A Multivariate Panel Data Analysis on Nexus between Banks Stock Returns and Institutional Specific Profitability Determinants of Commercial Banks listed in BSE

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ABSTRACT

This study investigates the dynamic nexus between commercial banks stock returns and banking sectoral profitability indicators for the period 2004-2005 to 2014-2016. The study aims to find the association between banks stock returns and institutional specific factors with the help of econometrics tools such as Panel Unit Root Test Analysis, Panel Johansen Fisher Panel Cointegration Test, Granger Casualty and Panel Data Regression (Random Effect Model). The analytical results revealed the long term relationship between bank stocks return and profitability determinants of commercial banks listed in during the study period. It is found that all the profitability variables are cointegrated with bank stocks return of commercial banks. It is also observed from the results that exogenous variables such as Return on Assets (ROA), Return on Equity (ROE), Operating Profits to Total Assets (OPTA), Deposits to Total Liabilities (DPTL) ,Return on Advances (ROAD), Secured Advances to Total Advances (SATAD), Non-Performing Assets to Total Assets (NPATA) and Repo Rate (RR) have prodigious effect in determining the movement of bank stocks return of listed commercial banks.

1. INTRODUCTION

Commercial Banks have witnessed tremendous changes in its functioning post banking reforms introduced during the year 1991. In the wake of stock market integration at global level, international major episodes like global financial crisis, Chinese currency devaluation and Asian financial crisis. Indian commercial banks are no exception to these phenomena. Surprisingly, Indian commercial banks were unaffected by the sweeping changes of global economic meltdown. The US Sub-prime crisis was a big lesson for the banks which extended loans without proper scrutiny of loan applications. Macroeconomic indicators have also its own contribution to the volatility level of banks stock return. Monetary policy rate also has its influence on banks stock returns. With this few brief prelude, the paper has been organised as follows: Section 2 reviews the existing literature related to banks stock returns at global level. Section 3 presents the research design and methodology. Section 4 discusses the empirical results and Section 5 concludes.

2. REVIEW OF LITERATURE

Maysami and Koh (2000) tested the relationships between the Singapore stock index and selected macroeconomic variables over a seven-year period from 1988 to 1995 and they found that there existed a positive relationship between stock returns and changes in money supply but negative relationships between stock returns with changes in price levels, short- and long-term interest rates and exchange rates. Their results showed that high inflation in Indonesia and Philippines influences the long-run negative relation between stock prices and the money supply, while the money growth in Malaysia, Singapore, and Thailand induces the positive effect for their stock markets. The exchange rate variable is positively related to stock prices in Indonesia, Malaysia, and Philippines, yet negatively related in Singapore and Thailand. **Yusof et al. (2006)** employed the autoregressive distributed lag model (ARDL) to examine the long run relationship between macroeconomic variables and stock returns in Malaysia. The macroeconomic variables tested in the study are the money supply, industrial production index, real effective exchange rate, and treasury bill rates. As hypothesized, money supply is found to be positively related to the changes in stock prices while exchange rate has negative effect on stock prices in the Malaysian m a r k e t .

Mohammad et al. (2009) establish the association between share prices of KSE (Karachi Stock Exchange) and foreign exchange reserve, foreign exchange rate, industrial production index, wholesale price index, gross fixed

