

IMPACT OF BANKING INSTITUTIONS ON NATIONAL ECONOMY AN EMPIRICAL STUDY OF TIME SERIES ANALYSIS IN PAKISTAN

Nouman Badar, Munib Badar***

Abstract

This paper examines the long and short term relationship of financial sector development on economic growth of Pakistan where development of financial sector is detected by the variables truly depicts the efficiency of financial sector i.e. Money Supply, size of Advances, Private sector Credit growth and Bank's equity with economic growth which is pronounced by Gross Domestic Product in this study. Data of almost 22 years ranges from 1992 to 2013 of overall banking industry is taken to obtain results by employing Johnson and Jusellious co integration technique to detect long run association while Granger Casualty test is used to determine cause and effect relationship and to measure short term dynamics Vector Error correction model is used. The result shows that both long and short run relationship exists between growth of financial sector and economy of Pakistan.

Key Words: Net interest income (NII), Non performing loans (NPL), Advances (AD), Equity (EQ), Gross Domestic Product (GDP) and Co integration Johanson and Jusellious

* *Research Fellow at Pakistan Agricultural Research Council*

** *IQRA University Islamabad, Pakistan*

1. Introduction

A Financial system that operates in a global, regional and at a firm specific level in an economy allows transferring money between investors and borrowers (Sullivan 2003). Gurusamy 2008 describes financial system as "a set of complex and closely interconnected financial institutions, markets, instruments, services, practices, and transactions." Banking company's ordinance 1962 Pakistan describes banking as to accept money for the purpose of lending or investment. Banks at one side helping government to meet its fiscal deficit and on the other side Banks provide loans to consumers and business for meeting their operating expenses and to enhance their scope of business. It is obvious that in any country an efficient financial system is a guarantee of quick economic growth. Likewise, previous studies reveals that there is strong link existed between an efficient financial system and economic growth of different economies.

In Pakistan since partition in 1947 Government owned financial institutions that had been ruling the overall banking industry, fulfilling financial needs of government, public and private enterprises (Khan 1995). It is witnessed in many other parts generally but particularly in Pakistan government owned banks leads to an inefficiency in banking sector on account of concentrated ownership of financial assets, undiversified portfolios of consumer and mortgage financing, limited product line, high taxes (Haque

1997). As banks are the credit generating machinery in any economy which is witnessed in Pakistan's scenario as inefficient resultantly led to low savings and investment which further results low growth in Private sector (Khan 1995).

A number of studies also revealed that there is the significant relationship exists between financial sector development and reformation with the economic prosperity and stability. It is rule of thumb a nation carries a good financial system have a greater likelihood of economic development. It is also evident that a financial system in any country is relatively highly regulated sector. In Pakistan State bank is acting as central bank and regulating nearly the whole financial system.

To avoid systemic risk and overall recession it has pivotal importance that the banks may generate sufficient amount of credit to provide liquidity to private sector on the similar time they overcome the perils associated to sanction this liquidity. It is guaranteed that for an efficient functioning of financial markets a strict supervisory and secure regulatory system may prevail (Caprio and Klingebiel, 1997). Similarly the reformation of financial system in consonance of the market based risk and to overcome distortion in market is very important (Mavrotas and Kelly, 2001). Financial sector in Pakistan remained under a continuous reformation process since early nineties, the objectives of these reforms were to maintain efficiencies, gearing up growth and to remove

inefficiencies of financial institutions (Faruqi, 2007). In order to improve the financial system of Pakistan, Government took multiple steps at Macro level for economy and restructuring program for financial system in consonance of advice, technical support and Banking sector adjustment Loan (BSAL) in 1996 of international agencies such as World Bank, IMF and Government of Japan.

The reforms in banking sector starts with the birth of Central Bank State bank of Pakistan from 1st July 1948 when Reserve bank of India has been serving as central bank of Pakistan right after the partition. State Bank of Pakistan Act was passed from Parliament in 1956 later Baking companies ordinance 1962 lay the foundation of regulatory requirement of financial institutions in Pakistan in short span of time of Pakistan's independence.

