Role of Private Commercial Banks in Accelerating the Economic Growth of Bangladesh

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By

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CERTIFICATE OF APPROVAL

This is to certify that the thesis entitled **"Role of Private Commercial Banks in Accelerating the Economic Growth of Bangladesh"** submitted by Sara Tasneem (Registration No. 149/ 2015-16) for the Degree of Doctor of Philosophy is a record of research work carried out by her under my supervision in the Department of Banking and Insurance, Faculty of Business Studies, University of Dhaka, Dhaka. The thesis represents her original work and has not been previously submitted for any other degree elsewhere.

I wish her every success.

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DEDICATION

To my parents

DECLARATION

I hereby declare that the thesis entitled "**Role of Private Commercial Banks in Accelerating the Economic Growth of Bangladesh**" submitted by me for the Degree of Doctor of Philosophy under the supervision of Professor Dr. Md. Rafiqul Islam, Department of Banking and Insurance, University of Dhaka, Dhaka is the record of all my own research work.

The thesis has not been submitted earlier wholly or partly to any Institution or University for the award of any degree or diploma.

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ABSTRACT

Economic growth is the single most contributory matter in the economic development process. Economic growth unpretentiously determines the economic wellbeing of any country. Economic growth portrays the performance of an economy. Growth ensures the utilization of natural resources, expansion of productive services, creation of employment opportunities and better standard of living. Bangladesh economy is growing at an impressive pace. Economic environment of Bangladesh is highly optimistic and projected growth of gross domestic product (GDP) is robust. Behind the satisfactory growth rate, the financial system of Bangladesh has contributed among other factors. The financial system and economic system of a country are inseparably linked. The performance of the system determines the status of the economy. In many countries including Bangladesh, commercial banks dominate financial system. But for the last few years, banking sector of Bangladesh is passing critical time. In this critical time, the performance of private commercial banks (PCBs) is satisfactory among the scheduled banks. In future, acceleration of economic growth will take place along with greater capital accumulation for which PCBs have to maintain their efficiency level for promoting growth. Hence, the significance of the role of PCBs is immense for economic growth.

The study has conducted an in-depth review of the existing theoretical and empirical literatures critically and discovered a significant gap in the problem area. Despite notable studies on economic growth, relation between financial system and economic growth, and commercial bank no specific attempt has been made to focus the role of PCBs to economic growth acceleration in Bangladesh. There exists a mentionable space in identification of the Demand Following or the Supply Leading hypothesis for Bangladesh economy. A gap in examination of economic growth of Bangladesh has also been noticed. Hence, the study aims at the examination of the role of PCBs to accelerate economic growth, investigation of the pattern of economic growth and detection of Supply Leading or Demand Following hypothesis in Bangladesh.

To investigate the role of PCBs in accelerating the economic growth of Bangladesh, the study has proposed a model after reviewing the literature critically. The model has

detected the dependent and independent variables and uncovered the interactions among the variables. The variables, *i.e.,* nominal GDP, real GDP and per capita nominal GDP resemble economic growth and has been considered as dependent variables. To portray the role of PCBs, the model has considered net loan and advances of PCBs, investment by PCBs, export earnings by PCBs, number of branches of PCBs, total income of PCBs and non-performing loan of PCBs as independent variables. Finally, the study has derived seven hypotheses from the model.

The present study is causal in nature as the purpose is hypotheses testing and has exposed properties of scientific approach 'Hypothetico-Deductive'. As the purpose of the study is to analyze the role of PCBs, the population consists of all PCBs. The study has conducted the nonprobability sampling design particularly the judgement sampling technique. Due to unavailability of data, the sample size (38) of this study is all PCBs except *ICB Islami Bank Ltd.* and *Simanto Bank Ltd.* The study has required quantitative information from secondary source. To meet the objectives, time series data have been required. The study has covered a period of 34 years *i.e.,* 1984 to 2017. Data analysis of this study is econometric in nature.

A constructive role of PCBs to accelerate economic growth has been hypothesized. Before estimation of the proposed model, stationarity test has been conducted. The decision whether the variables are stationary or nonstationary at level and difference form, the widely used Augmented Dickey-Fuller (ADF) test along with Dickey-Fuller and graphical tests have been applied. The study has proceeded based on the findings of ADF test as it is widely recognized test of unit root. The variables, nominal GDP, real GDP and per capita nominal GDP, net loan and advances of PCBs, investment by PCBs, export earnings by PCBs are stationary at 1^{st} difference, *i.e.,* I(1) at 95% confidence interval. The variables, number of branches of PCBs, total income of PCBs and non-performing loan of PCBs are stationary initially I(0). The selection of ARDL model has followed the results of stationarity diagnostic. The ARDL model has been applied to the three measures of economic growth, *i.e.,* nominal GDP, real GDP and per capita nominal GDP. The reason behind the estimation using three measures is to detect the true impact and role of PCBs to economic growth. As, detection is not error free, 5% level of significance has been accepted in measurement process. However, in the three estimated

ARDL models, the optimal lag has been selected applying mostly used criteria *viz;* AIC and SBC. The values of AIC in the three ARDL models were lowest among top 20 models. Cointegration has been checked by bounds test. The models were free from serial correlation. The study has satisfied with the models as those were homoscedastic in nature and the residuals are normally distributed. The models were free from misspecification. So, the models were correctly specified and stable. The results have revealed long run association between economic growth and private banking functions. The long run coefficients of net loan and advances, export earnings by PCBs and banks' investment are statistically significant to economic growth for all three models. The variables, number of branches, net loan and advances, export earnings of PCBs, investment by PCBs at one year lag, have been observed to influence the current year's per capita GDP. In the long run, real GDP and per capita nominal GDP have been influenced by previous year's values. PCBs have significant contribution to economy in the short run. The estimated three models have supported the view of slow adjustment to long run equilibrium due to any shock in the short run. The recovery to long run stability has proceeded slowly. Economic growth has been hurt despite smooth support of PCBs. Any shock in current year has impeded the cointegration of PCBs and economic growth in succeeding years. The study has recommended policies both for the contributory and noncontributory functions of PCBs.

A decade-wise investigation has been conducted for three conventional measures of economic growth namely nominal GDP, real GDP and per capita Nominal GDP. To investigate the pattern of economic growth, time series graphs have been drawn. To disclose the trend, linear trend models have been estimated. The study has revealed positive trend of nominal GDP, real GDP and per capita GDP over the decades. Economic growth in Bangladesh is on an increasing path and remarkably stable. The positive trend of nominal GDP, real GDP and per capita GDP has proved the national endeavors despite the impediments to growth in different decades. The study has suggested policies to augment economic growth in future.

The study has applied the Granger Causality test to detect existence of either the Demand Following or the Supply Leading hypothesis. It has estimated the pair-wise regressions for three dependent variables and six independent variables. The causality test has

revealed a mixture of Demand Following and Supply Leading hypothesis between the development of PCBs and economic growth. The study has recommended that measures should be taken to develop PCBs and economy proportionally.

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ABBREVIATIONS AND ACRONYMS

AIC	Akaike Information Criterion
ARDL	Autoregessive Distributive Lag Model
BB	Bangladesh Bank
BBS	Bangladesh Bureau of Statistics
BIDS	Bangladesh Institute of Development Studies
CAMELS	Capital Adequacy, Asset Quality, Management, Earnings, Liquidity and Sensitivity
CDP	Committee for Development Policy
CSE	Chittagong Stock Exchange
CSR	Corporate Social Responsibility
DFIs	Development Financing Institutions
DSE	Dhaka Stock Exchange
ECM	Error Correction Model
EXP	Export Earnings by PCBs
FCBs	Foreign Commercial Banks
GDP	Gross Domestic Product
GDPCAP	Per Capita Nominal Gross Domestic Product
GIT	Total Income of PCBs
HIES	Household Income and Expenditure Survey
IMF	International Monetary Fund
INV	Investment by PCBs
LAD	Net Loan and Advances of PCBs
LnEXP	Natural Logarithm of EXP
LnGDPCAP	Natural Logarithm of Per Capita NGDP
LnGIT	Natural Logarithm of GIT
LnINV	Natural Logarithm of INV
LnLAD	Natural Logarithm of LAD
LnNGDP	Natural Logarithm of NGDP

LnNOB	Natural Logarithm of NOB
LnNPL	Natural Logarithm of NPL
LnRGDP	Natural Logarithm of RGDP
MDGs	Millennium Development Goals
NGDP	Nominal Gross Domestic Product
NOB	Number of Branches of PCBs
NPL	Non-performing Loan of PCBs
PCBs	Private Commercial Banks
RGDP	Real Gross Domestic Product
ROA	Return on Asset
ROE	Return of Equity
SCBs	State Owned Commercial Banks
SDGs	Sustainable Development Goals
UN	United Nations
WB	World Bank

Chapter 1
INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Economic growth is the single most contributory matter in the economic development process. Sustained accelerated economic growth makes countries eligible to provide basic items such as food, shelter, educational support, health services, better clothing, cultural facilities, physical infrastructure, opportunities to activate more economic activities, better living standards, and social and economic security to each citizen. Economic growth unpretentiously determines the economic wellbeing of any country. In the long run, a nation's economic fortunes are regressed by the growth of potential output (Samuelsson & Nordhaus, 1998). Over the last 50 years, the globe has achieved growth in terms of gross domestic product (GDP). McConnell and Brue (2005) recognize growth as a widely taken economic goal. A country experiencing growth is blessed by higher living standard resulting from rising real wage and income. Growth reduces the burden of limited resources. Growth ensures more current consumption without sacrificing the capacity of future production, as growth is a flow concept. The country having growth is moving forward. The growth oriented country is dynamic not static. Growth enables a country to achieve other socio-economic goals such as poverty alleviation, better educational and health facilities, environmental protection, opportunities of entertainment, infrastructural development and utilization of scarce resources.

Bangladesh's economy is growing at an impressive pace. WB listed Bangladesh as one of the five fastest growing economies in April, 2019. Domestic output growth remains steady and robust. On the supply side, manufacturing and construction sectors have made progress resulting from elastic domestic demand and prudent macroeconomic policies. Private consumption and exports have led to economic growth on the demand side. The rural economy has moved forward as remittances and export performance have bounced back. Substantial electricity generation and plentiful agricultural production have stimulated growth (WB, 2019 April 4).

While examining economic situation of the globe, the UN forecasted that Bangladesh will be the third fastest growing economy in the world for attaining high Gross Domestic Product (GDP) in 2019. The UN unveiled that Bangladesh will grow at 7.4% in 2019. Economic environment is highly optimistic and projected GDP growth is robust in near future. Bangladesh's economy will grow at 7% per year amid sturdy fixed investment, dynamic private consumption and accommodative monetary policy.

The report projected 7.2% growth in 2020. But the economy is under trouble due to fiscal deficit and fighting to enlarge the tax base (UN, 2019 May 21).