capital formation and broad money in the context of Pakistan. The result shows that after the reforms in 1991 the influence of foreign exchange rate and foreign exchange reserve significantly affected the stock prices. Other variables like whole sale price index, and gross fixed capital formation insignificantly affected stock prices while external factors like money supply and foreign exchange affected prices positively. **Ahmad, Rehman, Raoof (2010)** observed the impact of interest rate and exchange rate to the Stock Return in Pakistan. The dependent variable used in their research is the stock return of KSE-100, where the independent variables used are interest rate and exchange rate (Rs/USD). The data is collected from the State Bank of Pakistan and Karachi Stock Exchange over period of 1998 – 2009 on yearly basis. As a result of multiple regression model analysis, it shows that the change in interest rate and exchange rate has a significant impact on stock returns. The change in interest rate giving negative impact, while change in exchange rate giving positive to the stock returns. **AhmetBüyükşalvarcıb(2010)** analyzed the effect of seven variables of macroeconomics in the Turkish Stock Exchange Market using the Arbitrage Pricing Theory framework. The method used in processing the data is Multiple Regression with seven variables macroeconomic (variables consumer price index, money market interest rate, gold price, industrial production index, oil price, foreign exchange rate and money supply) as independent variables and Turkish stock market Index (Istanbul Stock Exchange Index-100) as dependent variable. The data used are monthly basis over the period of January 2003 to March 2010. As a result, interest rate, industrial production index, oil price, foreign exchange rate has a negative effect while money supply has positive impact on ISE-100 Index returns. Moreover, inflation rate and gold price do not have any significant effect on ISE-100 Index returns. **Xiufang Wang (2010)** found that there is a unidirectional causal relationship between stock market volatility and interest rate volatility, with the direction from stock prices to the interest rate between bank stock and macroeconomic of important for financial and economic stability. The model included were GDP growth, inflation, house price inflation, federal funds rate and banking sector. The study found, expansionary shock shows the average bank risk decline and average bank lending increases. Further, the heterogeneity banks were characterized by idiosyncratic shocks. Also borrowing of larger banks increase risk of riskier and domestic banks has more response to house price shock. **Xiufang Wang (2011)** try to find some evidence on the relationship between stock price and macroeconomic variables (Real GDP, CPI, short term interest rate) in China Stock Market. The research is aim to estimate the volatility of each variable using Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) and determine the causal relationship between the stock price volatility and macroeconomic variables by using Lag-Augmented VAR (LA-VAR) models. The first finding of these research is there is no causal relationship between stock price and real GDP volatility. Bilateral causal relationship is found between inflation and stock price volatility. **Saeed and Akhter (2012)** determined the effects of macroeconomic variables on stock prices and investment decisions has preoccupied the minds of economists. In the literature, there are many empirical studies that disclose the relationship between macroeconomic variables such as interest rate, inflation, exchange rates, money supply, etc., and stock prices. **Hsing. Y (2012)** applied the exponential GARCH model to examine the macroeconomic factors that influenced the Argentine stock market index. The author chosen real GDP, money policy, fiscal policy, the exchange rate, the world stock market as represented by the U.S. stock market index, and the inflation rate. His results indicated that the Argentine stock market index is positively associated with real GDP, the ratio of M2 money supply to GDP, the peso/USD exchange rate and the U.S. stock market index, while negatively influenced by the money market rate, government spending as a percent of GDP and the inflation rate. **Laichena and Obwogi (2015)** sought to determine the effects of macroeconomic variables on stock returns in East Africa. Their study used stock returns, interest rate, inflation, exchange rate and GDP of the 3 East African countries from 2005 to 2014. Their multiple regression results using random effects model indicated a significant and negative relationship between stock returns and both exchange rates and interest rates, while displaying a significant but positive relationship between stock returns and both inflation and GDP.

3. RESEARCH DESIGN

3.1. Statement of the Problem

Commercial Banks performance have come under the keen scrutiny by regulatory bodies like Reserve Bank of India and Securities Exchange Board of India. Bank stock returns are affected by various macroeconomic factors such as GDP, inflation rate, exchange rate, and credit growth. In addition to this, RBI's Monetary Policy Rates are also having its critical impact on the movement of bank stock in the capital market. It has implication on banks commercial banks return and risk level in the market. Apart from this, the movement of stock or the performance of banex predominantly dependent on the financial figures of listed commercial banks. Audited financial statements play a crucial factor in investment decisions made by the players, investors and other stakeholders. To be more specific, financial ratios provide clear cut indication about the financial health of the commercial banks. The financial results serve as the basis for fluctuating prices of bank stock. In this context, the researcher has taken an effort to analyze the interface between bank stock returns and institutional specific factors.

3.2. Objectives of the Study

The following objectives are outlined for the study.

1) To analyse the existence of stationary of the bank specific profitability determinants and stock returns of commercial banks listed in BSE.

2) To examine the long run and causality relationship between stock returns of commercial banks listed in BSE and bank specific profitability determinants.

3) To evaluate the impact of bank specific profitability determinants on stock returns of commercial banks listed in BSE.

3.3. Statement of Hypotheses

Based on the above mentioned objectives, the following hypotheses are formulated and tested.

1. **H_0** Bank specific profitability determinants and stock returns of commercial banks listed in BSE do not have stationarity during the study period.
2. **H_0** Bank specific profitability determinants and stock returns of commercial banks listed in BSE are not cointegrated with each other.
3. **H_0** Bank specific profitability determinants do not granger cause stock returns of commercial banks listed in BSE and vice versa.
4. **H_0** Bank specific profitability determinants are not having significant relationship with stock returns of commercial banks listed in BSE.