Ishrat Hussain (2005) Before current spell of banking reforms that started in early nineties Banks in Pakistan nourishing only basic needs of government organization, serving only those corporations influenced by politicians, there was no concentration on SMEs, agriculture sector which is the biggest sector in terms of employing people and likewise housing sector of Pakistan. Banks in Pakistan were fallen prey of administrative distortions and regulatory weaknesses. The main reason was that the banks were used to concede loan to government because it was the safest mode of lending that brings good returns resultantly banks were making good profits, Secondly government owned most of the banks which were overstaffed and victim of less staff productivity and bureaucratic approach. Thirdly recovery rate was slow loans had not been sanctioned on merit but on political influence and fourthly a high tax rate 58 Percent were charged to banking industry irrespective of 35 were being charged to corporate sector is also one of the major reason of inefficiency consequently low deposit and high lending rates charged to customers which also add NPLs and discourage new entrants in market. The reforms which changed banking sector Pakistan were privatization of Nationalized commercial banks (NCB) except one i.e. National Bank of Pakistan hence domination of banking sector by NCB were reduced from 100 % in 1991 to 20 % in 2004 even the only nationalized bank National Bank is also floated for its equity in stock exchange up to 23.5 %, Restructuring of corporate governance of banks, Capital requirement were reset to ensure an adequate amount of capital must be acquired by the bank to absorb anticipated shocks that was raised from 500 million to 1 billion and it was raised again up to 2 billion till Dec 2005 at present capital requirement is revolving around 10 billion till 2014, Quality of assets were improved, foreign exchange regime was liberalized i.e. Pakistani corporations were allowed to acquire their capital to move abroad and FDI was being received in consideration that the repatriation of capital, profit and dividends are allowed, Consumer ,

SME and Micro financing was promoted and revamped, Tax rate was reduced from 58 % to 41 % and thereafter it had to be matched with corporate tax rate, Agriculture sector was reorganized by enhancing scope from production loans of inputs the entire value chain, Islamic Banking as a secure piece of financial system commenced again as parallel to the conventional banking so that the people can't compromise their religious bindings, E banking was introduced the network of ATMs were enhanced and state of the art technology were used to develop for new products, best Human resource were injected and culture of nepotism was eradicated, requirement of credit rating with approved credit rating agency was kept as mandatory, supervision was enhanced, New payment system with the name of real time Gross settlement (RTGS) was introduced.

Roughly in Pakistan financial system was reformed in different phases since 1991 after amendment in Nationalization act of 1974. There is the need to ascertain the fact that what type and level of association exists between the era when financial system was revamped and its impact of national economy of Pakistan. There are many studies available which traces the impact of financial sector development and reform on national economy but particularly in reference of Pakistan no significant work is carried out.

The objectives of the study are to analyze the long and short term relationship between financial sector development and economic growth in Pakistan during the period of 1994 till 2013 and to facilitate other researchers and regulators to set their direction in light of the outcomes of the study. This study is further divided into 5 parts the second part of the study right after introduction covers the literature review afterwards the methodology is discussed in third part. Fourth part illustrates different tests and discussion of results after employing these test and last part comprises of conclusions of study.

2. Literature Review

Din and Khawaja (1995) used generalized least square method on pool data to determine the interest spread. Their findings were interest spread doesn't influence the performance of banking sector even no significant impact was calculated on other financial sectors being served as other alternative to banks for small savers like development financial institutions and investment funds. They compiled their results by using non performing loans, administrative cost, GDP growth, inflation, interest rate, market share and equity.

Khatib et al (1999) determined the association between performance of commercial banks and economic stability of Qatar by using the variables i.e. profitability of bank, Foreign interest rates, equity of banks, GDP, Government revenues and expenditures. He used conventional technique Ordinary least square

to run regression analysis and Granger Causality to find out the cause and effect relationship. As per opinion sought from research work, there is the positive relation exists between banks and economic growth.

Demig Kunt and Levine (1999) compiled a diversified study covering 150 countries and observe that financial sector of richer countries depicts a unique proposition where stock markets behave more actively than banks. They used aggregate index of financial system in different countries and prefers to compile their study without analyzing the relationship between variables directly which depicts financial soundness and economic growth instead they tried to be focused on cross country interrogation of performance of relative bank and market based growth structure. They were unable to find a relationship between financial structure and economic growth.

Poshakwale and Qain (2007) examined the impact of financial reforms on efficiency of banking sector growth and assertiveness. He also found the long and short run relationship of financial reforms on economic growth of Egypt during 1992 to 2007. Results produced suggested that there is a positive and significant impact of reforms on economic growth. His further findings were domestic banks or government banks have been working more expeditiously than private or foreign banks.