WB opined that Bangladesh has made mentionable advancement in shrinking poverty supported by persistent economic growth. In parallel, life expectancy, literacy rates and per capita food production have augmented significantly. Over the decade 2010s, growth at 6.5 percent has strengthened the progress and reached to 7.9 percent in fiscal year 2017-2018 (WB, 2019 March 27). Speedy growth made Bangladesh to be the lower middle-income country in 2015. Bangladesh accomplished the three eligibility requirements for graduation from the list of UN's least developed countries for the first time in 2018, and is on track for graduation in 2024. Since 1970s, the UN has categorized Bangladesh as one of the least developed countries. In March 2018, Bangladesh receives eligibility for developing country by the UN committee for development policy (CDP). Bangladesh is trying to get the status of developing country officially by 2024. The country has got remarkable success to reach the millennium development goals (MDGs). Again Bangladesh is committed to achieve SDGs by 2030. SDGs consist of 17 goals and 169 targets. Persistent growth has boosted the need for energy, transportation services and urban facilities. To attain SDGs and get the official recognition of developing country, Bangladesh has to achieve remarkable progress. In order to achieve progress and growth, the country needs to introduce structural reforms immediately, invest in human resources, advance domestic revenue mobilization, attract female workers and increase productivity through an extended global amalgamation of the value chain (WB, 2019 March 27).

Although the remarkable economic growth allows a better standard of living in the developed nations, the country Bangladesh still emphasizes economic growth to manage socio and macroeconomic development. In fiscal year 2019-20, the targeted GDP growth rate is 8.2% (MoF, 2019). The average growth rate achieved is around 6% for a couple of fiscal years. Increased domestic demand, liberal trade policy, emphasized export, diversified manufacturing sector, bumper food crop production, service sector expansion and entrepreneurial activities have resulted in growth. Behind the 6% growth rate, among other factors, the financial system of BD has contributed. The International Monetary Fund views Bangladesh as one of the fastest growing economy of 2016 and the financial sector is the second largest in the

subcontinent. Bangladesh's economy is still suffering from the burden of poverty, income inequality and inequality of opportunities. More industries, production and jobs will have to be created. To be a developed nation, the growth rate should be in double digit or at least above 9%. Bangladesh needs to be more dynamic and efficient in macroeconomic management. The challenges can be met by adopting prudent fiscal and monetary policies. Monetary policy affects macroeconomic conditions especially economic growth through financial system. The financial system is the summation of financial service oriented organizations, platform of trading of securities, a procedure to deal with a nation's financial assets in a disciplinary mechanism combined with cannons, principles, laws and regulations. The operations of the system determine the status of the economy. Irregularities in financial system may result in production contraction, lower spending on goods and services, unemployment hike, depression in business and slow economic growth. The financial system and economic system of a country are inseparably linked. The financial system is the receiver of saving, generator of wealth, provider of liquidity, supplier of credit, bridge of clearing payment and protector of assets of an economy. In many countries including Bangladesh, commercial banks dominate financial system. There exists predominance of banking institution in financial system. Blanchard (2000) recognizes banks as one of the special type of financial intermediaries because people can use cheque to pay for transactions.

Fabozzi *et al*. (2002) highlight the significance of banking system to implement monetary policy. Central bank can be able to affect economic growth by its activities through banking system. Central bank influences the reserve of the banking system using the instruments such as interest rate, open market operations etc. When the economy is operating below potential output level, increased money supply brings about production expansion and job opportunities resulting from reduced interest rate, stimulated investment, capital accumulation and higher consumption.

But for the last few years, banking sector of Bangladesh is passing critical time. The volume of non-performing loan is increasing. Some banks are not maintaining provisions against non-performing loan. Liquidity crisis has been created due to non-performing loan. Substantial deposits can't be generated. As there is credit demand in private sector, most of the banks are dependent on borrowing. So, the interest rate in interbank call money market is becoming higher. Some large banks have disbursed

fewer loans. The banks are combating with capital deficit also. The government is providing financial support from national budget to overcome the crisis. But providing support from tax revenue is not a feasible solution while many socio-economic bottlenecks are waiting to be minimized.

Khatun (2018) presented that the expanded banking sector of Bangladesh has been suffering from severe challenges due to mismanagement, cheats and heists. The financial indicators reflected that the overall performance is negatively affected. The study expressed concerns for the deterioration of banking performance. The probable impacts of poor health of banking industry on economic growth will be pessimistic as the financial system is bank oriented. So, the rectification and addressing the problem is a priority action for the government.

The crisis is severe in state owned banks than that of private commercial banks (PCBs). In the annual report 2017-18, BB revealed that share of total assets of SCBs reduced to 25.88% in 2017 from 26.71% in 2016, while PCBs' share increased from 65.03% in 2016 to 67.07% in 2017. The share of total assets of the FCBs and DFIs has declined. SCBs' share in deposits decreased from 28.38% in 2016 to 27.35 % in 2017. PCBs' deposits augmented to 65.91% in 2017 from 64.79% in 2016. FCBs' and DFIs' deposits augmented slightly. In 2017, SCBs' and PCBs' assets increased by 5.29% and 15.85% respectively. The report unveiled the capital to risk weighted assets ratio (CRAR) on 31 December 2017. SCBs, DFIs, PCBs and FCBs maintained CRAR of 5.04%, -35.45%, 12.52% and 24.90% respectively. PCBs had the lowest non-performing loan (4.87%) whereas SCBs, FCBs and DFIs had 26.52%, 7.04% and 23.39% respectively in 2017. Of the total PCBs, 35 PCBs retained the clause. The provisions maintained by PCBs and FCBs are in upward trend whereas that of SCBs and DFIs are in downward trend (BB, 2018). PCBs has been positioned third in terms of earning expenditure ratio (78.4).

In the annual report 2016-17, Bangladesh Bank reveals the performance of banking sector. Among the four types of scheduled banks, PCBs are operating more resiliently and efficiently (BB, 2017). In 2016, PCBs share in total deposit is 64.8%, where share of SCBs, DFIs, and FCBs are 28.4%, 2.8% and 4% respectively. In terms of share of industry assets, BB reveals that PCBs is in the highest position. SCBs, DFIs, PCBs and FCBS have 27.6, 2.6, 65.0 and 4.8 percent respectively in 2016. Adequacy of capital helps banks to combat with various risks, and to protect the assets of savers

and creditors. In terms of CRAR, PCBs maintain 12.2 percent where SCBs, DFIs, and FCBs maintain CRAR of 5.9, 33.7 and 25.4 percent respectively. To judge the asset quality, NPL is the highest emphasized indicator in loan portfolio. At the end of 2016, PCBs had the lowest gross non-performing loan to total loan ratio (5.77%). To analyze the trend of profitability, PCBs is in a better position according to BB's annual report 2016.

The above discussion reflects the efficient functions and activities of PCBs. PCBs lend hand to growth process by pooling fund and allocating resources in efficient manners. With the passage of time the importance of the sound and well-functioning PCBs is also recognized. To stimulate the performance of the banks, different policies have been taken and implemented. In future, acceleration of economic growth will take place along with greater capital accumulation for which PCBs have to maintain their efficiency level for promoting growth. The significance of the role of the private commercial banks is immense for economic growth. PCBs can play more constructive role to economic growth through the efficient functions. So, if the role is constructive, what problem does the present research aim to address? The problem is that notwithstanding the constructive role of PCBs, recently, some irregularities have been observed in the banking sector. The sector is in troubles and crisis. If the irregularities and crisis prevail and contaminate the other parts of financial sector, the economic growth may be negative which will be one of the worst nightmares for Bangladesh’s economy. But at the same token, the contributions of PCBs should be noticeable. The other components of financial system are not completely organized. DFIs, DSE, CSE, HBFC, insurance companies are focused to specific functions and sectors. FCBs cannot reach to all classes of people of Bangladesh. The capital market is under various reforms. So, PCBs should be focused more. Gradually PCBs are offering more versatile financial services and operating pro-growth functions. In this background, the present research attempts to examine and evaluate the role of PCBs to accelerate the economic growth of Bangladesh.

1.2 JUSTIFICATION OF THE STUDY

Economic growth portrays the performance of an economy. An economy overcomes the underdeveloped stage and jumps to develop by achieving economic growth. Economic growth ensures the utilization of natural resources, expansion of productive services, creation of employment opportunities and better standard of living. People can access more opportunities after meeting basic fundamental human rights. The economic fortune of a nation is determined by economic growth. The socio-economic development is possible only when a nation achieves growth. Economic growth is the single most significant and prime indicator of economic success and development of a nation in the long run (Samuelson & Nordhaus, 1998).

Banking sector recurrently operates a dominant role to foster economic growth in Bangladesh. First, it collects the resources in terms of deposits. Second, prudently makes decisions on investment opportunities. Third, disburses credit in a variety of sectors. Finally, banks offer a variety of services. Bangladesh has to work hard to construct present day banking system and make it eligible to contribute in growth dynamics as growth is the single most leading factor to change the sluggish or fragile scenario of economy and society.

Bangladesh's economy is accelerating production and achieving growth. In fiscal year 2018-19 the provisional growth rate is 7.24% (MoF, 2018). Since 1970s, prudent fiscal and monetary policy, modernization of agriculture sector, new industrial strategy, development of agricultural research, new service oriented business, encouragement of entrepreneurship, expansion of ICT, infrastructural development, higher literacy rate, health awareness of people, human resource development program, liberal trade policy, cooperation of international agencies and support of financial system mainly the private banking sector are the contributors to achieve around 7% growth rate.

But Bangladesh is still suffering from some socio-economic problems. Poverty rate is 24.3% (MoP, 2016). Employment opportunities cannot absorb the labour force fully. All the people cannot reach the opportunities. The productive sectors are suffering from capital shortage. Financial system mainly provides the capital to production. Private commercial banks occupy a substantial portion of financial system of Bangladesh.

Bangladesh traces the importance of savings, investment and capital formation for economic growth. The country realizes the need of banks in private sector as it is the key part of financial system. On 12.04.1982, Arab Bangladesh Bank Limited starts the journey as first private commercial banks. In 1983, five first generation PCBs emerged. From 1987 to 1993, another three banks start operations. Afterward, many second and third generation banks are given permission to operate in the economy. In 2013, eight new banks are set to operate based on the demand of the banking services. Finally in 2016, one new private commercial bank gets license.

The present research is an attempt to justify the contribution of private commercial banks to growth. From the above discussion, it is not surprising that the new entry of banks in private ownership assures the contributory role to economic growth path. On the other hand, development experts and international agencies are talking about the radical changes of banking system and economic scenario that Bangladesh has made over the passage of time. It is possible for PCBs to operate efficiently, encourage domestic and foreign investment, minimize financial drain of government entities, promote savings and capitalization and investment, and make an inclusive banking system. The study will contribute the economy in a variety of ways. First, the study is a recognition of the contributions of PCBs as the performance of PCBs is relatively sound. Second, it will assist to generate policies to clean the newly found inconsistencies in banking sector. Third, the financial system can be reformed based on the findings of the study. Fourth, it will help portray the contributions of PCBs to economic growth. Fifth, it will be helpful to discover the anatomy of economic growth of Bangladesh. Finally, the study will assist PCBs to accelerate economic growth in future.