3.4. RESEARCH METHODOLOGY

3.4.1. Nature of the Study

The study is descriptive and analytical in nature. It describes the impact of banking sectoral profitability indicators on Bank Stock Returns.

3.4.2. Sources of Data

The study primarily depends on secondary data. Ratios and other financial variables are heavily drawn from "Statistical Tables Relating to Banks in India" published by Reserve Bank of India. Data for macroeconomic factors have been compiled from "Handbook on Statistics of Indian Economy" published by RBI. Bank stock returns of 27 commercial banks listed in Bombay Stock Exchange have been taken from "Historical Data of Stock Prices" in BSE website.

3.4.3. Sampling Framework

For the purpose of the study, the researcher has taken totally 27 commercial banks listed in Bombay Stock Exchange of India. 16 public sector banks and 11 private sector banks have been taken based on the consistency and availability of data. The list of sample commercial banks chosen for the study is shown in Annexure 1.

3.4.4. Research Instruments

The study has employed the following econometrics tools for analysis of macroeconomic data.

1. Panel Unit Root Test
2. Johanson Fisher Panel Cointegration Test
3. Granger Causality Test and
4. Panel Data Regression Analysis (Random Effect Model)

3.4.5. Period of the Study

The study is analytical in nature and the present study uses the latest available secondary data published by RBI for the 12 years starting from 2004-2005 to 2015-2016. **3.4.6. Limitations of the Study**

1. The study has heavily dependent on secondary data which does not reflect the qualitative aspects like investors psychology on price movement.
2. The study has taken listed commercial banks based on the availability of data for the study period, which do not represent the entire population of listed commercial banks.

3.4.7 Summary of Variables used in the study and its Expected Relationship

ENDOGENOUS VARIABLE	**EXOGENOUS VARIABLES**	**Expected Relationship**
BANK-STOCK RETURN –BANK SR	Return on Assets - ROA	+
	Return on Equity - ROE	+
	Net Interest Margin to Total Assets - NIMTA	+
	Operating Profit to Total Assets - OPTA	+
	Return on Advances - ROAD	+
	Deposits to Total Liabilities - DPTL	+
	Private Sector Lending - PVSL	+/-
	Secured Advances to Total Advances - SATAD	+/-
	Non-Performing Assets to Total Assets- NPATA	-
	Repo Rate - RR	+/-
	Gross Domestic Product - GDP	+
	Inflation Rate - IR	-

3. ANLAYSIS AND DISCUSSION OF EMPIRICAL RESULTS

4.1 – Econometrics Analysis of Bank Stocks Return and Bank Specific Profitability Determinants

The empirical evidence of the impact of banking institutional specific profitability determinants on banks stock returns of listed in BSE based on data of commercial banks over the period 2005-2016 is presented in this section. This section highlights the descriptive statistics of the selected variables, the correlation matrix, and finally the empirical panel data analysis with random effect model.

4.1.1 –Descriptive Statistics of Bank Stocks Return and Bank Specific Profitability Determinants

	BANK SR	DPTL	GDP	IR	NIMTA	NPAPTA	OPTA	PVSLR	ROA	ROAD	ROE	RR	SATAD
Mean	5.1070	4.4231	2.0350	2.0200	0.9764	-0.43862	0.6457	3.8840	-0.1363	9.9864	2.6224	1.9254	4.4380
Median	5.0294	4.4522	1.9740	1.8764	0.9969	-0.59220	0.6981	3.9037	0.0099	9.9548	2.7775	2.0149	4.4520
Maximum	7.9413	4.5119	2.2580	2.7060	1.5454	4.72552	1.2612	3.9734	0.7030	14.960	3.4537	2.1400	4.5983
Minimum	2.6775	3.9558	1.7221	1.5912	0.0769	-3.91202	-3.2188	3.6740	-3.9120	7.1329	-1.0498	1.6094	4.1734
Std. dev	1.1650	0.0905	0.1681	0.3278	0.2213	1.19463	0.4143	0.0896	0.6070	1.3852	0.5302	0.1684	0.0849
Skewness	0.1780	-2.8261	-0.0950	0.6105	-0.3261	1.30355	-3.5520	-1.0733	-1.8016	0.3784	-2.2830	-0.8247	-0.3834
Kurtosis	2.1967	12.107	1.8389	2.2562	3.4585	6.36785	29.027	3.0605	8.7873	2.9776	12.285	2.4594	2.6454
Jarque-Berg	10.390	1546.283	18.6354	27.514	8.5559	244.1277	9796.05	62.071	625.50	7.7148	1441.2	40.549	9.6062
Probability	0.0055	0.0000	0.0000	0.0000	0.0138	0.00000	0.0000	0.0000	0.0000	0.0211	0.0000	0.0000	0.0082
Sum	1650.055	1428.708	657.3181	652.48	315.3873	-141.6756	208.58	1254.544	-44.055	3225.630	847.05	621.90	1433.493
Sum sq.Dev	437.069	2.6419	9.1066	34.612	15.7725	459.5433	55.276	2.5876	118.64	617.894	90.542	9.1340	2.3242

