IMPACT OF BANK CREDIT AND BROAD MONEY ON
ECONOMIC GROWTH OF INDIA

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Abstract: *This paper examines the relationship between total Bank credit, liquid liability and Gross domestic product in India over the period of 2000-2014. This study mainly focuses on direction of causality between financial development and economic growth of India. The ADF unit root test indicated that the variable of the study are stationary at second difference .Johnson Co- integration test proven that through trace statistic and Max Eigen Statistic LNM3 and LNTBC and LNGDP all are Co-integrated. LNGDP and LNM3 has Positive associate in the long run. LNGDP and LNTBC has negative associate in the long run. This study recommend that Liquid liability (Broad money) which is control variable is positive associate with economic Growth. Total Bank Credit has causality with GDP but it is negative associate with Indian economy.*

Key words: *Total Bank Credit, Broad Money, Gross Domestic product, Granger Causality.*

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INTRODUCTION

Financial intermediaries are playing vital role in economic growth of any country. Financial development and economic growth are dependent on each other. Banking sector is main back bone of this financial sector in India. Broad money and Total Bank Credit took as main variable for financial development there are relationship with economic development.

Money supply is needed for financing the monetary growth of an economy. Monetary growth is related with the demand for money which may arise due to increase in real GDP or increase in monetary phenomenon in an economy.

The need of each of the economic agent within the economy varies in accordance with their functions. To meet with these pressing needs however, each of the economic agents contends for scarce financial resources available within the financial system. For instance, co-operate organizations need fund to procure machineries and equipments needed for the production of goods and services, Farmers obtain credit to purchase seeds, insecticides, fertilizers and erecting of various kinds of farm buildings. Government bodies source for credit to enable them meet with various kinks of recurrent and capital expenditures.

LITERATURE REVIEW

Aniekan O. Akpansung1 and Sikiru Jimoh Babalola2, (2008) Banking Sector Credit and Economic Growth in Nigeria: An Empirical Investigation. In this research examine relationship between banking sector credit and economic growth in Nigeria over the 1970-2008.Also to find direction of causality between banking sector credit and economic growth. They use variable such annual bank credit to private sector, GDP Gross Domestic Product at current basic price, Lending Rate of commercial bank, industrial production index. The researcher were used Granger causality test, Two stage least square, the study prove that private sector credit impact positively on economic growth over period of coverage in this study. Financial market development that favor more credit to private sector in order to encourage economic growth.

Abdulsalam Abubaka Ibrahim Musa Gani, (April 2013) Impact of Banking Sector Development on Economic Growth: Another Look at the Evidence from Nigeria[1]: this paper main aim to reexamined the long run relationship between financial - growth nexus in Nigeria over the period of 1970-2010. In this research Co-integration and Vector Error

Correction Modeling (VECM) were used for analyze the data. They were used variable as ratio of liquid liabilities of Commercial bank to nominal GDP, other variable include like government expenditure and tread openness. The study revealed that in the long-run, liquid liabilities of commercial banks and trade openness exert significant positive influence on economic growth, conversely, credit to the private sector, interest rate spread and government expenditure exert significant negative influence.

RESEARCH OBJECTIVE

- To find out relationship between bank credit and GDP of India during study period.

- To measure loan run relationship of variable which indicate of the financial development and economic growth?

- To find out direction of causality between financial development and economic growth.

RESEARCH METHODOLOGY

This research study used semi- annually time series data from 2001 to 2014. This is obtained from the central bank of India (RBI Statistics data). The first indicators of financial growth in banking sector are the measuring financial depth and size of financial intermediation. This study mainly focus on impact of bank credit on economic growth in India during 2001 to 2012 so to achieve this log form Johnson co-integration and Error correlation method model will be adopted for this research. Financial development indicators are total bank credit and liquid liabilities of India. Liquid liabilities are sum total of demand deposit saving and time deposits. It is also known as broad money. Developing countries a large component of broad money (M3) stock is currency held outside the banking sector.

ECONOMETRIC MODEL

To find out long run relationship between the variable of this study a co-integration and Error correction model is used to establish long run relationship between variable and equilibrium relationship is said to exist when the variable in the model are co-integrated. In this research using Johansen co-integration model in sequential steps are followed. First identify the stationary status of the variable. The variable are integrated of the same order may be co-integrated. Hence the Augmented dickey fuller test applied. This test applied on variable in level and first level difference. The second steps involve the determination of lag

length to be included in the Johansen co-integration test and subsequent VECM. The choice of lag length is determine by Akaike information criterion (AIC).Last conducted the co integration relationship and co- integration is proven to exist between the variables, then the third step will require the construction of an ECM to model the dynamics of the relationship. The reason behind ECM is to determine the speed of adjustment from the short-run disequilibrium to the long-run equilibrium state.