1.3 PROBLEM STATEMENT OF THE STUDY

Bangladesh wants to be one of the middle income countries by 2021. When the per capita income crosses US$1000, World Bank declares Bangladesh as a country of lower middle income in 2016. Now Bangladesh is in a challenge of how to accelerate growth. To grow faster in future, it is in need to know what causes previous growth and how to grow rapidly in future. In growth literature, economists emphasized mainly four streams of support behind growth. They identify the factors such as land

and natural resource base, formation of human capital, support of financial and non-financial capital, discovery of natural resources, invention, innovation and technological progression etc. But there exists considerable disagreements among growth theorists regarding the relative contribution of growth factors.

In classical growth theories, Adam Smith traces the significance of land to economic growth. People enjoy free availability of land in production process. Gross domestic product turns into total income where income consists of only one item named salary or wages. So the expansion of output relies only on population growth implying constant real wage up to a specific time period. The noticeable point is that capital resources have no contribution to production in Smith's theory. Moreover, there is a use of human resources along with land. As human population increases, T.R. Malthus observes a probability of downward movement of national output due to limited land and natural resources and diminishing returns to human resources. The Malthus's theory implicitly necessitates capital resources for economic growth. According to the Harrod-Domer growth model often recognized as AK model, any country must save from its current national income. Saving then creates capital in production process by investment. Basically, a threshold level of saving is required for investment and capital creation. The model tries to incorporate financial resources and mobilization of those resources in the production process. Actually one of the fundamental strategic plans for expansion of production is the mobilization of domestic and foreign saving for the creation of investment opportunities to accelerate economic growth. Finally, the technological ingredient enters the growth process when neoclassical growth process emerges. Mainly it is the Solow Neoclassical Growth model which incorporates the growth factors namely capital stock, human resource and technological progress (Todaro & Smith, 2003).

The present study aims at examining the trend of BD’s economic growth in the light of the above conversation. It should be noted from the above discussion that, except Adam Smith, the mobility of capital is endogenously required by other growth theorists. Resources become burden when it is discovered but not utilized. For utilization, there must exist some entities which are responsible to help resources mainly capital to be mobile. Banks take the responsibility in this regard. Banks integrate the savings, investment and capital in growth wheel. In the era of global trade, banks make the transactions outside the domestic territory easier. Banks absorb

labour force that contributes in the economy as human resource. Banks spread the remittance in the country thereby creating more aggregate demand and pursuing more economic activities. In Bangladesh, there are 59 banks in the economy. Among them 40 are in private ownership. PCBs are operating efficiently for long. Bangladeshi people are reliant on the PCBs for their services. People are getting loan for production purpose. Entrepreneurs are encouraged to take the support of the PCBs. The PCBs disburse credit upon prudent decision and approval. Regular monitoring and supervision on credit by the PCBs ensures the uses of capital in growth process. But recent irregularities and crisis existing in the banking sector have raised the question of the role of the sector. In this regard, the study aims at focusing the role of the PCBs to economic growth. The study has shown a model of how the PCBs are contributing to economic growth. It is evident from empirical studies that economic growth creates the demand of financial services in some countries (known as Demand Following Hypothesis). On the contrary, development of financial institutions such as bank creates the opportunities for the economy to grow (known as Supply Leading Hypothesis). So it is one of the targets to check which hypothesis exists in Bangladesh. Before analyzing the role of PCBs, it is of significance to evaluate the pattern of economic growth.

1.4 RESEARCH QUESTIONS OF THE STUDY

Focusing on the above discussion, it seems appropriate to put forward some questions which are important to know for economic growth acceleration and policy interventions. The present study necessitates evaluating the following questions or issues.

- What is the pattern of economic growth of Bangladesh?
- How do private commercial banks exert influence on economic growth?
- What is the causal relationship between development of private commercial banks and economic growth of Bangladesh?

The first question is derived from the postulation that economic growth is the key to overall development of a country. Bangladesh's economy has grown along with social development. The question will address the trend, seasonality, cyclical behavior and

irregularities in growth path. The question will ultimately uncover the factors behind growth along with the impediments. The second question is the most important one that addresses the role of PCBs to economic growth acceleration. This question is borrowed from the fact that the private banking sector is an integral part of the financial system. This part of the financial system is contributing to economic growth through conducting versatile functions efficiently (discussed in background of the study). In search of the question, a new model has been introduced (Chapter 3). The third question is an endeavor to understand the causal link between the PCBs' development and economic growth. It should be mentionable that in some countries, supplies of financial resources induce domestic output growth (known as Supply Leading Hypothesis). Conversely, output growth creates the demand for financial resources (known as Demand Following Hypothesis). From time to time, supply leading hypothesis and demand following hypothesis reinforce to output growth. This question is in quest of finding out the hypothesis which is applicable to Bangladesh's economy.

1.5 OBJECTIVES OF THE STUDY

Following the research questions and discovering the gap in the literature of the problem area, the study has been designed to address the pattern of economic growth, role of private commercial banks to accelerate economic growth, the direction of relationship between PCBs development and economic growth. So, the objectives are:

i) to investigate the pattern of economic growth in Bangladesh;

ii) to examine how the functions of private commercial banks have accelerated the economic growth in Bangladesh;

iii) to find out the direction of relationship (Supply Leading or Demand Following) between development of private commercial banks and economic growth; and

iv) to suggest policies to foster the role of private commercial banks to accelerate economic growth.

1.6 SCOPE OF THE STUDY

The present study enables readers to understand the significant contribution of PCBs to economy. The study has examined how different functions of PCBs accelerate economic growth. It has overviewed the profile, functions and financial information of PCBs in brief. The study also provides an overview of economic growth of Bangladesh. A decade-wise econometric investigation of economic growth has been revealed. Empirically, it is observed that in some countries, economic growth necessitates financial development (Demand Following Hypothesis) and in other countries financial development promotes economic growth (Supply Leading Hypothesis). The present study has checked in econometric nature whether demand following or supply leading hypothesis exists in Bangladesh's economy. The study has presented findings and discussion on analyses and results. The discussion will help Bangladesh to grow and develop at greater pace. Finally, the study has ended with policy recommendations. The recommended policies are expected to be helpful for the economy to grow, PCBs to promote growth, the banking sector to remove the irregularities, and both Bangladesh's economy and PCBs to develop further in near future.

1.7 ORGANIZATION OF THE STUDY

A brief description of the present study has been planned and structured under following chapters as follows.

Chapter 1 has been completed with background, justification, problem statement, research questions, objectives, scope, organization and limitations of the study.

Chapter 2 has explained the review of literatures. The chapter has conducted an in-depth review of existing studies critically. It has reviewed the theoretical and empirical literature. The chapter has reviewed the literatures on economic growth, economic growth theories, commercial banks, empirical literatures on the relation between PCBs and economic growth. Finally, the research gap in the problem area has been identified.

Chapter 3 has proposed a model (theoretical framework). The framework defines the variables and establishes the pattern of interaction between the variables with appropriate explanation. It portrays different aspects of the topic. The framework has

explained why and how the variables are related. It justifies the problem statement. The ideas, assumptions, principles and interrelations of variables have been clearly defined with the help of the framework. The chapter has also shown the other models related to the proposed model of the study.

Chapter 4 has discussed the methodology of the study. Methodology portrays how the study has been conducted. It has included the nature of the study, approach to investigation, population, sampling technique, data collection and sources, variables' description, data processing, and selection and description of econometric models for analysis of the data.

Chapter 5 has overviewed the profile, functions and financial information of PCBs in brief. The chapter has covered all the PCBs which are samples of the study.

Chapter 6 has investigated the pattern of economic growth in Bangladesh. A decade-wise investigation has been conducted for three conventional measures of economic growth namely nominal GDP, real GDP and per capita nominal GDP. The chapter has revealed the results of trend models and graphical analysis.

Chapter 7 has depicted the analysis on data and the subsequent results. The chapter has discussed in detail what has been done on data to meet the research questions and objectives. It has shown how the data have been converted to information. The literal meaning of the result has been expressed.

Chapter 8 has talked about the findings of the results. The chapter has carefully observed the message of the results for Bangladesh's economy. The prime responsibility of this chapter is to portray the significance and relevance of the message. The chapter has recommended policies to foster economic growth, augment the role of PCBs to accelerate growth, and promote the causal link between development of PCBs and economic growth. Finally, the chapter has concluded with the discussion on philosophic challenges of the study, contribution of the study and scope of further research.

1.8 LIMITATIONS OF THE STUDY

The study has tried to cover all the aspects related to the area of research interest. It has covered a critical review of literature, proposed a framework and explained the methodological issues in detail. It has revealed the analyses and results with findings. Finally, policies have been recommended. There are two minor drawbacks in the study. The sample size is 38 PCBs. Owing to data inaccessibility, the analysis failed to cover two PCBs, *i.e., ICB Islami Bank Ltd.* and *Shimanto Bank Ltd*. Other drawback relates to the overview of PCBs (Chapter 5). All the sample PCBs have been studied according to the information of 2017 except *The Farmers Bank Ltd.* For an overview of *The Farmers Bank Ltd.,* information of 2016 was collected.

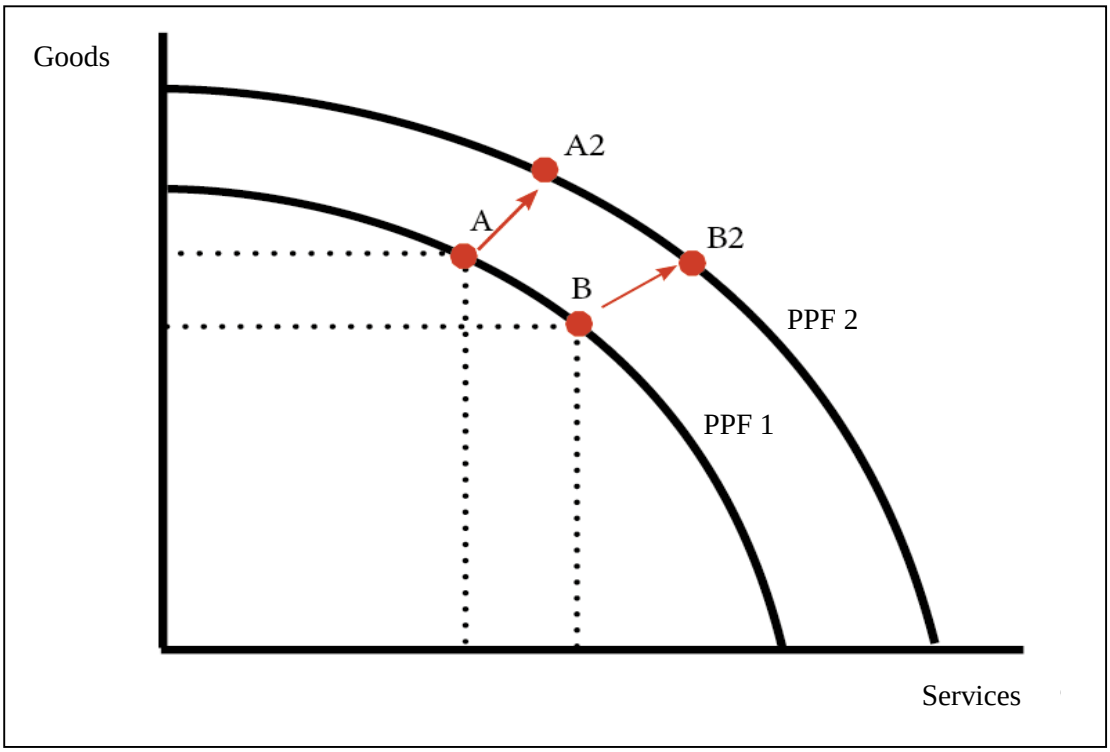
Chapter 2
LITERATURE REVIEW

This chapter has explained the literatures and conducted an in-depth review of existing studies critically in the problem area. It has reviewed the theoretical and empirical literatures critically. The literature review is defined as the selection and evaluation of available documents relevant to the problem area. To review literature critically is indispensable for research work. The review assists to structure the theoretical backdrop and hypothesis development in deductive research. The logical connection among the earlier, recent and more recent research works can be clarified and relevant controversial issues can be noticed (Sekaran & Bougie, 2015). The literatures on economic growth, economic growth theories, commercial banks, and empirical literatures on the relation between private commercial banks (PCBs) and economic growth have been reviewed in this chapter. The chapter has targeted to place the present study with the existing studies. A summary on review has been presented in tabular form. Finally, the chapter has identified the research gap in the problem area.