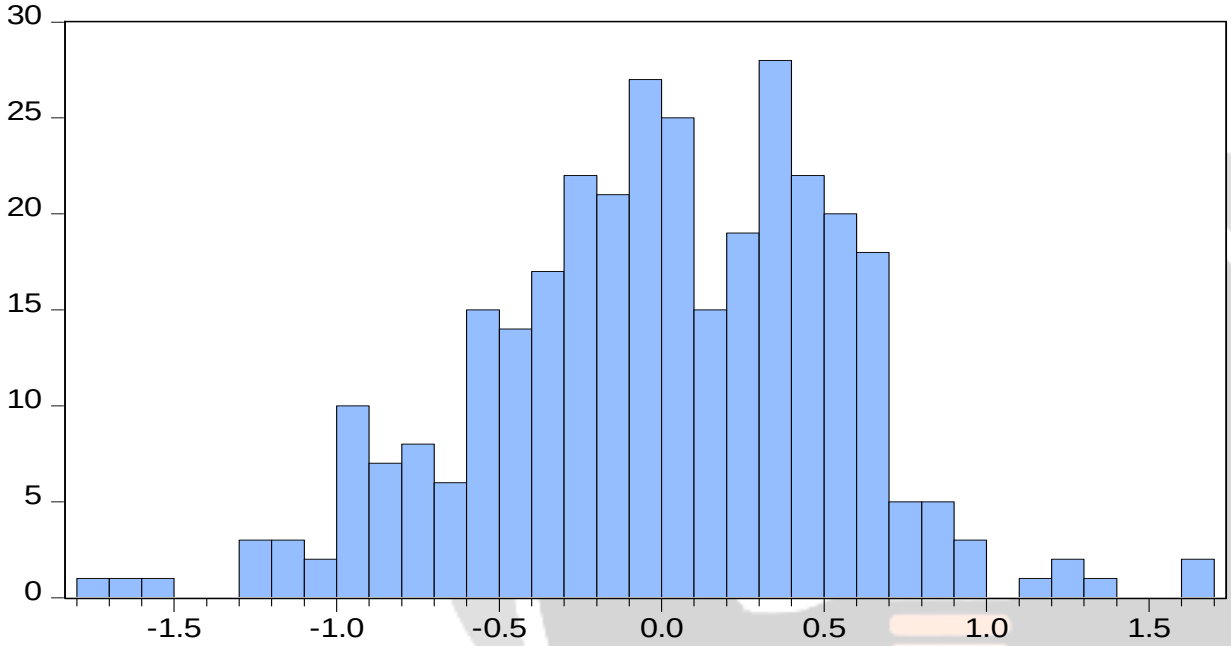
These statistics are generated to give overall description of the data used in the model and enable to screen the data for any suspicious figure. The key descriptive measures are the mean, standard deviation, the minimum and the maximum values of the variables over the period under consideration. Mean explains the average value of observations and standard deviation indicates deviation/ change of data from mean. It is particularly observed from the table that Banks Stock Return present a high disparity between banks with a minimum of 2.677% and a maximum of 7.941%. Concerning the macroeconomic variables, Gross Domestic Product (GDP) has the highest standard deviation and it has a mean value of 2.035%.. The summary statistics indicate that the macroeconomic series are normally distributed with the Jarque-Bera statistics probability value greater than the benchmark of 0.05 (values ranges from 7.7148 to 9796) and no essential variables are omitted from the endogenous variables.