DATA ANALYSIS AND RESULT

In this part of the study is analysis and interpretation of result of econometric analysis adopted in this work. So begun with analysis was a test for stationarity conducted using augmented dickey fuller test.

ADF result at level

Variable	ADF Test Statistic	1%	5%	10%	Lag	Order of Integration
LGDP	0.216305	3.769597	3.004861	2.642242	3	Non- Stationary
LM3	0.534356	3.752946	2.998064	2.638752	3	Non- Stationary
LTBC	1.251562	3.737853	2.991878	2.635542	3	Non- Stationary

The result in above table reviles that all the variables in the model are non-stationary at level. Because analysis of ADF -T statistics less then critical value at the 1 % significant value. Based on this we difference the variables to see their outcome.

ADF result at first difference

Variable	ADF Test Statistic	1%	5%	10%	Lag	Order of Integration
LGDP	3.988758	3.769597	3.004861	2.642242	3	I(1)
LM3	2.784478	3.808546	3.020686	2.650413	3	I(1)
LTBC	12.68663	3.737853	2.991878	2.635542	3	I(1)

From the result of ADF test shown in table, it indicates that all the variables are integrated of same order one i.e I(1). In other words the result shows that LNGDP, LNTBC and LNM3 are stationary at 10% level of significance. Because ADF t Statistics value of variables greater than critical value at 10% level of significance. So that reject the null hypothesis means variable not unit and so, having established stationarity among the variable, we proceed to co-integration with a view to determining the number of co-integrating equation in the model.

Co-integration Model

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value
None *	30.55538	29.79707	0.0408	16.80220	21.13162
At most 1	13.75318	15.49471	0.0900	12.98500	14.26460
At most 2	0.768176	3.841466	0.3808	0.768176	3.841466

None*(H: 0 =There is no co-integration equation)

At most 1 (H: 0 = There is at least one co- integration equation.)

 At most 2 (H: 0= There are 2 co-integration equation.)

In this Johansen co- integration test for examination variables are integrated or not. The result of the co-integration analysis from above table indicates that at most one co-integrating equation exist in the model at 5% level of significance. Because first analysis of trace statistic of None* which is 30.55 greater than 5% critical value 29.79. Also probability value is 0.0408 which is less than 5%. So here test is rejected the null hypothesis. That means there is co-integration equation. At most 1 trace statistic is 13.75 which is less than 5% critical value 15.49. Also max Eigen statistic value is 12.98 is less than 5% critical value 14.26. It means there is at least one co-integration equation in the model.

Co integrating Equation(s):		Log likelihood	177.8314
Normalized co integrating coefficients		(standard error in parentheses)	
LNGDP	LNM3	LNTBC	
1.000000	2.439006	-2.818233	
	(0.65540)	(0.56629)	

From the above table indicate that what long run Johansen co-integration equation of relationship between dependent variable GDP and independent variable M3, TBC. So here LNM3 have 2.439 coefficient values and (0.65540) is error term of LNM3. It indicates that positive sign of 2.439 coefficient of LNM3 which means LNGDP and LNM3 variable has positive association in the long run. But LNTBC has negative sign. It means that LNGDP and LNTBC has negative associate in long run.

Pair wise Granger Causality Tests

Pair wise Granger Causality Tests			
Null Hypothesis:	**Observation**	**F-Statistic**	**Prob.**
LNM3 does not Granger Cause LNGDP	24	2.19409	0.1389
LNGDP does not Granger Cause LNM3		9.78101	0.0012
LNTBC does not Granger Cause LNGDP	24	3.47222	0.0518
LNGDP does not Granger Cause LNTBC		8.00651	0.0030
LNTBC does not Granger Cause LNM3	24	16.1380	8.E-05
LNM3 does not Granger Cause LNTBC		0.75974	0.4815

Pair wise granger causality tests indicated that relationship between this three variables such as Gross Domestic product, Broad money and Total bank credit. This test indicate that null hypothesis is LNM3 does not granger cause LNGDP here the F statistics 2.19409, probability value 0.1389 which is greater than 0.05 so it means that study accept null hypothesis. But LNGDP does granger cause LNM3 because probability value 0.0012 which is less than 0.05. So study reject null hypothesis. LNTBC does not granger cause LNGDP it prove by Probability value 0.0518 which greater than 0.05. LNGDP does ganger cause LNTBC because probability value is 0.0030 less than 0.05. So here study reject null hypothesis. LNM3 does not granger cause LNTBC it prove by probability value 0.4815 is greater than 0.05.

VECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.177367	0.237040	-0.748260	0.4659
LNGDP	-0.125597	0.30575	0.4107	0.6870
LNTBC	-0.1460	0.3244	0.45023	0.6590
LNM3	0.677957	0.67114	1.0097	0.3286
R-squared	0.930211	Mean dependent var		0.073168
Adjusted R-squared	0.897643	S.D. dependent var		0.096265
Log likelihood	52.32686	Hannan-Quinn criter.		-3.755180
F-statistic	28.56210	Durbin-Watson stat		2.105002
Prob(F-statistic)	0.000000			

Table Above summarizes the VECM results; it is indicate that the coefficient of dependent variable (LGDP) have negative sing (-0.177367) and probability value is 0.4659 greater than 5%. So through co-integrating equation prove that there is long run causality with LTBC and LM3. It is meaning that LTBC and LM3 have influence on dependent variable such as LGDP in

the long run. The result of the long-run model shown in above reviles that the coefficient of TBCPS is (-0.1460) with a probability value of 0.6590, which is greater than 0.05 meaning that bank credit in the long run has a negative and insignificant impact on the growth of Indian economy variable such as Gross Domestic Product. On the other hand the coefficient of M3 which was used as a control variable in the model is 0.677957 with a probability value of 0.3286 which is greater than 0.005 indicating that M3 has a positive and insignificant impact on the growth of Indian economy for the study period.

The result in table also shows R^2 value is 0.930211, which means that 93.02% of the variation in GDP is explained in the model leaving only less than 7% to the error term. This also means that the line of best fit was highly fitted. This shows that this model is the best model to explain the relationship between the variable under consideration. Durbin-Watson statistics value of 2.105002 shows the likely presence of autocorrelation in the model. The result of F-stat is (28.56210) and the probability of F-stat is 0.0000 which implies that the overall regression is statistically significant. This also means that all the independent variable taking together will impact significantly on the growth of Indian economy.

Short Run Model

Wald Test C4- C5 (LTBC to LGDP)			
Test statistic	Value	Df	Probability
F- Statistic	0.949361	(1, 15)	0.3453
Chi-square	0.949361	1	0.3299
Wald Test C6- C7 (LM3 to LGDP)			
Test statistic	Value	Df	Probability
F- Statistic	2.964246	(1, 15)	0.1057
Chi-square	2.964246	1	0.0851

C4- C5= 0 there is no short run causality from LTBC to LGDP.

C6- C7= 0 There is no Short run causality from LM3 to LGDP

Above table no (1) Wald test indicate that Short run relationship between total bank credit, Broad money with Gross Domestic Product. Here Chi-square probability value is 0.3299 which is greater than 0.05. it means null hypothesis accepted, so that there is no short run causality between LTBC and LGDP. Also table no (2) indicate that relationship between LM3 to GDP. Here the Chi-square of probability value is 0.851 which is greater than 0.05. It

means null hypothesis is accepted. This test proves that there is no short run causality from LTBC to GDP and from LM3 to GDP.

CONCLUSION

The LNTBC, LNM3 and GDP all are stationary at 10% level of significance. There are stationary at all variables which are selected for the study. Johnson Co- integration test proven that through trace statistic and Max Eigen Statistic LNM3 and LNTBC and LNGDP all are Co-integrated. LNGDP and LNM3 has Positive associate in the long run. LNGDP and LNTBC has negative associate in the long run. Pair wise granger cause test recommend that LNGDP does granger cause LNM3 because probability value 0.0012 which is less than 0.05. LNGDP does ganger cause LNTBC because probability value is 0.0030 less than 0.05. LNM3 does not granger cause LNTBC it prove by probability value 0.4815 is greater than 0.05. Vector Error Correction model proven that there is long causality with LNTBC and LNM3. So both variable influences to GDP in long run. And Wald test suggest that there are no short run causality between LM3 and LNGDP as well as LNTBC and LNGDP during study period. So this study recommend that Liquid liability (Broad money) which is control variable is positive associate with economic Growth. Total Bank Credit has causality with GDP but it is negative associate with Indian economy.

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