

## Analyzing Impact of Demonetisation on Indian Banking Sector: An Evidence from NSE Nifty Bank Index

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### Abstract

*Demonetization or “Notebandi” is a step towards eradication of black money and other corruption sourced money out of the economy. It is an act of stripping a currency unit of its legal status. Indian government initiated demonetization on 8<sup>th</sup> November 2016 to tackle mainly the problem of black money in circulation and to make India a cashless economy. The study attempts to examine the impact of demonetization on NIFTY Bank Index and banks listed under the selected index. The data is analysed by using different statistical techniques such as graphical analysis, Summary statistics, Augmented Dickey Fuller Test and GARCH Model in E-views tool. For the purpose of study 200 days before and 200 days after the event of demonetization is considered. The stationarity of data was determined by using ADF test while heteroskedasticity of data was evaluated using Prob. Chi Square test. The study revealed a negative impact of demonetization on Nifty Bank Index, Federal Bank, HDFC Bank, Indusind Bank & RBL bank which state that returns on these stocks has decrease due to announcement of demonetization. Bank of Baroda, Kotak Bank, PNB & Yes Bank has a significant positive impact of demonetization announcement as its returns have improved due to demonetization. Returns on Axis bank stock, ICICI bank stock, IDFC Bank & SBI has not affected due to demonetization announcement in India. This study will be beneficial for various academicians, investors, government and other participants to understand the impact of demonetization on banking sector and will help them to take an intellectual investment decisions.*

*Keywords: Demonetization, Banks, Impact.*

### 1. INTRODUCTION:

Demonetization is one of the biggest wildcard played by our government to remark a new beginning. It is a step towards fighting corruption. It is an economic policy where a certain currency unit ceases to be recognized or loses its legal status. From time and again the government of India formulated financial strategies and policies so as to bring about economic growth, one such step was taken to curb black money which was circulating in the country for a long time and the sources of such income was not known. In order to remove such money out of the economy government of India has taken a major step i.e. demonetization.

An experiment was conducted to tackle a menace of corruption on November 8, 2016 by Prime Minister Mr. Narendra Modi. It was a bold step taken to get control over corruption in the country where there was a ban on 500 and 1000 currency notes and announced issue of new 500 and 2000 denominations. The amount was recovered by Reserve Bank of India [RBI] between 8<sup>th</sup> November to 31<sup>st</sup> December 2016.

Surgical strike on black money affected all the sectors in the economy including banking sector. Demonetization caused disturbance in banks day to day operations as well as resulted in liquidity problems. The exchange of banned currency notes depleted the quality of banks services. From November 10 to December 30, 2016, Rs 15.44 trillion worth of Rs 500 and Rs 1,000 currency notes were withdrawn. These notes comprise of 86% of total value of currency in circulation. It has been found that 97% of the demonetised notes are back in banks i.e 14.97 trillion as of December 30, 2016. ATM charges were waived off during banned period thus resulting of loss of Rs 20 in every transaction.

Pradhan Mantri Jan-Dhan Yojana, a national mission on financial inclusion, was launched by government where the focus was on expansion of banking sector's reach. Government took an initiative of generating bank accounts by way of Pradhan Mantri Jan Dhan Yojna (PMJDY). After announcement of demonetization, In October 2017 there were 50 million new accounts opened under Pradhan Mantri Jan Dhan Yojna (PMJDY).

#### 1.1 PURPOSE OF DEMONETIZATION:

The governor of Reserve Bank of India Mr Urjit Patel explained the following purpose of introducing demonetization in India:

- To tackle the problem of Black Money in India.

- To stop terror financing.
- To get India free from corruption
- To make the corrupt lose their money.
- To get everyone to have bank account.
- Encourage deposit base and Savings
- For cashless society
- For cracking down the fake currency notes (counterfeit notes)
- To give boost to white economy.