2.1 LITERATURE REVIEW ON ECONOMIC GROWTH

Economic growth is the percentage change of an economy's total production of final tangible and intangible products in a given time interval. The growth is usually measured by growth of nominal GDP, real GDP, nominal per capita GDP and real per capita GDP. An outward shift of Production Possibility Frontier (PPF) portrays economic growth of the country (Parkin, 2012). PPF shows the maximum production of an economy which can be obtained by using the available resources and technology at a particular point of time. Fig.-2.1 shows PPF1 is the initial situation of an economy. After economic growth takes place, the economy jumps to PPF2. Outward shift of the PPF makes the country better in economic status.

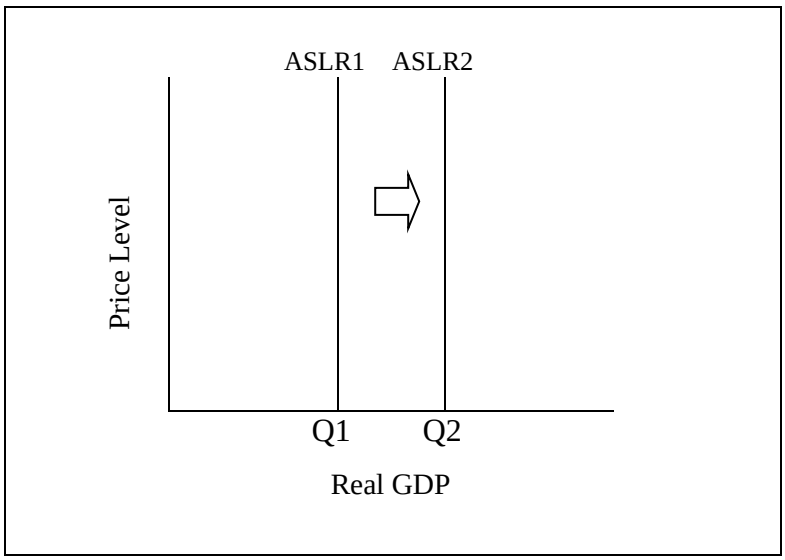
Fig.-2.1: PPF of the Economy Having Positive Economic Growth



Source: *McConnell and Brue, 2005.*

McConnell and Brue (2005) observe economic growth using aggregate demand (AD) and aggregate supply (AS) model, *i.e.*, AD-AS model. The long run aggregate supply (ASLR) curve determines the potential output. The Fig.-2.2 draws the scenario. Economic growth shifts the long run aggregate supply curve (from ASLR1 to ASLR2).

Fig.-2.2: Increase in Long Run Aggregate Supply



Source: *McConnell and Brue, 2005.*

Economic growth necessitates the uses of natural resources, human resources and technological advancement. Different economists emphasize the components of growth in following ways.

- "Three factors or components of economic growth are of prime importance in any society: capital accumulation, growth in population and hence eventual growth in the labor force and technological progress" (Todaro & Smith, 2005, p. 79).
- "Economic growth comes from technological change and capital accumulation. Technological change is the development of new goods and of better ways of producing goods and services. Capital accumulation is the growth of capital resources including human capital" (Parkin, 2012, p. 36).
- "The engine of economic progress must ride on the same four wheels, no matter how rich or poor the country" (Samuelson & Nordhaus, 1998, p. 519).

Economic growth necessitates the usage of four factors of production namely land, labour, capital and entrepreneurship. Capital accumulation and technological development (Blanchard 2000; McCornell & Brue, 2005; Lovewell, 2005), labour quality, natural resources and efficiency (McCornell & Brue 2005; Lovewell, 2005) and social, political and legal factors (Lovewell, 2005) promote economic growth.

Blanchard (2000) analyzes the factors which play notable role in economic growth process. Author raises the question of sources of growth. Why growth occurs? Analysis of the factors behind the growth brings the following results:

- Economic growth requires capital accumulation and technological development;
- Rate of saving cannot persistently boost up the growth rate. But higher saving rate can persist a higher production level; and
- Sustained development in technology sustains economic growth. To sustain technological progress, spending on research activities, designing patent laws, education and training are obligatory.

McConnell and Brue (2005) explore how a society can achieve economic growth. Authors' explorations find out the following ingredients of growth:

- Supply Factors:
  - ✓ Increase in natural and human resources;
  - ✓ Skilled human resources;
  - ✓ More supply of capital goods; and
  - ✓ Technological progress.
- Demand Factors:
  - ✓ Increase in Aggregate Demand.
- Efficiency Factors:
  - ✓ Productive efficiency in utilizing limited resources; and
  - ✓ Allocative efficiency for maximizing society's welfare.

Lovewell (2005) highlights some costs of growth. Growth brings direct opportunity cost of sacrificing present consumption and indirect costs to environment and society. The costs are as follows:

- Using more limited resources to capital accumulation reduces current consumption;
- Excessive use of natural resources may damage environment due to pollution; and
- Technological development may cause social insecurity and risks. All suppliers cannot be adaptive to new technology.

Rahman and Hossain (2014) analyze the relationship between agriculture sector and economic growth in Bangladesh. The study shows that the agricultural sector has had a huge influence on economic growth. The study uses value of agricultural GDP to denote agriculture sector and GDP to represent economic growth for the period 1973-74 to 2010-11. A unidirectional relationship exists from agricultural GDP to GDP. Test of co-integration confirms the long run relationship between the variables. The VAR models releases the fact that GDP response is critical to change in

agriculture sector. So, promotion of agriculture sector definitely ensures economic growth.

Upreti (2015) tries to find out the factors having impact on economic growth for the year 2010, 2005, 2000 and 1995 to 76 countries. Using a multiple regression model, the study shows that export, government, natural resource, foreign assistance, life expectancy and FDI inflow factors are positively linked to emerging economies' economic growth.

2.2 LITERATURE REVIEW ON ECONOMIC GROWTH THEORIES

Economic growth depends on four factors of production, *i.e.*, land, labour, capital and entrepreneurship. These factors have been considered in various ways by economic growth theorist. Different theories on economic growth in different phases are discussed below.

(i) Classical View:

Father of modern economics, **Adam Smith** contributes to economic growth theories by finding out the important factors of production and the process of economic growth. In his monumental book entitled 'An Inquiry into the Nature and Causes of the Wealth of Nations' (1976), Smith postulates both land and accumulation of capital give birth to production expansion. Expansion of domestic production and standard of living are primarily determined by investment and capital collection. Increasing returns to scale and specialized labour force contribute to growth. Where increasing returns to scale comes from specialization of labour force which is also termed as division of labour. The extent of division of labour and savings out of profit retained by industry and agriculture sector determine investment. Labour productivity is based on the division of labour. Smith suggests that the scale of the economy limits the division of labour. Smith gives arguments in favor of free trade, and zero control of government over the domestic market mechanism for growth. Smith views economic progress a self-generating mechanism. His vision to progress is optimistic combined with increasing returns to scale based on division of labour (Thirlwall, 2003).

Malthus views production expansion in a different way in 1798. His vision is pessimistic. He argues that as population increase gradually, land will be scarce. People use land both for shelter and food. So, lower arable land is left for food production. On the other hand, the labour force is rising and placing pressure on the prospect of jobs. As land is fixed and more workers are working with the same piece of land, output grows at diminishing returns to scale. Real wage rate is going to be reduced due to declining marginal product resulting from the hike of labour land ratio (Samuelson & Nordhaus, 1998).

David Ricardo in his book named 'Principles of Political Economy and Taxation' published in 1817, reveals that capitalism creates stationary state with no growth and diminishing returns in agriculture sector. But Ricardo emphasizes the need of capital formation in growth process where reinvested profits generate capital. Ricardo advocates withdrawing all types of taxes and duties on factors of production because duties reduce capital accumulation indicating slow economic growth (Thirlwall, 2003).

Karl Marx contributes to growth theory while finding the causes of expiration of capitalism in his famous book 'Das Capital in 1867. Marx focuses capital as prime productive input and determinant of growth. The capital is created by the capitalist surplus. He predicts that capitalism will expire due to crises originating from excess production and social upheaval (Thirlwall, 2003).

(ii) Modern Growth Theory:

Roy Harrod and Evesy Domar express their valuable opinions on economic growth in their well-known papers published in 1939 and 1946 respectively. According to their opinion, households spend a portion of current income for consumption at present. The part of households which is not spent is the saving. The saving is the leakage in the circular flow of macroeconomic activity. On the contrary, firms do production for the economy. For production, firms need funds. Households' saving reaches to firms through financial institutions of the economy. When households' saving is at the hand of firms then it becomes the injections to macroeconomic activity. The Harrod-Domer model specifies the

importance of saving and investment for growth process. The model necessitates the relation of saving and investment by the following equation:

Saving = Investment

Firms use the fund to offset the depreciation and to purchase new capital equipment for further production. If there is an increment to existing capital stock after meeting depreciation, economic growth takes place. Growth also relies on capital's capacity to generate production or the ratio of capital output. Growth rate is positively related with saving and negatively with capital output ratio (Ray, 2003).

(iii) Neo Classical Growth Theory:

Neo Classical Growth Theory was first introduced by **Robert Solow** in 1956. Neo classical theory of growth emphasizes labour and capital as the two important factors of production. Technology is an independent factor influencing the production. The rate of technological development is determined exogenously. So, Solow's model sometimes is termed as exogenous model of economic growth. Solow utilizes the following aggregate production function:

$$Y = k^{\propto} AL^{1-\propto}$$

Where,

Y denotes gross domestic product;

K is the capital stock;

L is the labour force; and

A denotes labour productivity (labour productivity growth rate is exogenous)

Capital and labour jointly determines the production. The prime ingredients are capital and technological advancement. These two are the major forces in the production process. Solow's model postulates diminishing returns to scale of labour and capital. In the long run growth is explained by technological development (Todaro & Smith, 2005).