Ozturk, Ilhan (2008) studied financial development and economic growth of Turkey for the period of 1975 till 2005. They investigated causality analysis and used co integration technique to compile research results. Their findings were there is no long run relationship exists between financial development and economic growth in Turkey.

Bitzenis (2008) used surveys in Serbians banking industry to examine pre and post performance factors of reformation of banking system, efficiency and quality of management. He concluded that there is the positive relation exists between reformation of banking system and its contribution for economic growth. He also added problems and challenges confronted by the current system.

Gabriel et al (2009) used quarterly data of seventeen years pertains to information on all loans sanctioned to different non financial firms of Spain and found that both adverse economic conditions and contractionary monetary policy reduced loan supply particularly for the banks being operated with low liquidity to total assets and capital.

Inekwe, Murumba (2009) finds that in developing economies like Nigeria a significant relationship exists between in real GDP and Non performing Loans, Government should take measures to revise GDP growth i.e. infrastructural development, moderate interest and exchange rate and improve regulatory role of related agencies.

Mwenda and Mutoti (2009) investigate the effects of market-based financial sector reforms on the competitiveness, efficiency of commercial banks and economic growth of Zambia by using the variables such as per capita income, GDP and inflation. The results provided that an endogenous growth model pronounces industrial production is a key for GDP growth. In first stage the results shown that structure adopted maximize the regulatory and monetary role, payments and remittances and other financial operations of banking sector. Thereafter in next stage a comprehensive financial sector development regulations were employed which had significant and positive effects on banking cost efficiency. In last stage it was revealed that degree of economic freedom and rate of inflation were significantly impact on economic growth.

Malik (2010) studied in a similar fashion but in opposite direction that the impact of recent global recession and its consequences. He concluded that banking industry in Pakistan is facing a number of challenges and its further extension is a question mark. Global financial crises, cost of borrowing, devaluation of Rupee, low profit margins, Bad law and order and risk on investment are the basic causes which is prohibiting investors to take challenge in Pakistani markets

Kayode et al (2010) curtailed the scope of his work up to the credit sanctioned by Nigerian's bank for manufacturing sector and determined the impact of manufacturing output on economic growth. He used Vector Error Correction Model (VECM) and co integration technique to detect the short and long term relationship of time series data spread over a period of 36 years from 1973 to 2009. It is transpired that although there is a strong association exists between bank lending and production growth of manufacturing but he urged the role of central bank to implement monetary policy for capping upper limit of borrowing rate and to create competitive environment.

Yazdani (2011) examined the impact of private banks on economic growth of Iran. He used variables like cash, investment, profitability and economic growth to run analysis. He made different hypothesis and determine the significance of hypothesis which further reveals the performance of private banks on economic stability of Iran. He used Spearman and Pierson correlation on secondary data of private banks. The Hypothesis results confirmed that a positive correlation exists between the variables.

Aurangzaib (2012) used data of 30 years pertains to 10 commercial banks of Pakistan, the results he produced with the help of ordinary least square and Granger causality, investigating the impact of performance of banking sector on economic growth. He identified that banks performance in shape of deposits, interest earnings, advances, profitability and investment on economic growth has a bidirectional casual relationship between banks

performance and economic growth. It confirms that banking sector influence economy directly and policy makers must focus on enhancement of banking sector in Pakistan.

Abubakar and Musa Gani (2013) brought another point of view that the only reforms in banking sector couldn't bring the desired results. In Nigeria, commercial bank holds 90 % of the financial assets. Bank credit is not being utilized by private sector due to high cost of borrowing, concentration of bank credit to a limited scale of business mix i.e. communication and oil and gas in particular. The main buyer of bank credit is government as 50 % of this credit is sold to government to meet fiscal needs. They compile the results by using the data of 40 years from 1970 to 2010 by using Johansen and Juselius 1990 approach of co integration and VECM. They found that a long run relationship exist between financial development and economic stability. The other part of his work covers the aspect that two element are the main reason of crowding out.

Zafar Iqbal et al 2012 compiled a study to monitor the impact of credit to private sector and found that increase in gross domestic product is greatly influenced by increase in savings and credit to private sector, he uses ARDL approach of co integration to detect long and error correction model for short run association between economic growth and private sector credit and savings. He studied particularly in Pakistan's scenario and trace the period of 1973 to 2007.