### 1.2 EFFECT OF DEMONETIZATION ON BANKING OPERATIONS:

The exchange of currencies resulted in short and long term effect on banks. In short term, there was disruption in bank operations and in long term it helped banks to accumulate money in the form of deposits without incurring any cost. The following are some of the effects:

- 1) Increase in deposits: Demonetization had increased the deposits in bank as lot of money was flowing in the banks through exchange of 500 and 1000 notes.
- 2) Fall in the cost of funds: As the deposits have increased banks share has also increased thus leading to low cost of funds.
- 3) Decrease in lending of funds: The quantity of lending has declined after demonetization where banks tried to provide funds at low interest rates to the needy people.

**Nifty Bank Index:** It comprises of highly liquid and large capitalised Indian banking stocks. It is a benchmark that tells us the performance of Indian banks in the capital market. The sectoral distribution states that major stock holding is of HDFC Bank i.e 35.85% followed by ICICI Bank 18.12%, Kotak Bank 13.01%, Axis Bank is 10.11%, SBIN is 8.1%, Indusind Bank is 6.06%, Yes Bank is 3.44%, RBL Bank is 1.92 %, Federal Bank is 1.34 %, IDFC First Bank is 0.67 %, Bank of Baroda is 0.77% and lastly PNB is 0.6 %

## 2. REVIEW OF LITERATURE:

The following studies have thrown ample light on the gradual changes that have been taken place in the economy due to demonetization in India. While conducting this review, various articles published in journals and websites were reviewed. Thus for better understanding the review of relevant literature has been taken.

**Shah Yousuf Ayash**, (2017), in his research paper titled “Impact of Demonetization on Rural India” studied the impact of demonetization on common man of India and the economy as a whole. He also focussed on studying the impact on agriculture sector and farmers of India. The data was collected from secondary sources such as newspapers, articles etc and analysed through graphical representations. Period of study is from 2014 to 2016. The study concluded that the country will become more effective; farmers can directly deal with consumers and get credits to their bank account. Similarly there will be increase in supply of money in the form of taxes resulting to increase in government savings.

**Mishra Deepika**, (2017), in her research paper “Demonetization: Its socio- economic impact” examines the short term and long term impact of demonetization on corruption and society in general. In order to achieve the objectives the data was collected from secondary sources like journals and articles and the period of study is from 1<sup>st</sup> November 2016 to 20<sup>th</sup> December 2016. The data is analysed by using graphs. The findings of the study state that in short run, withdrawal of currency notes will affect to some extent the working of general public but in long term it will have a positive effect.

**Agarwal Padmavathi**, etal,(2018), in their research paper titled “Demonetization and its effect on banking sector ”studied the influence of demonetization on banks and their operations. The data is collected from secondary sources and past available literature work. The research concludes that demonetization has badly affected the banks operations in the country.

**Patil Anoop, etal**, (2018), in their research paper titled “Analysing the impact of Demonetization on the Indian Stock Market: Sectoral Evidence using GARCH Model” they examined the impact of demonetization on Indian stock market. The study considers secondary data collected from official website NSE, India. The period of study is from 15<sup>th</sup> January 2016 to 29<sup>th</sup> August 2017 where 200 days after and 200 days before demonetization are considered. The data is analysed using techniques such as Graphical analysis, summary statistics, unit root test and GARCH model in E-views and MS Excel. The study concludes that there is a significant negative impact of

demonetization in case of Nifty Auto Index, Nifty Financial Services Index, Nifty FMCG Index, Nifty IT Index, Nifty Media Index, Nifty Private Bank Index and Nifty Realty Index. Out of all Nifty Realty Index was affected the most because of demonetization.

**3. IDENTIFICATION OF RESEARCH PROBLEM:**

After reviewing the literature, the researcher has found out the following research gap for further study:

Previously research has been conducted to study the effect of demonetization on banking sector but no research has been done by taking into consideration the banks listed on NSE, India.

**4. OBJECTIVE OF THE STUDY:**

- 1) To study the impact of demonetization on NIFTY Bank Index.
- 2) To examine the impact of demonetization on banks listed under NIFTY Bank Index.