(iv) Endogenous Growth Theory:

This approach explains technological advancement as an endogenous factor. For growth, saving and investment in physical capital are integral. But economy needs to invest in human capital. Human capital is formed by education, work experience and training. Human capital in everyday language is the skilled and efficient labour force. Skilled and efficient labour force can operate the physical capital such as machineries, tools and equipment properly. Labour, if skilled, can generate new ideas, do more research, and find out new techniques to production. So, investment in human capital paves the way for technological development. Then growth occurs due to human capital formation embedded with new technology (Todaro & Smith, 2005).

2.3 LITERATURE REVIEW ON COMMERCIAL BANKS

Banks are the most vital institution in the financial system of an economy. Banks are of different types. In Bangladesh, banking system is dominated by commercial banks. A commercial bank can be defined as a bank which collects fund from the surplus unit of the economy and provides the collected surplus fund to the deficit unit of the economy with an aim to make profit. Commercial banks are the business entity whose main element of business is money. It deals with the money to make profit. Like other business, commercial banks operate business with the objectives namely growth, survival, corporate social responsibility and profit. A commercial bank is a licensed commercial business entity. A commercial bank offers versatile financial services to all the units of the economy such as individuals, households, business entities, and government owned organizations. It performs a variety of functions. The functions can be classified as primary, secondary and miscellaneous.

Debnanth (2008) stated that commercial banks occupies a significant portion of the entire financial system and operate the following primary functions.

- Commercial banks accept the surplus fund. The surplus units of the economy deposit the fund in the bank. Banks create different accounts to accept the deposit and make interest payment to depositors.

- Commercial banks lend money to deficit units who are the borrowers of the banks. Banks provide credit for short term, medium term and long term. Interest on loan made by borrowers is the main source of income of banks.

- Making investment is another prime function of commercial banks. Banks invest by purchasing government securities and shares of another business entities

Ali and Howlader (2009) evaluate the secondary functions of commercial banks. The domain of services is widening gradually. They identify the following secondary functions:

- Opening letter of credit;
- Issuing and collecting different types of cheques;
- Making payment to customers against the cheques;
- Receiving remittance;
- Financing of export and import;
- Providing debit and credit cards;
- Making payments of utilities and other bills on behalf of the clients;
- Under writing of securities and shares;
- Keeping the non-financial assets of citizens; and
- Providing information of financial assets and services.

Gomez (2012) traces the prominent role of banks to economic development of a country. The well-functioning commercial banks assist underdeveloped countries to be developed. The following are the vital services provided by banks to economic development.

- Commercial banks form the capital for economic growth. By collecting deposit and issuing shares banks pile up the financial capital. Interest on deposit and dividend on shares are the tools to attract the depositors and shareholders respectively.
- Resource utilization takes place as banks provide loan. Deposited funds are channeled to productive sectors. Resource utilization ensures production expansion.
- Banks can categorize the projects based on necessity of society. The prioritized projects are financed by loan made by banks.
- Commercial banks distributed credit to different regions of the country. So, banks contributed equitable regional development.
- Financing of export and import promotes international trade.
- Socio-economic development occurs as banks provide various financial services.

2.4 EMPIRICAL LITERATURE REVIEW ON PRIVATE COMMERCIAL BANKS AND ECONOMIC GROWTH

The potent weapon for development of developing country like Bangladesh is economic growth. The country is persistently trying to hike the growth rate. There are notable factors for the acceleration of economic growth in Bangladesh. Prudent macroeconomic policy, adoption of structural adjustment policy in the mid-1980s, expertise and financial aid from donor countries and agencies in the immediate post-independence period, export oriented industrial strategy, encouraging private sector participation in economic activities, liberal trade policy, foreign direct investment, uninterrupted remittance flow and expansion of financial system have played a vital role in economic growth acceleration.

Financial system contributes to the acceleration of economic growth for both developed and developing countries. Financial system has a fundamental impact on the economic growth process, so a better understanding of evolution and structure of

financial system is necessary (Levine, 1997). Well-developed and better functioning financial system support faster economic growth (Rahman, 2004). Long-term sustainable economic growth, according to FitzGerald (2006), depends on the ability to increase the rate of accumulation of physical and human resources, to make more effective use of the resulting productive assets and to ensure that the entire population has access to these assets. This investment mechanism is enabled by financial intermediation by mobilizing household and foreign investment investments by companies; ensuring that these funds are committed to the most efficient use; and by distributing risk and providing liquidity so that firms can operate the new capacity effectively. Therefore, financial development includes the formation and expansion of the institutions, instruments and markets that sustain this phase of investment and growth. As a fundamental part of financial system, PCBs play the crucial role to economic growth and socio-economic development. Levine (1997) focuses the role of banks as provider of liquid deposits to saving-oriented people, undertaker of a mixed liquid low-return investment and illiquid high return investment. In point of fact, banks insurance facilities to savers. Schumpeter (1911) accentuates the well-structured financial system, productive investment and efficient allocation of bank resources. Bagehot (1873) and King and Levine (1993) portray the significance of banking sector. Levine (1997) argues that countries with larger banks and more active stock market grow fast. In the countries having well developed banks and securities markets, industries and firms relying on external finance grow disproportionately faster than countries with poor financial system. So, financial system creates a significant blow on economic growth.

In a study, namely ‘Stock Markets, Banks, and Economic Growth’ Levine and Zervos (1998) inspects practical association between different measures stock market development, banking development and long-run economic growth. The study employs a panel data set of 47 countries from 1976 to 1993 and uses cross country regression analysis. The findings outline that stock market liquidity and banking growth both positively forecast growth, accumulation of capital and productivity improvements, even after economic and political factors are regulated. The indexes of the banking and financial markets are robustly associated with current and projected economic growth rates. The analysis uses the variables as follows:

- The Value of Listed Domestic Shares on Domestic Exchanges divided by GDP (measuring the size of the stock market);
- The Value of Trade of Domestic Shares on Domestic Exchanges divided by the value of listed domestic shares (measuring liquidity);
- The Value of Trades of Domestic Shares on Domestic Exchanges divided by GDP (measuring liquidity);
- The Intercept Turn of Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) as measures of market integration;
- Twelve Months Rolling Standard Deviation based on market returns (representing volatility);
- The Value of Loans made by the commercial banks and other deposit taking banks to the private sectors divided by GDP;
- Long Run Real Per Capita GDP Growth;
- Output Growth;
- Capital Stock Growth;
- Productivity Growth; and
- Savings.

In an investigation of the linkage between finance and growth, Berger *et al.* (2004) contribute to both the final growth literature and the community banking. Using data from 49 countries between 1993 and 2000, they found that higher market shares and efficiency ratings of small private domestic banks were correlated with better economic performance, and that the marginal benefits of higher shares were greater when they were more effective. For hypothesized transmission mechanisms, mixed results are observed through better funding for small and medium enterprises or higher overall bank credit flows. Developing countries still comply with the beneficial economic effects of foreign-owned banks, but with the detrimental effects of state-owned banks.

For the fast-growing nation of China, Cheng and Degyse (2010) analyze the relationship between finance and growth. Using data from 27 Chinese provinces for the period 1995-2003, they research the effect (significantly different) on local economic growth of the financial development of two different types of financial institutions-banks and non-banks. The results indicates that a statistically significant and economically more pronounced impact of banking development on local economic growth. Chinese economic growth is influenced by banking development. Banks role is more vital than non-bank on local economic growth. Financial reforms increase the efficiency of Chinese banks. Borrowers prefer bank in case of borrowing fund. The study utilizes the following variables:

- Growth Rate of Real GDP per capita;
- Initial GDP per capita;
- Growth of per capita Capital Stock;
- Capital Stock Growth;
- Bank Deposit to GDP;
- Bank Credit to GDP;
- Non Bank Deposit to GDP;
- Non Bank Credit to GDP; and
- FDI to GDP.

The role of the development of the financial sector in economic growth, and domestic and foreign capital accumulation is analyzed by Ahmed and Malik (2009). Studying a panel data set for 35 developing countries over the period 1970-2003, the study emphasizes the importance of efficient resource allocation on per capita GDP rather than capital accumulation by financial system. The results also implies that domestic capital is instrumental than foreign capital to increase per worker output and promoting long run economic growth. Domestic capital plays a major role in attracting foreign capital.

Jalil and Ma (2008) attempt to examine the relationship between financial development and economic growth from 1960 to 2005 for China and Pakistan. To determine the nature of a long-term relationship, the bound testing (ARDL) approach to co-integration is performed. The study uses the Deposit Liability Ratio (DLR) and

Credit to Private Sector Credit (CPS) to reflect economic growth as a proxy for financial development and actual per capita GDP. The study finds the following results:

- In case of Pakistan, the relationship between economic growth and financial development is positive and significant;
- Deposit liability ratios and economic growth are positively and significantly linked in China, where the relationship between credit and the private sector is positive and negligible;
- Non-performing loan is an obstacle to financial development in China; and
- For developing countries like Pakistan, the Government should maintain a flexible and positive real interest rate to promote savings and investments.

Rahman and Cheema (2013) examine long-term and casual relationship in an attempt to study the empirical relationship between financial intermediation and real-sector growth in Pakistan. They investigate whether financial development follows hypotheses of supply leading, demand following or feedback. Their findings reveal a single co-integration relationship among the variables of financial intermediation and real sector growth. Causality ranges from growth in the real sector to financial intermediation, implying demand based on a hypothesis supported in Pakistan by a private credit variable. Commercial banks play a vital role in the country's real sector growth. The study applies the following econometric techniques:

- Augmented Dickey-Fuller Test;
- Philip Peron Test;
- Johansen Co-integration Test;
- Vector Error Correction Model (VECM); and
- Granger Causality Test.

Aurangzeb (2012) examines the contribution of the banking sector to Pakistan's economic growth. Utilizing time series data from the period of 1981-2010 to 10 banks and applying augmented Dickey-Fuller (ADF), Philip Perron unit root test, ordinary least square, Granger Causality test and regression analysis, the study exposes that deposits, investments, advances, profitability and interest earnings have significant positive effects on Pakistan's economic growth. The Granger Causality test demonstrates the bidirectional causal relationship of economic growth with deposits, advances, and profitability. On the other hand, the study finds that investment and interest earnings have a unidirectional causal relationship with economic growth, ranging from investment and interest earnings to economic growth. It is recommended that policymakers should make policies to boost Pakistan's banking sector, as the banking sector contributes significantly to Pakistan's economic growth.

In a discussion paper, Koivu (2002) traces the relationship between financial sector and economic growth in transition countries. In the period 1993-2000, the paper applies a fixed-effects panel model and unbalanced panel data from 25 transition countries. It measures the qualitative development in the banking sectors using the margin between lending and deposits interest rates. The second variable for the extent of growth of the financial sector is the amount of bank credit distributed as a share of GDP to the private sector. The interest rate margin is strongly and negatively linked to economic growth, according to the results. An increase in the amount of credit, on the other hand, does not seem to stimulate economic growth. The reasons behind the outcome may be the various banking crises and soft budget constraints that are still prevalent in many transition countries. In an attempt to contribute to macroeconomic literature, Sunde (2013) examines financial development and economic growth nexus for Namibia using a cointegration framework. The study tells a demand following hypothesis for Namibia running from economic growth to financial development. For Namibia, financial sector improves when economy proceeds. Economic growth is not significantly affected by financial services for the study period (1990Q1-2011Q4). The results imply creation of new banks and competition among banks for exerting significant impact on economic growth.

