability of investments,
 - b. enables investors to keep track of their investments and thereby, channelize them into most profitable lines,
 - c. safeguards the interests of the investors by the involvement of SEBI.

No doubt, Stock Markets in every country play a significant role in uplifting its economy from Capital and Risk allocation to Policy Making and it is one of the core factor or channels that is making a huge influence in upgrading the GDP of any country and it is the best way to route the savings into long-term constructive use.

A developed and brisk Stock Market will highly contribute towards blistering economic growth and development.

So, from the above discussion it is clear that the stock market plays a very crucial role in the development of an economy as a whole and as the banking sector serves a very important component of an economy, we want to know that whether development in the stock market is reflected in the performance of banks in India or vice versa.

OBJECTIVES OF THE STUDY:

The study aims to:

1. To check the stationarity of the data.
2. To find the cause and effect relationship between the stock indices and bank indices.
3. To check that whether the developments in the stock market is a result of well efficient banking system or vice versa.
4. To check whether there exists a co-integration among the two variables or not.

HYPOTHESES:

On the basis of objectives it is hypothesized that:

- H_{01} :Variable NIFTY 50 has a unit root.
- H_{02} :Variable NIFTY BANK has a unit root.
- H_{03} : There is no cause and effect relationship between NIFTY 50 and CNX BANK.
- H_{04} : Residual has a unit root or there is no co-integration among the variables.

REVIEW OF LITERATURE

Darrat (1990) examined and tested the efficiency and the expected returns of the stock market of Canada that whether they are constant over time or not. The study was being conducted using the multivariate Granger-causality technique and concluded that the Canadian stock prices fully reflect all information available on monetary policy moves. **Kwon and Shin (1999)** tested the co-integration of economic variables such as exchange rates, production; money supply; and trade balances and found that they are co-integrated among each other in Korean Stock Exchange using Granger causality tests and Engle-Granger test of co-integration through vector error correction model. **Maghayereh (2003)** uses co-integration analysis on monthly time series data ranging from January 1987 to December 2000 and examined the relationship between stock prices and certain selected macroeconomic variables of Jordan stock market. The results of his research concludes that those macroeconomic variables like foreign reserves, exports, inflation, industrial production and interest rates are being reflected in the stock prices in the stock market of Jordan. The study further proliferates that macroeconomic variables are significant in prognosticating future changes in stock prices of Jordan stock exchange. **Erdogan and Ozlale (2005)** anatomized the authority of macroeconomic variables on stock returns of Turkey and opinioned that two variables i.e. exchange rates and industrial production are positively related with the stock return. On the other hand, they concluded that Circulation in Money, M1 had no meaningful impact on stock returns. **Gan, Lee, Yong and Zhang (2006)** investigated the linkage between stock prices and macroeconomic variables in New Zealand. The variables chosen for the purpose of the study are long-

run and short-run interest rate, exchange rate, GDP, inflation rate, domestic retail oil price and money supply. Findings of their study proved that there exists a long term relationship between stock prices and selected macroeconomic variables in New Zealand. However, the Granger causality test argues that stock exchange is not a good index for macroeconomic variables in New Zealand. **Odhiambo (2010)** analyzed the relationship between bank-based financial development and stock market development in South Africa. The study tries to find that whether the services delivered by banks and stock markets are positively related or not in South Africa. The empirical results of his research unveils that there is a positive association between bank's development and stock market development in South Africa. **Tripathy, (2011)** proves the relationship between Indian stock market and macroeconomic variables from the period ranging from January 2005 to February 2011 pertaining several tests such as Ljung-Box Q test, Breusch-Godfrey LM test, Unit root test and Granger causality test. These tests show bidirectional relationship in interest rate, exchange rate, international market with Indian stock market. The study focused on meaningful impact of international market on Indian stock market and found that there is an impact of exchange rate and interest rate on stock price. **Naik and Padhi (2012)** studied the association between the Indian stock market index (BSE Sensex) with various macroeconomic variables such as wholesale price index, money supply, industrial production index, treasury bills rates and exchange rates from the time period 1994 to 2011. The analysis revealed that macroeconomic variables and the stock market index are co-integrated and, hence, a long-run equilibrium association is present between them. **Ray (2013)** finds the relationship between stock prices and macroeconomic variables in the stock market of India. The causal association between industrial production and stock price in India was studied over a period of twenty years ranging from 1990-91 to 2010-11. The results proved that there is an absence of significant causal linkage between share price and industrial production in India. Although, the results of regression suggested that there might have been a direct relationship between real industrial production and the stock prices. The increase in the production by industries the greater will be the stock price and vice versa. **Sireesha (2013)** studied the impact of various macroeconomic factors upon the movements of the Indian stock market index Nifty using linear regression method. For the purpose of study, gold and silver prices with the help of linear regression methodology. Gold, Silver, and stock returns are selected and the results shows that Stock return