3. Data and Methodology

On the basis of our literature review it is presumed that the five variables can precisely trace the overall efficiency of financial sector and economy. Here, we choose growth of financial sector in terms of Money Supply (M2), Equity (CAP), Private Sector Credit (PSC) and Investment made by Banks (INV) with economic growth where Gross Domestic Product (GDP) is taken as proxy as an indicator of economic growth. In this study the post era since 1991 of amendment in nationalization act 1974 of Pakistan is kept as the period of study. Hence data is gleaned on semiannual basis since 1992 to 2013 and compile for obtaining results with the help of the software E views to captures the short and long term association of development of financial sector and economic growth. This study is meant to discover relationship between developments in financial sector with economic prosperity where conventional estimation Ordinary Least square is routinely used to find the strength of the relationship but produce spurious results if regressed for a non stationary series, a series is said to be stationary if revolved around its mean value with a tendency to converge towards its mean value (Engle and Granger 1987).

Unit Root Test is used to check the stationary of a series here in this study Augmented Dickey Fuller

test is used to test unit root is frequently used to check stationary of a complicated series. It is based on the presence of auto regressive mode in unit root is a condition of Dickey fuller. As regards co integration it is based on the analysis to find the presence of an equilibrium relation between variables because an economic time series may wander with passage of time and there is the likelihood that a linear combination of variables converges to equilibrium. If the condition persist is called variables are co integrated. The Johansen (1988, 1991), Johansen and Juselius (JJ) (1990) tests are used to find the maximum likelihood ratios while Engle-Granger (1987) test is used to evaluate the residual based long run relationship between variables. JJ test is used to find the no of co integration relationship between the variables.

Value of null hypothesis of co integration vector is represented by Eigen value used to explore the existence of co integration in comparison of alternate hypothesis or in other words maximum Eigen values are derived through E views software which should be greater than critical value if is supposed to be vectors are co integrated. Lag length is chosen before employing JJ co integration. In this study Granger Causality is also employed to direction and association between or among the variables and it also provides that whether one time series is helpful to forecast other. Likewise to determine short run dynamics Vector error correction model is used which adds error correction features to a multi factor model such as VAR vector auto regression. In VAR each variable has an equation explaining its evolution based on its own lags and the lags of all the other variables in the model. VECM is allowed to consider overall co integration without normality and specification of dependent and independent variables to determine misspecification and short run relation.

$$GDP = \beta_0 + \beta_1 M2 + \beta_2 CAP + \beta_3 PSC + \beta_4 INV + \mu_t \quad (1)$$

Here,

GDP = Real Income

M2 = Money Supply

CAP = Capital introduced by Banks

PSC = Private Sector Credit

INV = Investment made by Banks

μ_t = Random Error

The β 's are the elasticity of Money Supply (M2), Capital (CAP), Private Sector Credit (PSC) and Investment (INV) and μ_t is error term.

There are several authors suggested there is positive and long term relationship exists between the growth of financial sector and economy because the loan conceded by commercial banks provide convenience and equity to expand their size of business which ultimately increase income that adds on economy.

4. Discussion of Results

Table 1. Variables of the research

Variable	Augmented Dickey Fuller	
	Level	1st Difference
Cap	-0.857788	-6.44215*
GDP	-1.494805	-3.819775*
INV	1.47976	-5.280734*
M2	4.047247	-5.382983*
PSC	-0.835404	-2.726472**

Note: The * indicates significance at 1%, ** at 5% and *** at 10%

After being carried out the Unit Root Test through Augmented Dickey Fuller for all variables, it was assessed that the variables were not stationary and showing trend of different levels therefore 1st difference is applied and results depicted that the variables are integrated on the same order after 1st

difference. As a prerequisite of Johansen and Jusellious co integration test where by all the variables should be integrated on the same order long run relationship is test between economic growth i.e. Gross domestic Product (GDP) and growth of financial sector.

Table 2. Multivariate Co integration Analysis Trace Statistics

Hypothesis	Eigen value	Trace Statistic	Critical Value 5%	Vectors (CAP, INV, PSC and M2)
$r = 0^*$	0.744512	120.1542	69.81889	
$r \leq 1^*$	0.511519	62.84183	47.85613	
$r \leq 2^*$	0.455318	32.75075	29.79707	
$r \leq 3$	0.158034	7.233496	15.49471	
$r \leq 4$	0.000211	0.008846	3.841466	

After establishing the fact that all the variables are integrated on the same level, the next step is preceded which purported to find the long run relationship where the test called Johansen and Jusellious co integration test is applied between economic growth Gross domestic product and financial sector growth translated by Money Supply

(M2), Capital (CAP), Private Sector Credit (PSC) and Investment (INV) which further interpreted by two test statistics i.e. trace statistics and maximum Eigen value. Multivariate cointegration analysis of trace statistics is used to evaluate the null hypothesis of r vector of cointegration against the r or other vectors of cointegration proposed by maximum likelihood.