Ayadi *et al.* (2013) find negative correlation among credit to private sector, bank deposit and growth while studying on 11 northern and southern Mediterranean countries over the period 1985-2009. The result confirms deficiencies in the region.

According to the study, growth is affected by stock market size and liquidity. Poor financial supervision and liquidity are suggested by them. In the banking sector, credit to private sector and deposit negatively correlated to growth due to lack of strong financial regulation and supervision. On the contrary, stock market size and liquidity exert positive impact on growth. The study considers the following variables:

- Credit to Private Sector (% of GDP);
- Bank Deposit (% of GDP);
- Stock Market Capitalization (% of GDP);
- Stock Market Total Volume Traded (% of GDP);
- Market Turnover (% of Stock Market Capital);
- Log Real GDP Per Capita ($);
- Inflation (% Growth in Deflator);
- Growth of Government Debt (%);
- Legal and Democratic Quality Index;
- Financial Reform Index;
- Net FDI (% of GDP);
- Net Portfolio Investment (% of GDP);
- Official Aid and Grants (% of GDP);
- Remittances (% of GDP); and
- Other Net Investment (% of GDP).

To scrutinize the finance-growth nexus in Bangladesh, Rahman (2004), uses the period 1976-2005 and a long run vector auto regressions model précised by Blanchard-Quah (1989). The analysis is done dividing the period into three: full sample period 1976-2005, pre-FSRP period 1976-1990 and post-FSRP period 1991-2005. Although the results show positive impact of financial development both on investment-GDP ratio and income per capita, the results also confirm the influence of investment's share of GDP on per capita income. The findings for pre-FSRP are

misleading. There is significant difference between pre and post FRSP period in the result. Actually the task of competitive financial environment is crucial for Bangladesh. The preface of FRSP in 1990 creates a competition by hiking the relative credit share of private commercial banks (PCBs) than those of nationalized commercial banks (NCBs).

The effects of financial liberalization on the economic growth are studied by Sulaiman *et al*. (2012) in Nigeria. Gross Domestic Product is the dependent variable and lending rate, exchange rate, inflation rate, financial deepening (M2/GDP) and degree of openness are the independent variables of the study. Data from the annual time series from 1987 to 2009 was used. The Johansen Cointegration test and the error correction mechanism (ECM) were used. The results obtained from the co-integration test show the nature of the variable's long-run equilibrium relationship. Therefore the study concludes that there is a growth-stimulating impact of financial liberalization on Nigeria.

In other developing countries, financial liberalization enhances economic performance. Mwanga and Sanday (2013) inspect the impact of financial liberalization on economic growth in Uganda for the period 1980-2011 and make use of vector autoregressive method, augmented Dicey-Fuller test, Johanson Cointegration, Error Correction Model and Granger Causality tests. The chosen variables are GDP (dependent variable), lending rate, real exchange rate, inflation, balance of payment, private sector credit to GDP ratio, money supply to GDP ratio. The study gets a positive relationship between the liberalization of the financial sector and economic growth.

In an economy, banks play a crucial role to achieve economic development goals. Uddin *et al*. (2012) examine the relationship in Bangladesh between the development of the banking sector and poverty alleviation. They apply ARDL bound testing approach to cointegration for the data of the period 1976-2010. The study uses private per capita consumption and the ratio of bank claims on the private sector to GDP to represent poverty reduction and banking sector development respectively. The analysis finds interesting results:

- There is a long-term equilibrium relationship between improving the banking sector and reducing poverty;
- Bidirectional causalities exist between the growth of the banking sector and the reduction of poverty; and
- Policy makers can get insights for banking sector reforms and poverty reduction strategies.

In empirical literature, there are three views regarding banking sector development and economic growth. In some countries, economic growth pushes banking sector expansion (termed as Demand Following Hypothesis). On the other hand, enhanced banking services promote economic growth in other countries (called as Supply Leading Hypothesis). Bidirectional relationships, however, are also found. Odeniran and Udeaja (2010) explore Nigeria's finance-growth nexus. They used Granger causality tests in a VAR framework for the period 1960-2009. Four variables were used to capture the development of the financial sector, namely: broad-money stock-to-GDP ratios, growth in net domestic credit to GDP, growth in private sector credit to GDP and growth in bank deposit liability to GDP. Bidirectional causality exists between some of the proxies of financial development and economic growth variable. Furthermore the results indicate that net domestic credit is driven equally by production growth, thus suggesting bidirectional causality. The decomposition of the variance indicates that deposit shock does not significantly affect net domestic credit. The study recommends that the current reforms should not be emphasized unilaterally in the Nigerian banking sector. Rather the complementary and organized implementation of financial reforms and improvements in the real sector of the economy should be given attention.

While studying the development of the banking sector and economic growth in Lebanon, Awdeh (2012) finds that causality extends from economic growth to the development of the banking sector. The study covers information from the year 1992 to 2011 and applies Granger Causality test and regression analysis using OLS method. The selected variables are the growth rate of local currency GDP at current prices, the growth rate of local currency GDP per capita at current prices, credit to resident private sector as a percent of GDP, banking market interest rate spread, banking

sector assets-to-GDP ratio, market share of (assets) of top 5 banks of Lebanon, the annual growth rate of total sector's deposits and one year lag of credit to resident private sector as a percent of GDP. The findings prove a one-way causality from growth to bank development. Banking sector does not influence economic growth significantly.

To find out the relationship between economic growth and banking sector development, Liang and Reichert (2006) study on a panel of 70 emerging and developing countries and 20 advanced countries for the period 1960 to 2000. Granger Causality test and fixed effects multivariate regression model are applied for analysis. The variables are the annual real GDP growth rate, the labour force growth rate proxied by population growth; the investment/GDP ratio, measured as the gross nominal fixed capital formation divided by nominal GDP, the annual growth rate of the real liquidity stock; and the real export growth rate, calculated as the annual growth rate of goods and services exports. Strong evidence is found between aggregate output and financial sector development. The Granger Causality tests imply a demand-following hypothesis that runs from economic development to the development of the financial sector.

The role of banks on economic growth differs based on ownership structure, bank size and efficiency. Usai and Vannini (2005) take initiative to check up the role of different types of bank on regional economic growth of Italy. Authors use the information over the period 1970-1993 and apply fixed effects regression model. The findings reveal the following facts:

- In Italy, different banks affect economic growth disproportionately;
- Cooperative banks and special credit institution play a positive role where Banks of national interest and Public law banks affect economic growth negatively; and
- Less complex banking institutions are more operational than large hierarchical banking corporations.

Financial markets can create opportunities for foreign direct investment. In a paper, Kholdy and Sohrabian (2005), study the association between financial markets, foreign direct investment and economic growth for the period of 1975-2002 on a panel of 25 countries. They apply Granger Causality model to check the direction of association. The results show that countries initially with low per capita GDP, economic growth is guided by financial development, and the direction of causality is opposite for counties with higher per capita GDP. The study concludes that bi-directional causality exists between financial markets and foreign direct investment for the countries with cooperatively higher GDP per capita and more developed financial markets. But the disappointing matter is that foreign direct investment cannot persuade economic growth.

Financial services should be available at all regions in a country. A country by and large consists of differentiated regions based on the level of development. Developing country like Bangladesh has urban, rural, semi-urban and coastal areas. PCBs should increase branches in all areas to make their services available for all classes of people of the country. Banks must increase efficiency in resource distribution and selecting feasible investment projects in less developed areas. Otherwise unavailability of banking services and resources may create inequality in regional economic growth and social development. In a study on China, entitled "Financial Development, Growth, and Regional Disparity in Post-Reform China" Liang (2006) finds income disparity is widening along with expanding financial development and fast economic growth between the coastal and inland regions. The research uses the Generalized Method of Moment (GMM) to analyze the effect of financial development on China’s growth performance in a panel dataset for 29 Chinese provinces over the period 1990-2001. The study uses log of real per capita GDP, total credit by financial institution to GDP, share of credit allocated to private sector, share of credit issued by financial institutions other than the four major state banks and total fixed asset investment to GDP. The results of the research indicate the following issues:

- There exists a significant impact of financial development on growth in coastal region;
- Credits to private sector, investment by financial institution, bank competition are positively correlated to economic growth in coastal regions of China; and
- There is a sluggish financial growth relation in inland regions. In less developed inland areas, only bank competition (credit given by financial institutions other than four major state banks) has a positive and important impact on economic growth.

Bangladesh's financial system consists primarily of capital markets, the banking sector, leasing firms, insurance companies and cooperatives of non-bank financial institutions. The banks operate a wide range of activities for the wellbeing of the economy. Comparatively developed countries have larger number of banks and economic development relies heavily on banking system (Debnath, 2008). Soundness of financial system depends mostly on the performance of the banks. Actually the performances of commercial bank carry significance to the consumers, business units, producers and different groups of the economy. So, different performance indicators of banks in a roundabout way, helps to judge the impact of banking roles to economic growth acceleration. In Bangladesh's economy, PCBs are more efficient than other types of banks. So, expansion of PCBs will enhance competition and efficiency.

Bikker (2010) draws attention to competition and banking performance, as competition has an impact on four factors, *i.e.*, financial innovation, financial health of banks, financial stability and consumer usability of banking services (with accessibility meaning the extent to which small and medium-sized businesses have access to affordable financing). Efficiency and performance of banking sector depend on both internal and external factors of banks and macroeconomic performance as a whole.

Kamau and Were (2013) in a study, try to find out the issues behind the performance of banking sector of Kenya over the period 1997-2011. They conclude with the message that in Kenya structure of banks and collusive power are more significant than efficiency for better performance. The performance of banks can be judged by

return on assets, return on equity, net profit etc. Profit and performance vary among different types of banks. Banks' capability to operate the roles to national economy depends on ownership pattern, central bank's requirement, asset management, capital adequacy, liquidity etc.

The real sectors of Bangladesh gradually need more financing from financial institution to grow. Sarker *et al.* (2015) in a study of the role of banking sector to inclusive growth, applying simple linear regression model find a strong relationship between the banking sectors' financing in agriculture and total agricultural output in Bangladesh. It is also apparent that credit from the banking sector significantly facilitates financial inclusion in Bangladesh. For developing nations seeking ways of inclusive growth, the model can be instrumental. Furthermore the study suggests some policy measures to address the challenges of financial inclusion with regard to initiatives by the banking sector to fund agriculture in Bangladesh.