is been significantly influenced by GDP and inflation while return on gold is been significantly influenced by supply of money. **Singh (2014)**, studied the inter linkage between certain macroeconomic variables and the stock market of India. Pearson's correlation and multivariate stepwise regression is put to use in order to find the relationship between the two. Granger's causality test is further applied for testing the dynamic causal relationship among these two variables and the empirical results of the study reveals the meaningful impact of macroeconomic variables is there on Indian stock market. **Luthra and Mahajan (2014)** investigated the influence of macroeconomic variables on Banking sector of BSE i.e. BSE Bankex. The index takes into account substantial number of public and private sector banks listed on BSE. Macroeconomic variables chosen for the study are GDP growth rate, inflation, gold prices and exchange rate and the analysis of the study depicts that inflation, exchange rate and GDP growth rate affects the Bankex positively. However, Gold Prices are affecting BSE Bankex negatively but again none of these variables have a meaningful impact on the stock prices of banks if we talk about India. **Ghosh and Kanjilal (2016)** analyzed the multivariate relationship between international crude oil prices, rate of exchange and Indian stock market for a period of eight years ranging from 2003 to 2011. The tests are not in favor of establishing long-term relationship amongst variables but again the study is been divided into three phases on the basis of time and there is some sort of linkages between variables in these three phases. The study also opinionates that crude oil prices effects Indian stock market and is determined exogenously. **Giri and Joshi (2017)** analyzed the long run and short run relationship amongst macroeconomic variables and stock prices in India for 35 years ranging from 1979 to 2014. The results of the study suggests that certain macroeconomic variables like growth of the economy, inflation rate and rate of exchange are directly related to the stock prices whereas crude oil is one such variable which is related negatively to the stock prices. **Afonso, Baxa and Slavik (2018)** analyzed the association amongst debt ratio, level of economic activity and financial stress with respect to various financial regimes. Quarterly data for four different countries viz. US, UK, Italy and Germany was taken into consideration including their fiscal, macro and financial variables into considerations. The results of the study reveal that generally when there is an increase in debt ratio; output is also rising in different financial regimes. But financial stress has an inverse relationship with output and sometimes worsens the situation.

DATA AND METHODOLOGY

Data

For the purpose of the study, the daily stock index returns of NSE are taken. Banking indices are also taken from the official website of National Stock Exchange. Nifty 50 is taken as a measure of stock market performance and Nifty Bank is taken as the performance indicator of Banks listed on NSE. The analysis and the interpretation performed in this study are for a period of eleven years ranging from **April 1st 2007 to April 31st 2018 using daily closing indices.**

Methodology

Unit root test is applied for testing the stationarity of the data. A **unit root test** tests evaluates whether a time series variable is non-stationary using an autoregressive model or not. In the present study, two variables are studied that is why Engel Granger Test of Co-integration is used to find the co-integration between the two variables. Further Granger Causality test is applied in order to find the cause and effect relationship between the two variables taken i.e. which one is the cause and which one is the effect out of the two variables. The Engle Granger Test of Co-integration is used to test the relationships of both the indices.