Table 3. Multivariate Co integration Analysis Maximum Eigen Value

Hypothesis	Eigen value	Max-Eigen	Critical Value 5%	Vectors (CAP, INV, PSC and M2)
$r = 0^*$	0.744512	57.31236	33.87687	
$r \leq 1^*$	0.511519	30.09108	27.58434	
$r \leq 2^*$	0.455318	25.51726	21.13162	
$r \leq 3$	0.158034	7.224650	14.26460	
$r \leq 4$	0.000211	0.008846	3.841466	

It is revealed from the results sought after applying co integration through E views that three co integration vectors are found on table 2 displaying the figures compiled for multivariate co integration analysis of trace statistics where trace statistics are greater than critical value at 5 % level of significance. Likewise for further elaboration Eigen values are

assessed on Table 3 which also provides that three co integration vectors are formed by virtue of maximum Eigen values are greater than critical value at 5% level of significance. This further confirms that a long run relationship exist between economic growth and a growth in financial sector.

Table 4. Bi Variate co integration test

Pair wise co integration	Hypothesis	Eigen value	Trace Statistic	Critical Value (5%)	Remarks
GDP - CAP	$r = 0^*$	0.459307	25.82598	14.26460	Co integration
	$r \leq 1^*$	0.003224	0.135626	3.841466	
GDP - INV	$r = 0$	0.333297	17.02727	14.26460	Co integration
	$r \leq 1^*$	0.013443	0.568429	3.841466	
GDP-M2	$r = 0^*$	0.554924	33.99945	14.26460	Co integration
	$r \leq 1^*$	0.078637	3.439838	3.841466	
GDP-PSC	$r = 0$	0.236623	11.34012	14.26460	No Co integration
	$r \leq 1^*$	0.003355	0.141160	3.841466	

Table 4 shows a further detailed co integration on one to one basis where long run relationships are assessed between GDP the dependent variable in our study and each independent variable Capital, Investment. Money Supply and Private sector growth exclusively at 5 % level of significance, while 'r' is taken as co integration vector to ascertain null and

alternate hypothesis. The results obtained in Table 4 describes that there is bivariate co integration exist between GDP with Capital, investment and Money supply as trace statistics are greater than critical value where as no co integration found between GDP and private sector credit as trace statistics are less than critical value.

Table 5. Pair wise Granger Causality Tests

Null Hypothesis:	F-Statistic	Prob.	Conclusion
INV does not Granger Cause GDP	0.28284	0.8868	Accept Ho
CAP does not Granger Cause GDP	0.73734	0.5737	Accept Ho
PSC does not Granger Cause GDP	2.32742	0.0782	Reject Ho
M2 does not Granger Cause GDP	0.54249	0.7057	Accept Ho

After detecting long run relationship it is further helpful to analyze cause and effect relationship to unfold unidirectional association. Table 5 represents the results complied through Granger Causality within the sample where χ^2 - Statistics and probability values shows presence of one unidirectional causality

in GDP with money supply which describes that GDP can be predicted with money supply. However, a lacuna exists while using Granger causality that it can only be suitable to test causality within the sample period.

Table 6. Vector Error Correction Estimates

Error Correction:	D(GDP)	D(CAP)	D(INV)	D(M2)	D(PSC)
CoIntEq1	0.023246	6.07E-05	0.000408	0.333840	-0.069879
	(0.02234)	(1.5E-05)	(0.00013)	(0.09194)	(0.05580)
	[1.04037]	[3.92034]	[3.06905]	[3.63105]	[-1.25229]

Hence Error correction model brought in further assessment of date which provides short run dynamics of model. Table 6 provides that there is a considerable short relationship exists between GDP with capital, investment and money supply.

Conclusion

The study traces the period since 1992 to 2013 when financial industry is reformed and revamped, overall growth of GDP is progressed with a blend of precipitousness and stagnancy, on the other hand financial sector has also grown in numbers multiple times during the last 20 years. Modern banking and a

highly competitive environment is evolved there are 36 schedule banks have been working till the end of 2013.