Although industrialization is promoting economic growth, development of agriculture sector is equally important for economic growth. To accelerate economic growth, banks should play a vital role for agricultural development of Bangladesh. In another study of the role of banks on agricultural development, Sarker (2016) concludes that bank plays a significant role on agriculture development. In terms of crops, the purchase and installation of irrigation machinery, livestock and the selling of agricultural products, fisheries, poverty alleviation and income generating activities, agricultural production is calculated. A total of 50 respondents were interviewed to obtain primary data through a semi-structured interview schedule. Secondary data from Bangladesh Bank’s annual reports were collected during the period of 2010 to 2014. The disbursement of agricultural credit for the production of crops increased to Tk. 71.31 billion in 2014, from Tk. 33.19 billion in 2010. Subsequently, the disbursement of agricultural credits for the purchase and construction of irrigation equipment, the cultivation of crops, the marketing of agricultural products and the fishing industry have changed dramatically over time. The poverty alleviation credit has risen up to Tk. 18.64 billion in 2014 from Tk. 13.61 billion in 2010. The result implies that the bank plays a significant role in Bangladesh’s agricultural growth. Timely agricultural credit flows will meet the demands of farmers to ensure agricultural productivity. The study will assist government policy makers and NGOs

in addressing and evaluating agricultural sector issues in order to provide farmers with loans to facilitate real growth in this sector.

To scrutinize the economic transformation and social development, Ahluwalia and Mahmud (2004) note the improvement in economic growth rate. They showed, the growth rate was slow in the 1980s at 3.7% per year but accelerated to 4.4% in the first half of 1990s and to 5.2% in the second half. To compare the growth rates in per capita income between 1980s and 1990s they remark the positive impact of slowdown in population growth rate.

Macroeconomic variables have a profound impact on economic growth (Ali *et al.*, 2015). In an investigation, employing data from the year 1988 to 2012, using VAR Co-integration methodology, they found long run relationship between economic growth and market capitalization, foreign direct investment and real interest rate. But all the variables showed no short run relationship in the same study for Bangladesh.

Basically, Foreign Direct Investment FDI) in developing countries stimulates economic growth. Srinivasan *et al*. (2011) found a long-run relationship between FDI and economic growth using Johanson co-integration in a study of the SAARC region. The study reveals a long-run bidirectional causal link using vector error correction model between GDP and FDE.

Adhikary (2010) traces a clear long-term equilibrium relationship between GDP growth rates and other explanatory variables to examine the correlation between economic growth, FDI, capital creation and trade openness. But for the period, 1986-2008, Adhikary (2010) finds a strong unidirectional casual flow originating from changes in FDE, trade openness and capital formation to the economic growth rates of Bangladesh.

One of the vital functions of commercial banks is to provide credit to producers. Yakuba and Affoi (2014) find noteworthy impacts of credit from commercial banks on domestic production. They study on GDP and credit for the period 1992 to 2012 applying regression analysis and ordinary least squares in Nigeria. The study reveals that agriculture and manufacturing sector must be prioritized for loan. Banks should keep continuing credit to private sector. Better monitoring and legal framework promote more credit and recovery of bad debt.

Khan (2008) assesses the association between financial development and economic growth in the wake of financial sector reform in Pakistan. The variables are private sector credit to GDP (representing financial development), ratio of GDP to Consumer Price Index, Gross fixed capital formation to nominal GDP (share of investment), real deposit rate (nominal rate-inflation rate). The ARDL model is used. The statistically significant positive coefficient of private sector credit to GDP (financial development) indicates that liberalization strategy promotes economic growth. Insignificant coefficient of real interest rate alone cannot influence economic growth. Economic growth is positively affected by both short and long-term financial development and investment. The real deposit rate is favorably but insignificantly linked to growth in the long run, but strongly linked to growth in the short run.

Daly and Frikha (2016) explore the impacts of Islamic banking on economic growth process. They work on a panel of ten countries (Egypt, Saudi Arabia, Turkiye, Kuwait Bahrain, Jordan, Qatar, Jordan, Sudan, UAE and Pakistan) for the period 2005-2012 and apply OLS regression. They take data of 120 banks (54 Islamic banks and 66 conventional banks). The variables ROA, ROE, total deposit, total investment and total income, number of branches, number of employees are used to measure bank profitability and GDP to represent economic growth. Control variables are total assets, market share, income diversity and inflation rate. The study gets important findings. The contribution of Islamic banking is comparatively better than that of conventional banking. Variables in the banking sector, after all have a positive influence on economic growth. Mingling of Islamic and conventional banking system will improve the economic growth scenario.

In an investigation to judge the contribution of Islami Bank Bangladesh Limited (IBBL) in the economic development of Bangladesh, Rahman and Rafiq (2016) find that the bank is working to develop different types of industry by providing loans. It pulls the workforce by creating employment opportunities. The bank facilitates in international trade. In a nutshell, the bank plays a vital role for socio-economic development of Bangladesh. The analysis is of descriptive sort. For the period 2010 to 2014, it assesses the conditions of deposits, investment, export import, remittance, total income, total expenditure, net income and equity of IBBL.

New financial products and versatile financial services have positive impacts on economic growth. Qamruzzaman and Jianguo (2017) portray the issue. For a period of

35 years (1980-2016), authors study on the variables real per capita GDP, domestic credit to private sector, inflation rate, total trade as % of GDP, gross fixed capital formation, broad to narrow money ratio (proxy of financial innovation), government final consumption expenditure and apply ARDL bound testing and Granger Causality based on Error Correction Model. A long run exists between financial innovation and economic growth. Between financial innovation and growth, bidirectional causality exists. The government should promote financial creativity.

Siddique and Islam (2001) examine the success and contribution of the banking sector to the economy of Bangladesh. The study finds some factors which exert influence on net profit of banks. The results reveal amount of expenditure, amount of investment and number of advance accounts are negatively correlated with net profit whereas amount of asset, number of employees, number of branches and amount of time deposit are in positive association with net profit. By analyzing the profit scenario of different banks, the study discloses that the performance of specialized banks and national commercial banks are poor while the transnational banks (foreign commercial banks) are operating extraordinarily due to good management and sound policies. They focus that private commercial banks are increasing their market share since starting their operation in 1982 and functioning with profit.

Banks' capability to operate the role to national economy depends on ownership pattern, central bank's requirement, asset management, capital adequacy, liquidity etc. In a study to examine the impact of bank ownership concentration on capital adequacy, liquidity and capital stability, Chalermchatvichien *et al.* (2014) found that capital adequacy is strengthened by an increase in ownership concentration. In the study, they use a sample of 68 East Asian Banks from the year 2005 to 2009. The chosen banks are among the ten largest active commercial banks in each country. The authors apply the baseline regression model. Authors find the following results:

- As ownership concentration rises, banks become more capitalized and liquid;
- Macroeconomic conditions have impact on banks' capital level; and
- Lower ownership concentration levels, an increase in concentrated ownership would have decreased capital stability, and greater ownership concentration would have improved capital stability at higher ownership levels.

To add value to the economy, commercial banks have to be well-functioning. Performance shows the status of the banks. Khandker (2011) judges the performance of ten Bangladeshi private commercial banks for 2009. For the selection of banks, random sampling technique is adopted. Number of branches, amount of deposit, classified loan, capital adequacy, return on assets, return on equity, earning per share and operating expense ratio are the variables of interest. In the study period, the selected banks have variations in number of branches, amount of deposit, asset quality and efficiency. The profitability ratios indicate the selected banks have similarity in terms of profitability. The profitability ratios are impressive and quality of asset is good in the study period. But the PCBs of Bangladesh are facing many problems.

Chowdhury and Ahmed (2009) evaluate the performance of selected PCBs for the period 2002 to 2006. The study uses the variables named bank branches, number of employees, deposits, total loans and advances, classified loan, net income earning per share and time as independent variable. After estimating trend equation by ordinary least square, the study discloses that there is a positive trend in all the variables. But positive trend in classified loan is no good for the economy. Better performance in the above mentioned variables shows the constructive role played by PCBs.

At present, as the banking sector is facing many problems, there is a common question of interest for the economy whether the existing banks can operate their functions properly or keep pace with the increasing demand of financial services of people. So, the pros and cons of entry of new banks should be analyzed. Rahaman *et al.* (2015), assess the economy's need for new private commercial banks. They gather information from both secondary (annual reports of PCBs) and primary (conducting interview and focus group discussion) sources. After analyzing the information by SWOT and PESTEL analysis, the study discloses the following outcomes.

- Banking sector is suffering from credit growth, credit disbursement and risk management.
- Credit growth is declining implying lower investment along with possible lower domestic output. The existing PCBs are offering new innovative financial services. So, in such a situation more new banks will get lower scope to serve the economy. Again, banking sector is passing through some problems such as corruption, low loan recovery and non-performing loan.
- Entry of new PCBs may worsen the situation.

Non-performing loan is harmful for the economy to grow. Banks take various policies to recover the loan. Banks can provide new loans after getting the disbursed loan. In an effort to analyze the loan recovery positions of Islamic banking, PCBs and NCBs, Ahmed *et al.* (2006) find that the percentage of non-performing loan is higher in NCBs and PCBs. For the period 1997 to 2001, NCBs and PCBs are in a shortfall of capital provision. PCBs are in a better position in terms of RoA, RoE, NII than NCBs. But Islamic banking is in a better position in loan recovery process than PCBs and NCBs for the study period.

PCBs are assisting the economy by creating employment opportunities and reducing unemployment. The quality of work life between male and female PCB employees in Bangladesh is examined by Tabassum *et al.* (2011). They apply factor analysis after collecting primary information by a structured questionnaire (Likert measurement scale). The study discloses that PCBs are employing female employees from national labour force and utilizing their skill, abilities and wisdom. But there is significant difference between male and female employees in terms of compensation, work schedule, job responsibility and relationship between employees. Nonetheless, PCBs are contributing to social development by employing female employees from the labour force. So, PCBs should focus on gender equity.

To overview the linkage between financial markets and growth Pagano (1993) observes that financial intermediaries play vital role in the economy. Financial intermediaries collect residual of income after consumption, the second important task is to disburse the fund in the economic activities which provide highest marginal outcome. Without banks, households may investment in less productive projects due to lack of information. Marginal propensity to save may be affected if households get more return in capital markets than depositing in banks. Financial intermediation also help household to borrow. Usually financial development and growth are positively related. But as households get the scope of borrowing, savings and growth may be influenced negatively.

2.5 SUMMARY ON REVIEW OF EMPIRICAL LITERATURES

The summary on review of empirical literature of the study is shown in Table -2.1.

Table -2.1: Summary on Review of Empirical Literature of the Study

Author(s) and Year	Study Area	Study Period	Variables (Time Series) and Models Applied	Major Findings
FitzGerald (2006)	Existing Study	-	-	Accumulation of physical and human capital determines the long run persistent economic growth.
Levine and Zarvos (1998)	47 countries	1976 to 1993	Indicators of stock market and banking sector development, GDP Growth.	Both the indicators of the banking and stock markets are closely correlated to current and future economic growth rate.
Cheng and Degryse (2010)	27 Chinese provinces	1995 to 2003	Per capita GDP, Banking development indicators.	Chinese economic growth is influenced by banking development. Bank's role is more vital than non-bank on local economic growth.
Rahman and Cheema (2013)	Pakistan	1972 to 2011	Indicators of financial development, GDP per capita.	The demand following hypothesis exists. Commercial banks play a vital role for the real sector growth of the country.