**5. RESEARCH METHODOLOGY:**

The research is focussed on analyzing the impact of demonetization on NIFTY Bank Index and the banks listed under banking sector. The study is completely based on secondary data which has been collected from NSE India website. The period of the study is from 15<sup>th</sup> January 2016 to 29<sup>th</sup> August 2017 where the researcher has considered 200 days before and 200 days after the event of demonetization. The returns of NIFTY Bank Index of NSE are computed with the help of daily closing prices. The closing prices are converted into log form for normality purpose. Dummy variables have been created for the study. The data has been analysed by using statistical techniques such as Graphical Analysis, Summary Statistics, Unit Root Test and GARCH (Generalized Autoregressive Conditional Heteroscedasticity) Model.

In order to check the stationarity of data Augmented Unit Root tests have been used and for checking heteroskedasticity of data Prob. Chi Square test have been used. The sample for the study include NIFTY Bank Index and Banks under the selected index namely Axis Bank, Bank of Baroda, Federal Bank, HDFC Bank, ICICI Bank, IDFC Bank, Indusind Bank, Kotak Bank, Punjab National Bank, SBI, Yes Bank, RBL Bank. The researcher has used GARCH Model for determining the impact of demonetization on NIFTY Bank Index and banks listed under it. The testing of hypothesis included unit root testing i.e Ho: There is unit root in data, testing of heteroskedasticity of data i.e. Ho: Data is Homoskedastic and GARCH Model i.e Ho: There exist no significant impact of demonetization on NIFTY Bank Index and banks listed under banking index.

**6. DATA ANALYSIS:**

The data is analysed by using Summary Statistics, graphical analysis, Unit Root Test, heteroskedasticity and GARCH Model.

Table No: 1 Showing Summary Statistics for Nifty Bank Index:

	Mean	Standard Deviation	Skewness	Kurtosis
<i>Nifty Bank</i>	0.108878	1.080854	0.172643	4.596188
<i>Axis Bank</i>	0.063525	1.833818	-0.03154	4.837028
<i>Bank of Baroda</i>	0.016891	2.592442	0.838845	13.40974
<i>Federal Bank</i>	0.201893	2.121127	0.630094	6.498248
<i>HDFC Bank</i>	0.127215	0.926799	0.288232	4.282832
<i>ICICI Bank</i>	0.059836	2.084669	0.30914	5.466922
<i>IDFC Bank</i>	0.041003	2.059831	0.629801	6.138768
<i>Indusind Bank</i>	0.145839	1.360817	-0.28544	8.221189
<i>Kotak Bank</i>	0.085851	1.253764	0.119792	5.679765
<i>Panjab National Bank</i>	0.091459	2.585303	0.115136	4.723358
<i>SBI</i>	0.086412	2.062394	0.412251	6.503193
<i>Yes Bank</i>	0.234363	1.913576	0.139651	5.882828
<i>RBL Bank</i>	0.233340	2.023254	0.358131	3.397038

Source: Compiled using E-views and MS Excel

The above table shows the mean values, standard deviation, skewness & kurtosis for the selected variable of the study. Mean value measures the performance of given variable hence higher the mean better the performance of selected variable of the study. Yes bank has a highest mean value

for the stock returns followed by RBL bank, Federal Bank, Industrial Bank, HDFC Bank, Nifty Bank Index, Punjab National Banks, SBI, Kotak Bank, Axis Bank, ICICI Bank, IDFC Bank & lowest mean value is for Bank of Baroda.

The standard deviation measures the fluctuation or the variation in the data. Lower the variation in the data lower will be the standard deviation which will be treated as favourable for the study. HDFC Bank has the lowest standard deviation value which shows that returns on HDFC stock is less volatile as compared to Nifty banks and other listed Bank under Nifty Bank Index.

Skewness measures the relationship between Mean, Median & Mode.