4.1.2 – Correlation Matrix of Bank Specific Profitability Determinants

	ROA	ROE	NIMTA	OPTA	ROAD	DPTL	PVSL	SATAD	NPATA	RR	GDP	IF
ROA	1											
ROE	0.059113	1										
NIMTA	-0.013099	-0.24419	1									
OPTA	-0.160674	-0.06872	-0.09396									
ROAD	-0.141243	-0.11193	-0.1383(	0.0239								
DPTL	-0.298662	-0.03112	0.12054	0.6348	0.01428	1						
PVSL	-0.100543	-0.33763	0.15256	-0.248	0.22948	-0.1401	1					
SATAD	-0.279322	-0.09238	0.21540	0.4699	-0.0470	0.5084	-0.0753	1				
NPATA	-0.007105	-0.31944	0.33967	0.1185	0.12378	0.0437	0.4516	0.1536	1			
RR	-0.011652	-0.14466	0.22635	0.3571	-0.1679	0.3869	-0.1643	0.7927	0.0150	1		
GDP	-0.065276	-0.09945	-0.3300(	0.0215	0.10947	-0.0798	0.3707	-0.1051	0.1898	-0.145	1	
IF	0.195089	-0.20952	-0.1877	-0.058	0.18226	-0.1367	0.1451	-0.0970	0.3735	-0.163	0.1921	1

Table 4.1.2 exhibits the correlation matrix for all the variables incorporated into the model. The coefficient of correlation provides an index of the direction and the magnitude of the relationship between two set of scores without implying causality. The sign of the coefficient is an indication of the direction of the relationship. The absolute value of the coefficient indicates the magnitude. Correlation matrix is useful to the extent that it reveals it reveals that whether there are elements of multicollinearity in the data. Multicollinearity is the situation when some or all of the explanatory variables are highly related making it difficult to tell which of them is influencing the dependent variable. The severity of multicollinearity would be manifested in a situation where all p-values of regression coefficients are insignificant but overall model having significant F statistic. Table 4.1.2 indicates the results of correlation matrix of study variables. The correlation coefficient of all the chosen variables implies the absence of multicollinearity problem as correlation co-efficient of all the variables are less than 0.80. The Non-Performing Assets to Total Assets (NPATA)has high correlation coefficient with Secured Advances to Total Advances (SATAD) followed by Deposits to Total Liabilities (DPTL). But, these two variables do not exceed the limit of 0.80.

Figure 4.1.1 Normality Tests



Series: Standardized Residuals	
Sample 2005 2016	
Observations 324	
Mean	1.37e-18
Median	0.024943
Maximum	1.662032
Minimum	-1.722238
Std. Dev.	0.540981
Skewness	-0.218964
Kurtosis	3.308565
Jarque-Bera	3.874410
Probability	0.144106

Normality Test

The Jargue-Bera (JB) test is conducted to test the normality of the residuals. Since the p-value is very high (0.144106), the JB test states that the variables are normally distributed.

Heteroskedasticity Test

The White test has been employed to test the presence of heteroskedsastic elements among the chosen variables and the robust standard errors have been presented to account for the presence of heteroscedasticity. Before running white test, the natural logarithm of all the variables are taken. The results indicated the residuals of study variables are homogenous.

Dignostic Test: Fixed Effects Vs Random Effects Model

The model delineating the stock returns of listed commercial banks is estimated using Panel Least Square method. The random effect panel regression model has been adopted, because the panel sample is adequately large enough to permit the use of Random Effects Model. To ascertain the selection of random effect model is appropriate, the hausman test is carried out and the results are presented in Table 4.1.3. The null hypothesis (Ho) supports the use of panel data regression model with random effect against the alternative (Ha) Since the estimated chi-square value (282.47Y) is highly significant, the fixed effect model is rejected and random effects model is fitted.