Our empirical results describes that a long run relationship exists between Gross domestic product and the components of growth in financial sector i.e. Capital, investment, private sector credit growth of commercial banks and money supply verified by the results generated by using Johansen multivariate co integration. Likewise pair wise bivariate cointegration confirms that long run relationship is also exists between GDP with money supply, investment and capital. Short run dynamics is also confirmed by vector error correction model describes a short run

association exists between GDP with Capital, investment and money supply. Investment in Financial sector and implementation of monetary measures in a right direction can bring short and long run economic prosperity in country.

References

1. Sullivan, Arthur; Steven M. Sheffrin (2003). *Economics: Principles in action*. Upper Saddle River, New Jersey 07458: Pearson Prentice Hall. p. 551. ISBN 0-13-063085-3.
2. Gurusamy, S. (2008) *Financial Services and Systems* 2nd edition, p. 3 Tata McGraw-Hill Education. ISBN 0-07-015335-3.
3. Aurangzeb 2012 “contribution of banking sector in economic growth of Pakistan” *Economics and Finance Review* Vol. 2(6) pp. 45 – 54, August, 2012.
4. Engle RF, Granger CWJ 1987 co-integration and Error correction, Representation, Estimation and Testing *Econometrica* 55 (2): 251-276.
5. Gabriel Jiménez Steven Ongena José-Luis Peydró Jesús Saurina 2013 “The Impact of Economic and Monetary Conditions on Loan Supply Identifying Firm and Bank Balance-Sheet Channels” *International Journal of Capacity Building in Education and Management (IJCBE)*, Vol. 2, No 1, Dec., 2013.
6. Inekwe, Murumba, 2013, Research Centre for Management and Social Studies “The Relationship between Real GDP and Non-performing Loans: Evidence from Nigeria (1995 – 2009)” *Journal of Business Management & Social Sciences Research (JBM&SSR)* ISSN No: 2319-5614 Volume 2, No.4, April 2013.
7. Abdulsalam Abubakar, Department of Economics, Umaru Musa Yar’adua University, Katsina State, Nigeria Ibrahim Musa Gani, Department of Economics, Isah Kaita College of Education, Dutsinma Katsina State, Nigeria Impact of Banking Sector Development on Economic Growth: Another Look at the Evidence from Nigeria.
8. Ozturk, Ilhan “Financial development and economic growth evidence from Turkey” *Applied Econometrics and International Development* Vol. 8-1 (2008).
9. Khan, A H. (1995), “Need and Scope for Further Reforms in the Financial Sector in Pakistan”. *Journal Bankers Institute of Pakistan*.
10. Haque, Ul N. (1997) “Financial Market Reforms in Pakistan,” *The Pakistan Development Review* Part-II, pp: 839-854.
11. Ishrat Hussain (2005) Reproduced from *Blue Chip – The Business People’s Magazine* - January 2005.
12. Mavrotas, G. and Kelly, R (2001) *Old Wine in New Bottles testing Causality between Savings and Growth*, The Manchester School, Vol. 69: 97-105.
13. Caprio, G, and Daniela K, (1999), *Episodes of systematic and borderline financial distress*, Manuscript, The World Bank.
14. M. Hashem Pesaran (1997), “An Autoregressive Distributed Lag Modeling Approach to Co integration Analysis” Department of Applied Economics, University of Cambridge, England.
15. Shakil Faruqi “Pakistan Financial System - The Post-Reform Era Maintaining Stability and Growth” *The Lahore Journal of Economics Special Edition* (September 2007).
16. M. Idrees Khawaja and Musleh ud Din “Determinants of Interest Spread in the Pakistan” *Development Review* 46: 2 (Summer 2007) pp. 129–143.
17. Johansen S (1988) *statistical analysis of cointegration vectors* *J Econ Dyn Control* 12: 231-254.
18. Johansen S, Juselius K (1990) Maximum likelihood estimation and inference on co integration with application to the demand for money *Oxf-Bull.Econ.Stat* 52(2): 169-209.
19. Johansen S (1991) estimation and hypothesis testing of co integration vectors in Gaussain vector autoregressive models *econometric* 59:1551-1580.
20. Muhammad Zafar Iqbal, Nisar Ahmad, Zakir Hussain “Impact of Savings and Credit on Economic Growth in Pakistan” *Pakistan Journal of Social Sciences (PJSS)* Vol. 32, No. 1 (2012), pp. 39-48.