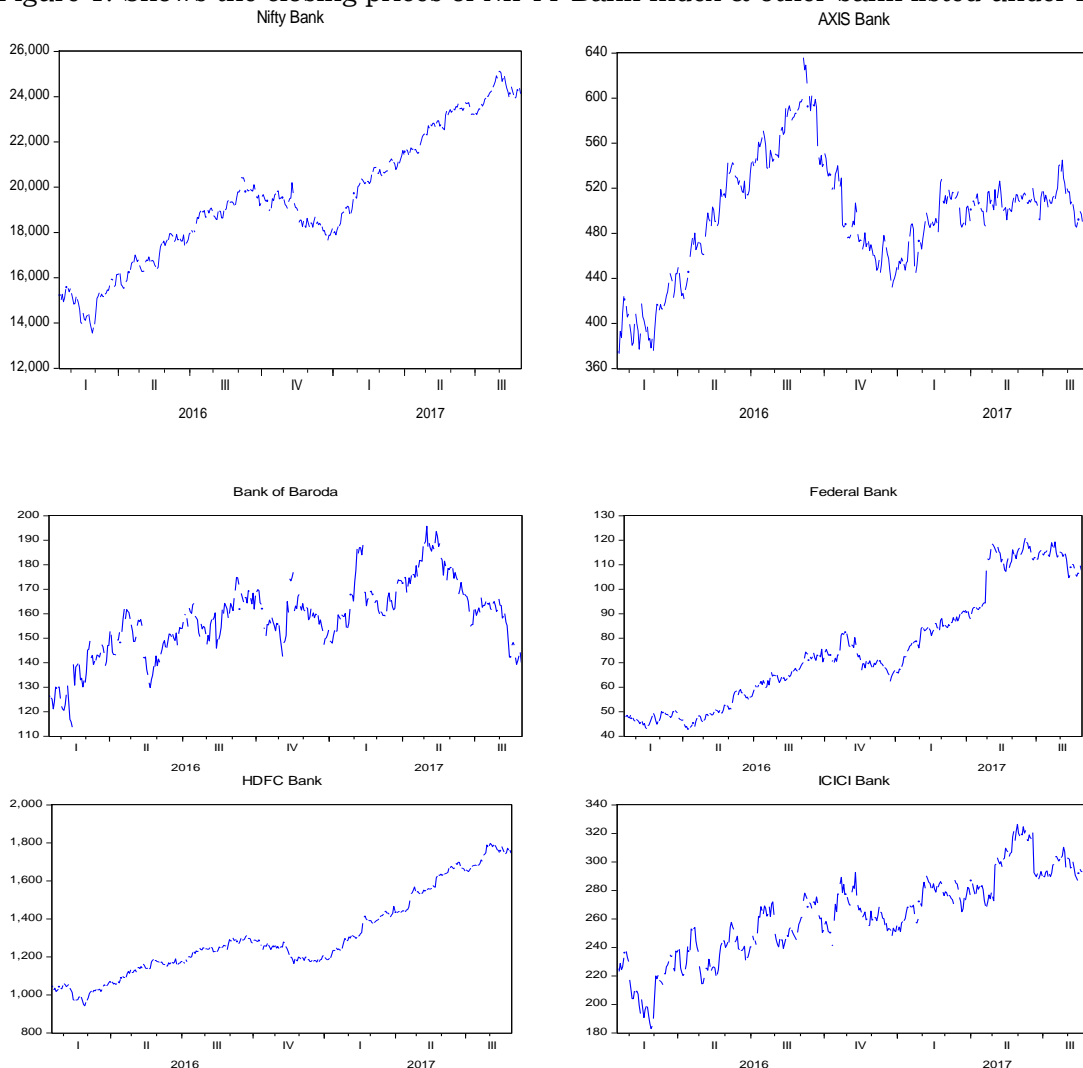
The decision of Skewness of data to be made on the following rule:

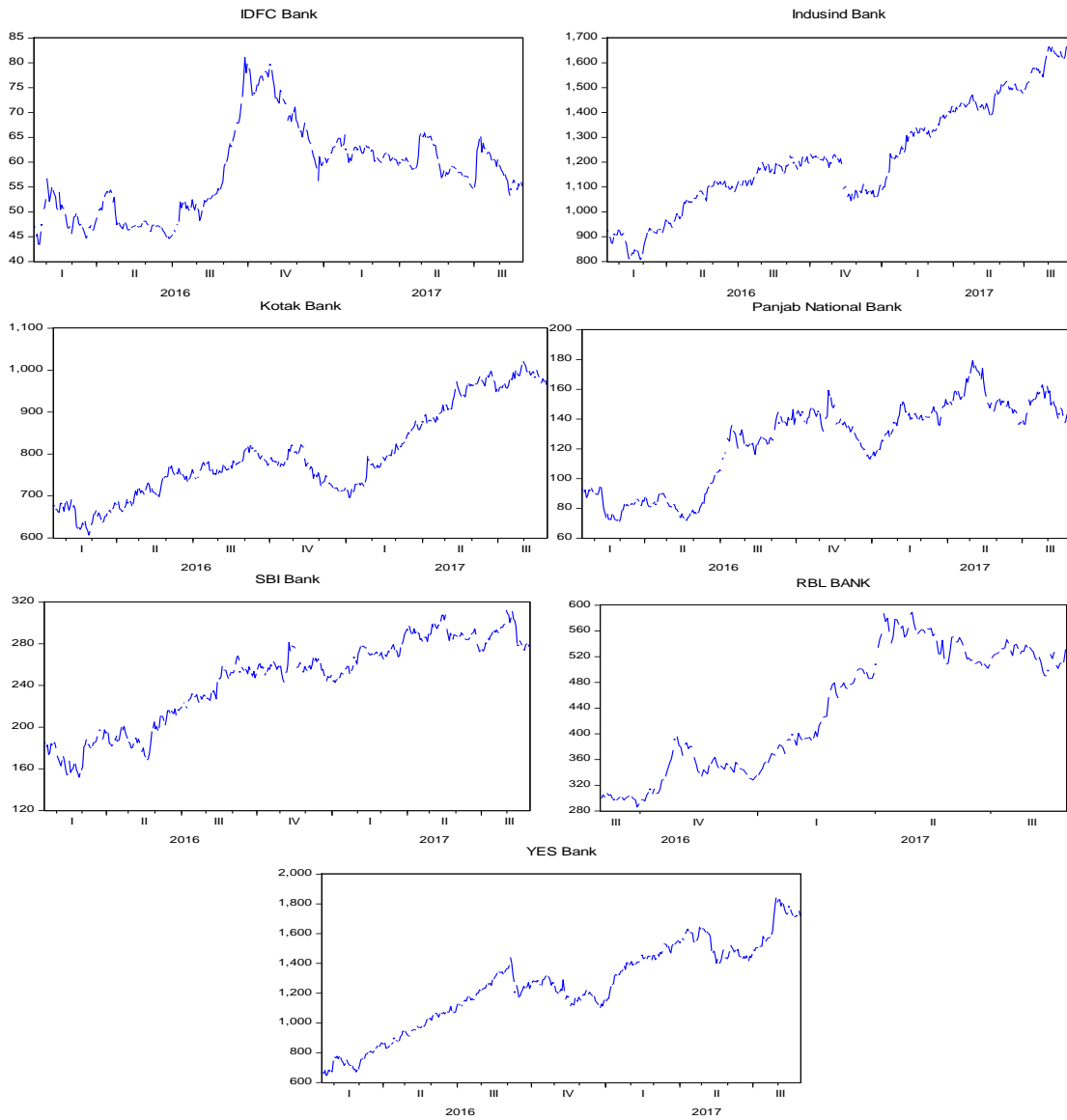
- i. when  $\text{Beta}(\beta) = 0$  then skewness is considered as symmetry.
- ii. When  $\text{Beta}(\beta) > 0$  then skewness is considered as positive skewed.
- iii. When  $\text{Beta}(\beta) < 0$  then skewness is considered as negatively skewed.

Above table shows the positive  $\beta$  for Nifty Bank, Bank of Baroda, Federal Bank, HDFC Bank, ICICI Bank, IDFC Bank, Kotak Bank, PNB, SBI, Yes Bank & RBL bank which indicates that the skewness is positive skewed. The Axis Bank & Indusind Bank has a negative  $\beta$  which shows negatively skewed skewness.