ANALYSIS AND INTERPRETATION

Testing the unit root or non-stationarity of data:

Testing the unit root for Nifty Bank

As mentioned above, unit root test is applied to check the stationarity of the data, whether or not the given data moves in a constant way or not. For the purpose of testing the stationarity of the data, unit root test is applied. Null Hypotheses is taken as: Bank has a unit root that means banking sector has non-stationary data for the time period studied and the results are as follows:

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.204394	0.9355
Test critical values:		
1% level	-3.432541	
5% level	-2.862394	
10% level	-2.567269	

From the above analysis, as we can see that p value is coming out to be greater than 0.05. Therefore, we will be accepting the null hypotheses and rejecting the alternative hypothesis. Hence, we can say that the data set has a unit root or the data set is said to be non-stationary which means in the duration of study, Bank's indices does not move in a constant manner.

Testing the unit root for Nifty 50

Similarly, using unit root test, stationarity of Nifty is also tested and the result shows:

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.355976	0.9140
Test critical values:		
1% level	-3.432541	
5% level	-2.862394	
10% level	-2.567269	

From the above analysis, as we can see that p-value is coming out to be greater than 0.05. Therefore, we will be accepting the null hypotheses and rejecting the alternative hypothesis. Hence, we can say that the data set is having unit root or the data set is said to be non-stationary which means for the time period taken data is not moving in a constant pattern.

Pair-wise Granger Causality Tests

Granger Causality Test is applied to test that out of the two variables studied here, which one is the cause and which one is the effect. In the present study, Granger Causality Test is applied for testing the causality of relationship among two variables. Null hypotheses are :

H_{01} : Nifty Bank does not Cause Nifty 50;

H_{02} : Nifty 50 does not Cause Nifty Bank, and the result shows:

Null Hypothesis:	Obs	F-Statistic	Prob.
BANK does not Granger Cause NIFTY50	2744	5.99920	0.0025
NIFTY50 does not Granger Cause BANK		1.54909	0.2126

From the above analysis, it is found that the null hypotheses H_{01} is rejected and another null hypotheses i.e. H_{02} is accepted. Therefore, it is concluded that the Nifty Bank causes Nifty 50 but it's not vice-versa. Hence, it is that Nifty Bank is one of the causes for developments in Stock markets in India.

Test for Co-integration

Co-integration is applied because both the variables has a unit root and in order to test the relationship between these two variables the Engel Granger Test of Co-integration is applied and the results are as follows:

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.164792	0.0223
Test critical values:		
1% level	-3.432540	
5% level	-2.862393	
10% level	-2.567269	

The analysis reveals that the residuals of the results are stationary or does not have a unit root, which means that there is some degree of co-integration present in the two variables studied here.

FINDINGS

Unit root, causality and co-integration among the Nifty and Banks listed on NSE are tested in the present study and the results of the analysis shows that both the variables are having non-stationary data. Therefore, Co-integration test is used to find the relationship between the two variables and it was found that there exists a relationship between the two variables studied here. It is also analyzed that the degree of relationship between these two variables by using granger causality test and found that the development in banking sector is one of the variables that cause developments in stock market in India but vice-a-versa is not true.

CONCLUSION

In this study, the co-integration between Nifty 50 and Nifty Bank has been studied using the Engle Granger test of co-integration. This study has studied dependency of Indian equity market on Indian banking sector and vice-versa. The stock index values (closing prices) are obtained from NSE

and the Engle Granger test of Co-integration is used to examine the interdependence among these two variables. Interdependence/dependence was examined for the period from 1st April 2007 to 31st April 2018. The results of the test show that the Indian Stock Market shows the presence of co-integration between the Indian Stock market and the Indian Banking Sector.

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