4.1.3 Panel Unit Root Test of Banks Specific Profitability Determinants and Bank Stock Returns of Commercial Banks Listed in BSE

Series: D (BANK_RETURN) Sample: 2005 2016. Exogenous variables: Individual effects

Method	**Statistics**	**Prob.****	**Cross Sections**
Null:Unit root(assumes common unit root process) Levin,Lin & Chu t*	-9.66578	0.0000	27
Null:Unit root (assumes individual unit root process) Im,Pesaran and Shin W-stat	-6.33957	0.0000	27
ADF-Fisher Chi-square	143.807	0.0000	27
PP-Fisher Chi-square	342.719	0.0000	27

****Probabilities for Fisher tests are computed using an asymptotic Chi-square diustribution. All other tests assume asymptotic normality**

Table 4.1.3 displays the results of panel unit root test of chosen variables. It is important that bank specific profitability variables used in the study must be stationary. If the variables are not stationary, it is assumed that they include stochastic or deterministic trends. As non-stationary variables lead to spurious regression between variables which in turn cause distorted results. In order to check whether the cross-sectional series data are stationary or non-stationary, Panel Data Unit Root test has been applied. The analytical results reveal that all the endogenous and exogenous variables are non- stationary at level. But, when first difference of these variables are taken, they are stationary at first difference. The rejection of null hypothesis against the alternative hypothesis implies that all the time series variables are stationary and integrated the order of zero i.e., 1(1).

Table 4.1.4
Jahonsen Fisher Panel Cointegration Test of Banks Specific Profitability Determinants and Bank Stock Returns of Commercial Banks Listed in BSE

Pairwise	**Trace Statistic**	**Critical Value (5%)**	**Max-Eigen Value**	**Critical Value (5%)**
BANK SR - ROA	190.2	15.59471	152.8	14.26460
	129.2	3.841466	129.2	3.841466

BANK SR - ROE	173.8	15.59471	140.4	14.26460
	120.6	3.841466	120.6	3.841466
BANK SR -NIMTA	138.3	15.59471	108.9	14.26460
	109.7	3.841466	109.7	3.841466
BANK SR - OPTA	168.1	15.59471	143.2	14.26460
	110.2	3.841466	110.2	3.841466
BANK SR - ROAD	210.6	15.59471	182.6	14.26460
	119.4	3.841466	119.4	3.841466
BANK SR - DPTL	164.1	15.59471	132.3	14.26460
	118.3	3.841466	118.3	3.841466
BANK SR - PVSL	249.1	15.59471	209.6	14.26460
	130.9	3.841466	130.9	3.841466
BANK SR -SATAD	145.8	15.59471	128.1	14.26460
	89.10	3.841466	89.10	3.841466
BANK SR -NPATA	157.1	15.59471	148.9	14.26460
	78.99	3.841466	78.99	3.841466
BANK SR - RR	180.1	15.59471	147.5	14.26460
	128.1	3.841466	128.1	3.841466
BANK SR - GDP	164.1	15.59471	132.3	14.26460
	118.3	3.841466	118.3	3.841466
BANK SR - IF	154.0	15.59471	138.2	14.26460
	94.29	3.841466	94.29	3.841466

Table 4.1.4 represents the bivariate Johansen Fisher Panel Cointegration Test results of banks specific profitability determinants and bank stock returns of commercial banks listed in BSE. Johansen Cointegration analysis helps to determine whether there is a cointegrating relationship between the variables or not. The study has applied Johansen Fisher Panel method of cointegration to find whether there is more than one cointegration relationship among the variables. In order to accept the cointegrating relationship between variables, Trace and Max-Eigen Statistics value should be higher than the critical value at 5% significance level. The results indicate that all the variables are cointegrated with endogenous variable banks stocks return. Hence, it can be concluded that there are 12 cointegrating equation among the variables based on Maximum-Eigen value.

Table 4.1.5
Granger Causality Test of Banks Specific Profitability Determinants and Bank Stock Returns of Commercial Banks Listed in BSE

Null Hypothesis	**F-Statistic**	**Prob.**	**Result**
ROA does not Granger Cause BANK SR	2.78705	0.0634	Rejected H_o
BANK SR does not Granger Cause ROA	2.30100	0.1022	Accepted H_o
ROE does not Granger Cause BANK SR	2.97828	0.0526	Rejected H_o
BANK SR does not Granger Cause ROE	1.56594	0.2108	Accepted H_o
NIMTA does not Granger Cause BANK SR	3.45563	0.0330	Rejected H_o
BANK SR does not Granger Cause NIMTA	4.36106	0.0137	Rejected H_o
OPTA does not Granger Cause BANK SR	2.97403	0.0528	Rejected H_o
BANK SR does not Granger Cause OPTA	5.44993	0.0048	Rejected H_o
ROAD does not Granger Cause BANK SR	4.80209	0.0089	Rejected H_o
BANK SR does not Granger Cause ROAD	5.65335	0.0039	Rejected H_o
DPTL does not Granger Cause BANK SR	0.80421	0.4485	Accepted H_o
BANK SR does not Granger Cause DPTL	3.03230	0.0499	Rejected H_o
PVSL does not Granger Cause BANK SR	8.12605	0.0004	Rejected H_o
BANK SR does not Granger Cause PVSL	2.87406	0.0582	Rejected H_o