Kurtosis measures whether the data is heavily tailed or light tailed. If the beta ( $\beta$ ) is equal to 3 the data is considered to be leptokurtic and if less than 3 the data is considered to be platykurtic. Above table shows Beta value for Nifty Banks, Axis Banks, Bank of Baroda, Federal Bank, HDFC Bank, ICICI Bank, IDFC Bank, Industrial Bank, Kotak Bank, PNB, SBI, Yes Bank & RBL Bank more than 3 hence the data is to be considered as Leptokurtic.

Figure 1. Shows the closing prices of NIFTY Bank Index & other bank listed under it.





Source: Compiled using E-views

The government of India has announced the event of demonetization on 8<sup>th</sup> November 2016. The above figures show the share prices of Nifty bank Index and 12 banks listed under it for the period of 400 i.e. from 15<sup>th</sup> January 2016 to 29<sup>th</sup> August 2017. This further classified as 200 days before demonetization and 200 days post demonetization. Movement in stock prices has been notice from the very next day after announcement of demonetization except Axis bank stock as it has constant prices. The impact of demonetization was for a limited period of time on nifty bank index, Federal bank, HDFC bank, ICICI bank, Indusiand bank, Kotak bank, SBI, Yes Bank and RBL bank as its stocks prices starts increasing after some period of time. Bank of Baroda, IDFC bank and Panjab National Bank shows a negative trend as its share starts decreasing after announcement of demonetization.

Table No: 2 Showing Unit Root Test:

Nifty Bank Index	Augmented Dickey Fuller test statistic	P-Value
<i>Nifty Bank</i>	-18.38125	0.0000***
<i>Axis Bank</i>	-18.81209	0.0000***
<i>Bank of Baroda</i>	-22.50266	0.0000***
<i>Federal Bank</i>	-18.73939	0.0000***
<i>HDFC Bank</i>	-19.09351	0.0000***
<i>ICICI Bank</i>	-18.60405	0.0000***
<i>IDFC Bank</i>	-18.96861	0.0000***
<i>Indusind Bank</i>	-19.10304	0.0000***
<i>Kotak Bank</i>	-20.81038	0.0000***
<i>Panjab National Bank</i>	-19.52768	0.0000***
<i>SBI</i>	-19.47927	0.0000***
<i>Yes Bank</i>	-20.05592	0.0000***
<i>RBL Bank</i>	-13.98488	0.0000***

Note: \*\*\* 1% level of significance

Source: Compiled using E-views and MS Excel

Unit Root test:

HO: Data has a unit root (Data is non-stationary)

H1: Data don't has a unit root (Data is Stationary)

To check the stationarity of the data unit root Augmented Dickey Fuller test (ADF test) has been run at 1% level of significance. P values for ADF test is 0.000 for nifty bank indices & bank listed under it which is less than 0.01 at 1% level of significance hence we reject the null hypothesis which indicates that the data does not have unit root & it's a stationary data. So it fulfils the one of requirement for using regression analysis.

Table No: 3 Showing Heteroskedasticity Test:

Nifty Bank Index	F-Statistic	Prob. Chi - Square
<i>Nifty Bank</i>	3.462381	0.0633
<i>Axis Bank</i>	0.899271	0.3423
<i>Bank of Baroda</i>	0.615937	0.4318
<i>Federal Bank</i>	1.947345	0.1628
<i>HDFC Bank</i>	2.940723	0.0867
<i>ICICI Bank</i>	0.022977	0.8792
<i>IDFC Bank</i>	0.283584	0.5936
<i>Indusind Bank</i>	0.004927	0.9439
<i>Kotak Bank</i>	0.071363	0.7889
<i>Panjab National Bank</i>	0.183553	0.6676
<i>SBI</i>	0.143853	0.7038
<i>Yes Bank</i>	1.139619	0.2852
<i>RBL Bank</i>	0.169196	0.6797

Source: Compiled using E-views and MS Excel

Heteroskedasticity Test

H0: Data is Homoscedastic

H1: Data is Heteroskedastic

Above table shows the heteroskedasticity test for Nifty Bank Index & 12 banks listed under it. Prob. Chi-square value for nifty bank index & all other bank is more than 0.01 at 1% level of significance hence we fail to reject the null hypothesis which mean the data is homoscedastic and there is no problem of heteroskedasticity so the results are favourable for study.



Table No: 4 Showing GARCH Regression Model:

Nifty Bank Index	Coefficient	Standard Error	Z-Statistic	P-Value
<i>Nifty Bank</i>	-0.617322	0.367448	-1.680025	0.0937*
<i>Axis Bank</i>	-0.283731	0.587857	-0.482654	0.6296
<i>Bank of Baroda</i>	3.850581	2.200048	1.750226	0.0801*
<i>Federal Bank</i>	-1.235401	0.709939	-1.74015	0.0826*
<i>HDFC Bank</i>	-0.714012	0.302523	-2.360194	0.0187**
<i>ICICI Bank</i>	1.060732	2.620768	0.404741	0.6857
<i>IDFC Bank</i>	2.131771	1.570499	1.357385	0.1747
<i>Indusind Bank</i>	-1.467718	0.430111	-3.412418	0.0007***
<i>Kotak Bank</i>	0.063974	0.02909	2.199159	0.0279**
<i>Panjab National Bank</i>	22.00386	6.265265	3.51204	0.0004***
<i>SBI</i>	0.832487	0.531617	1.565952	1174
<i>Yes Bank</i>	1.693655	0.946237	1.789886	0.0735*
<i>RBL Bank</i>	-1.543124	0.647063	-2.384811	0.0179**

Note: \*\*\* 1% level of significance, \*\*5% level of significance and \* 10% level of significance.

Source: Compiled using E-views and MS Excel

At 1% level of significance Indusind Bank & PNB Bank has a P value less than 0.01 i.e. 0.007 & 0.0004 respectively. Hence we reject the null hypothesis which indicates that there is a significant impact of demonetization on stock returns of Indusind Bank & PNB Bank. But the coefficient value for Indusind Bank is negative i.e. -1.46778 which shows a negative impact where as PNB have a positive coefficient which shows a positive impact.

Null hypothesis get rejected at 5% level of significance for stock returns of HDFC Bank, Kotak bank & RBL bank as their P-value is less than 0.05 which shows a significant impact of demonetizations on it. Kotak Bank has a positive impact of demonetization as it has a positive coefficient value i.e. 0.063974 where as HDFC bank and RBL bank has a negative impact as it has a negative coefficient value i.e. -0.714012 & -1.543124 respectively.

Nifty Bank index, Bank of Baroda, Federal Bank, Yes Bank has a significant impact of demonetization announcement at 10% level of significance since it has P-value less than 0.10 i.e. 0.0937, 0.0801, 0.0826 & 0.0735 respectively. Nifty Bank Index & Federal Bank has significant negative impact while Bank of Baroda & Yes bank has a positive impact of demonetization announcement. Axis Bank, ICICI Bank, IDFC Bank & SBI Bank does not have a significant impact of demonetization announcement on its share prices or stock returns.

## 7. CONCLUSION:

There is a negative impact of demonetization on Nifty Bank Index, Federal Bank, HDFC Bank, Indusind Bank & RBL bank which state that returns on these stocks has decrease due to announcement of demonetization. Bank of Baroda, Kotak Bank, PNB & Yes Bank has a significant positive impact of demonetization announcement as its returns have improved due to demonetization. Returns on Axis bank stock, ICICI bank stock, IDFC Bank & SBI has not affected due to demonetization announcement in India.

The present study is useful for the investors, government & various stock holders of selected banks to examine the impact of demonetization on Nifty Bank Index & banks listed under its thereby frame the necessary policies for bank operating in India. This study also helps the academicians & teaching to understand the impact of demonetization on banking sectors. These also exist a scope for further search as present study only focus on the banks listed on NSE banking sector. The period of the study can be extended & further comparative study can be done on private & public sector banks.

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