SATAD does not Granger Cause BANK SR BANK SR does not Granger Cause SATAD	1.80255 1.80202	0.1669 0.1670	Accepted H_o Accepted H_o
NPAPTA does not Granger Cause BANK SR BANK SR does not Granger Cause NPAPTA	1.00897 2.40271	0.3660 0.0924	Accepted H_o Rejected H_o
RR does not Granger Cause BANK SR BANK SR does not Granger Cause RR	6.13585 0.01028	0.0025 0.9898	Rejected H_o Accepted H_o
GDP does not Granger Cause BANK SR BANK SR does not Granger Cause GDP	9.18726 21.3515	0.0001 3.E-09	Rejected H_o Accepted H_o
IR does not Granger Cause BANK SR BANK SR does not Granger Cause IR	11.6255 1.27124	1.E-05 0.2822	Accepted H_o Accepted H_o

Table 4.1.5 delineates the results of Granger Causality Test of banks stock return of commercial banks listed in BSE. Granger Causality Analysis is a statistical hypothesis test for determining whether one times series data is useful in predicting another. Granger causality test results have shown the bi-directional relationship between Bank Stocks Return (BANK SR) and Net Interest Margin to Total assets (NIMTA), Operating Profits to Total Assets (OPTA), Return on Advances (ROAD), Private Sector Lending (PVSL). Whereas all other profitability determinants such as Return on Assets (ROA), Return on Equity (ROE), Deposits to Total Liabilities (DPTL), Non-Performing Assets to Total Assets (NPATA) and Repo Rate (RR) have depicted uni-directional relationship with Bank SR. SATAD does not exhibit any causality relationship with bank stocks return.

Table 4.1.6
Panel Data Regression Analysis -Random Effect Model of Banks Specific Profitability Determinants and Bank Stock Returns of Commercial Banks Listed in BSE
Dependent Variable: BANK SR Method: Panel Least Squares Sample: 2005 2016

Periods included: 12 Cross-sections included: 27 Total Panel (balanced) observations: 324

Variable	**Coefficient**	**Std.Error**	**t-statistics**	**Prob**
C	29.86465	4.896328	6.099398	0.0000
ROA	1.003063	0.256333	3.913122	0.0001
ROE	-0.665216	0.270520	-2.459031	0.0145
NIMTA	0.214211	0.322166	0.664908	0.5066
OPTA	0.573197	0.163240	3.511370	0.0005
DPTL	-2.972935	0.711640	-4.177585	0.0000
ROAD	-0.177439	0.050381	-3.521975	0.0005
PVSL	-0.084533	0.716836	-0.117925	0.9062
SATAD	-2.112192	0.701391	-3.011433	0.0028
NPAPTA	0.164377	0.043075	3.816085	0.0002
RR	0.196027	0.345255	0.567775	0.5706
GDP	-0.094646	0.322322	-0.293637	0.7692
IR	0.555327	0.201928	2.750121	0.0063

R-squared	0.486764	Mean Dependent Variable	5.176127
Adjusted R-squared	0.466961	S.D dependent Variable	1.167732
S.E. of regression	0.852556	Akaike info criterion	2.558140
Sum Squared resid	226.0507	Schwarz criterion	2.709836
Log likelihood	-401.1486	Hannan-Quinn criterion	2.618689
F-statistic	24.57992	Durbin-Watson stat	0.761590
Prob(F-statistic)	0.000000		

Table 4.1.6 exhibits the summary results of Panel Data Regression Analysis with Random Effect Model. In order to control autocorrelation and heteroscedasticity, robust standard errors have been calculated by clustering the panel data. The value of F for chosen model is significant at 1% level of significance. The estimation results divulge that Return on Assets (ROA) has a statistically significant relationship with bank stock returns. The coefficient of Return on Equity (ROE) indicates a negative relationship with BANK SR. At the same time, its coefficient has been significantly related with endogenous variable bank stock returns. This result implies that 1% increase in ROE, reduces stock return to the point of 0.66521. The exogenous variable Return on Advances (ROAD) is negatively related with BANK SR. It denotes that the increase in Return on Advances is not adequate to the movement of bank stock return. However, this relationship proves to be statistically significant at 5% level of significance. In accordance with the expected relationship, Net Interest Margin to Total Assets (NIMTA) has shown a positive relationship with bank stock returns. However, the coefficient of Net Interest Margin to Total Assets (NIMTA) is having an insignificant relationship. In line with the expectation, the coefficient of Operating Profits to Total Assets (OPTA) shows a positive association with endogenous variable BANK SR and significantly related with BANK SR at 1% level of significance. This result implies that increase in operating profits lead to the positive movement of bank stock returns. An important determinant of bank stock return is the level of deposits which has a large coefficient with positive sign and statistically significant as well. It is also consistent with our expectation. The coefficient of Private Sector Lending (PVSL) is having a highly insignificant association with BANK SR. The coefficient of Secured Advances to Total Advance (SATAD) is having a negative association with bank stocks return. However, this result is statistically significant. Hence, it can be interpreted that collateral security received on loans is not adequate. Similarly, there exists a positive and significant relationship between Non Performing Assets to Total Assets (NPATA) and bank stocks return. So, increase in NPA level do not affect bank stocks return adversely. Gross Domestic Product (GDP) has a negative association with BANK SR. It means that increase in GDP reduces bank stock return. But this result is not statistically significant. Hence, it can be inferred that interest rate is one of the factors for mounting NPAs in the banks. The influence of monetary policy rate Repo Rate on BANK SR is negligible. In contrast to our expectation, Inflation Rate (IR) has a positive relationship with BANKSR and its coefficient is statistically significant at 5% level of significance. R^2 value of the model explains the endogenous variable to the extent of 48% as Likewise, the adjusted R^2 value is also good which implies the goodness of the fil of the model. However, other variables like all monetary policy rate and some other macroeconomic factors may give better explanation about bank stocks return movement. As Durbin Watson statistics value is less than 2, there is no problem of auto correlation among the cross sectional data series.

5. Concluding Remarks:

This empirical study has analysed the impact of institutional specific profitability determinants on Bank Stocks Return using the econometrics tools for the period 2005-2017. The bivariate cointegration results revealed that all the bank specific profitability determinants are cointegrated with Bank Stocks Return of commercial banks listed in BSE. It is also found from the analysis that exogenous variables Return on Assets (ROA), Return on Equity (ROE), Deposits to Total Liabilities (DPTL), Non-Performing Assets to Total Assets (NPATA) and Repo Rate (RR) are having uni-directional causality relationship with Bank Stocks Return. Whereas determinants like Net Interest Margin to Total assets (NIMTA), Operating Profits to Total Assets (OPTA), Return on Advances (ROAD), Private Sector Lending (PVSL) granger caused Bank Stocks Return in bi-directional mode. It can be concluded that bank specific determinants such as Return on Assets (ROA), Return on Equity (ROE), Operating Profits to Total Assets (OPTA), Deposits to Total Liabilities (DPTL),Return on Advances (ROAD), Secured Advances to Total Advances (SATAD), Non-Performing Assets to Total Assets (NPATA) and Repo Rate (RR) cause monumental upshot on bank stocks return of listed commercial banks.

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Annexure 1

S.No	Listed Public Sector Banks	S.No	Listed Private Sector Banks
1.	State Bank of India	1.	City Union Bank
2.	Allahabad Bank	2.	Dhanlaxmi Bank
3.	Andhra Bank	3.	Federal Bank
4.	Bank of Baroda	4.	Jammu and Kashmir Bank
5.	Bank of India	5.	Karnataka Bank
6.	Bank of Maharashra	6.	Karur Vysya Bank
7.	Canara Bank	7.	South Indian Bank
8.	Corporation Bank	8.	Axis Bank
9.	Dena Bank	9.	HDFC Bank
10.	Indian Overseas Bank	10.	ICICI Bank
11.	Oriental Bank of Commerce	11.	Indusind Bank
12.	Punjab National Bank	Listed Public Sector Banks = 16 Listed Private Sector Banks = 11 Total Sample Banks Chosen = 27	
13.	Syndicate Bank		
14.	UCO Bank		
15.	Union Bank of India		
16.	Vijaya Bank		