Table -2.1: Summary on Review of Empirical Literature of the Study (Continued)

Author(s) and Year	Study Area	Study Period	Variables (Time Series) and Models Applied	Major Findings
Liang (2006)	China (29 Chinese Provinces)	1990 to 2001	Log of real per capita GDP, Financial development indicators. Generalized Method of Moments.	The results indicate a significant impact of financial development on growth in coastal region. The study reveals a sluggish finance growth relation in inland regions.
Rahman (2004)	Bangladesh	1976 to 2005	Per capita GDP, Indicators of banking sector development. Long-run SVAR.	Financial development has a long run positive impact both on investment GDP ratio and income per capita.
Aurangzeb (2012)	Pakistan	1981 to 2010	GDP, Indicators of banking development. Granger Causality Test, Ordinary Least Square.	All bank-specific variables have significant positive effects on Pakistan's economic growth.
Sunde (2013)	Namibia	1990 to 2011	Real GDP and Real GDP per capita, Indicators of banking sector development. VAR model.	Creation of new banks and competition among banks exert significant impact on economic growth.

Table -2.1: Summary on Review of Empirical Literature of the Study (Continued)

Author(s) and Year	Study Area	Study Period	Variables (Time Series) and Models Applied	Major Findings
Ayadi *et al*. (2013)	Northern and Southern Mediterranean Countries	1985 to 2009	Indicators of financial development, Economic growth. Fixed Effect Panel Regressions, GMM model.	In the banking sector, credit to private sector and deposit negatively correlated to growth due to lack of strong financial regulation and supervision. On the contrary, stock market size and liquidity exert positive impact on growth.
Jalil and Ma (2008)	China and Pakistan	1960 to 2005	Real per capita GDP, Deposit liability ratio, Credit to private sector.	A well-functioning financial system is needed for economic growth.
Awdeh (2012)	Lebanon	1992 to 2011	Nominal GDP Growth Rate, Indicators of banking sectors development. Granger Causality Test, Multiple Regression Analysis using OLS technique.	Demand following hypothesis exists for the study period running from economic growth to banking sector variables. The study also reveals that banking sector does not influence economic growth significantly.

Table -2.1: Summary on Review of Empirical Literature of the Study (Continued)

Author(s) and Year	Study Area	Study Period	Variables (Time Series) and Models Applied	Major Findings
Odeniran and Udeaja (2010)	Nigeria	1960 to 2009	Real GDP per capita, Indicators of financial sector development. Granger Causality Test, VAR Model, The Variance Decomposition.	The deepening of financial capital is not correlated with economic growth. Bidirectional causation is shown by net domestic credit and growth. The relationship between finance and growth is influenced by type and activities of financial organization and policies.
Usai and Vannini (2005)	Italy	1970 to 1993	GDP per capita, Indicators of Banking Development. Fixed Effect Regression Model.	Different banks affect economic growth disproportionately.
Liang and Reichert (2006)	70 emerging and developing countries and 20 advanced countries	1960 to 2000	Indicators of banking sector development, Annual growth rate of real GDP. Granger Causality Test, Fixed Effects Multivariate Regression Model.	Strong evidence is found between aggregate output and financial sector development.

Table -2.1: Summary on Review of Empirical Literature of the Study (Continued)

Author(s) and Year	Study Area	Study Period	Variables (Time Series) and Models Applied	Major Findings
Uddin *et al.* (2012)	Bangladesh	1976 to 2010	Indicators of banking sector development, Economic growth. ARDL Bounds Testing Approach to Cointegration.	There is a long run equilibrium relationship between improving the banking sector and reducing poverty. Between these variables, bidirectional causality is present.
Mwanga and Sanday (2013)	Uganda	1980 to 2011	GDP, Indicators of financial liberalization. VAR Model.	The study gets positive relationship between the liberalization of the financial sector and economic growth.
Ahmad and Malik (2009)	35 developing countries	1970 to 2003	Annual growth rate of real GDP per worker, Indicators of financial sector development. GMM Model.	Efficient allocation of resources than capital accumulation work better for economic growth. In the long run domestic capital is vital for per worker GDP.
Kholdy and Sohrabian (2005)	25 developing countries	1975 to 2002	Financial Market Indicators, FDI Inflow, Per capita real GDP growth rate. Granger Causality Test.	There exist bi-directional causality between financial markets and economic growth. FDI cannot influence economic growth.

Source: *Existing empirical literature* (constructed by the author)

2.6 RESEARCH GAP ADDRESSED BY THE STUDY

The study has discovered a significant gap after reviewing the theoretical and empirical literatures related to problem area of present research. Despite notable studies on economic growth, commercial banks, and relation between financial system and economic growth, no specific attempt has been made to focus the role of private commercial banks (PCBs) to accelerate economic growth in Bangladesh. PCBs are operating efficiently for long. The functions of PCBs have accelerated the economic growth of Bangladesh. The question of how the functions of PCBs have accelerated economic growth is unanswered. So, an examination of contribution of PCBs to economic growth is expected to fill the gap.

There exists a mentionable space in the identification of the Demand Following or the Supply Leading hypothesis for Bangladesh's economy. Three general hypotheses have been disclosed in empirical studies of financial system and economic growth literatures. The hypotheses are Demand Following (where economic growth produces more financial services), Supply Leading (financial system creates opportunities to encourage economic growth) and Mixed Relationship (financial development and economic growth promote each other). In Bangladesh's economy, privatization in banking industry began in the decade of 1980s. On the other hand, the economy started to grow in the mid-1980s. In this circumstances, existing studies have failed to notice which hypotheses is applicable to Bangladesh regarding the expansion of PCBs and economic growth. Is it the development of PCBs to accelerate economic growth or economic growth to drive the PCBs to be developed? The causality analysis is required.

The study identifies a gap in the examination of economic growth of Bangladesh. As economic growth is the single most contributory factor in the economic development process, prudent econometric investigation of growth is necessary. Bangladesh wants to be self-reliant, aid-free, and country of economic growth and social development. Thus, the study considers proposing policies that would enrich the existing bunch of policies.

Chapter 3
THEORETICAL FRAMEWORK AND CONCEPTUAL ISSUES

The chapter has proposed a model to investigate the role of private commercial banks (PCBs) in accelerating the economic growth of Bangladesh. After reviewing the literature critically, the study has proposed the model or the framework in the present chapter. The need for the framework, identification of variables, relationship among the variables and the reasons behind the relationship have also been discussed in this chapter. Finally, the model has been developed. The model or the framework is the foundation as the present study has adopted hypothetico-deductive approach. The hypothesis development has followed the model. The hypotheses have been placed after the model. Before the exposition of the model, some related models have been discussed.

3.1 CONCEPTUALIZATION

The conceptualization process incorporates identification of the variables, clear definition of the variables, explanation of the relations among the variables and justification of the relationship. A schematic presentation gives the picture of the conceptualization process of the study. The framework is the blueprint of correlation among the concepts (variables) of a research. The framework defines the variables and establishes the pattern of interactions among the variables with appropriate explanation. It justifies the expected relationship among the variables. It assists to construct the discussion of the critically reviewed literature. It clarifies the objectives of the research. It portrays different aspects of the topic. The framework explains why and how the variables are related. It justifies the problem statement. The ideas, assumptions, principles and interrelations of variables are clearly defined with the help of the theoretical framework. The readers can think about the theorized relations among the variables of the proposed model and get an immediate idea with the schematic presentation of the model.

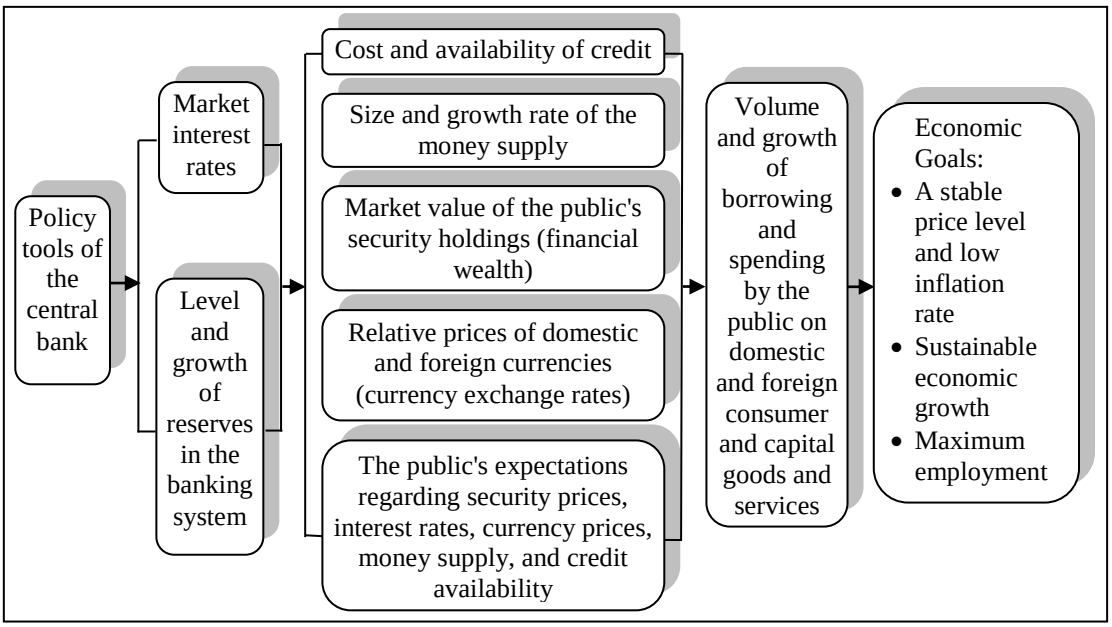
3.2 EXISTING MODELS

Some related models in the problem area of the study have been presented in this segment. The following models are related to the proposed model directly and indirectly.

3.2.1 The Goals and Channels of Central Banking

Rose and Marquis (2006) opine that banks as an integral part of financial system, help central bank to achieve macroeconomic goals. Central bank aims at maintaining a stable price level with tolerable inflation rate, creating employment opportunities and maximum production with available resources and existing technology. Applying the instruments of monetary policy such as interest rate and money supply, central bank affects the economy through the financial system where commercial banks dominate. To reach the goals, central bank controls the interest rate, availability and price of loanable fund, volume of narrow money in circulation, volume of time deposit in the banking industry, expected future price of securities and price of domestic currency against foreign currencies. Achieving all the goals simultaneously is tedious and complex for the central bank as the goals often contradict. Inflationary pressure may necessitate higher deposit interest rate (in case of demand pull inflation). But higher deposit interest rate may be negatively correlated with output growth and employment creation. However, regardless of the conflict, central bank tries to make a balance between the goals with prudent monetary policy. The policies to be implemented, financial system are of great importance in term of providing support to central bank (the guardian of all banks). The Fig.-3.1 discloses how central bank influences the economy and financial system.

Fig.-3.1: The Impact of Central Bank Policy: How Central Banks Influence the Economy and Global Financial System

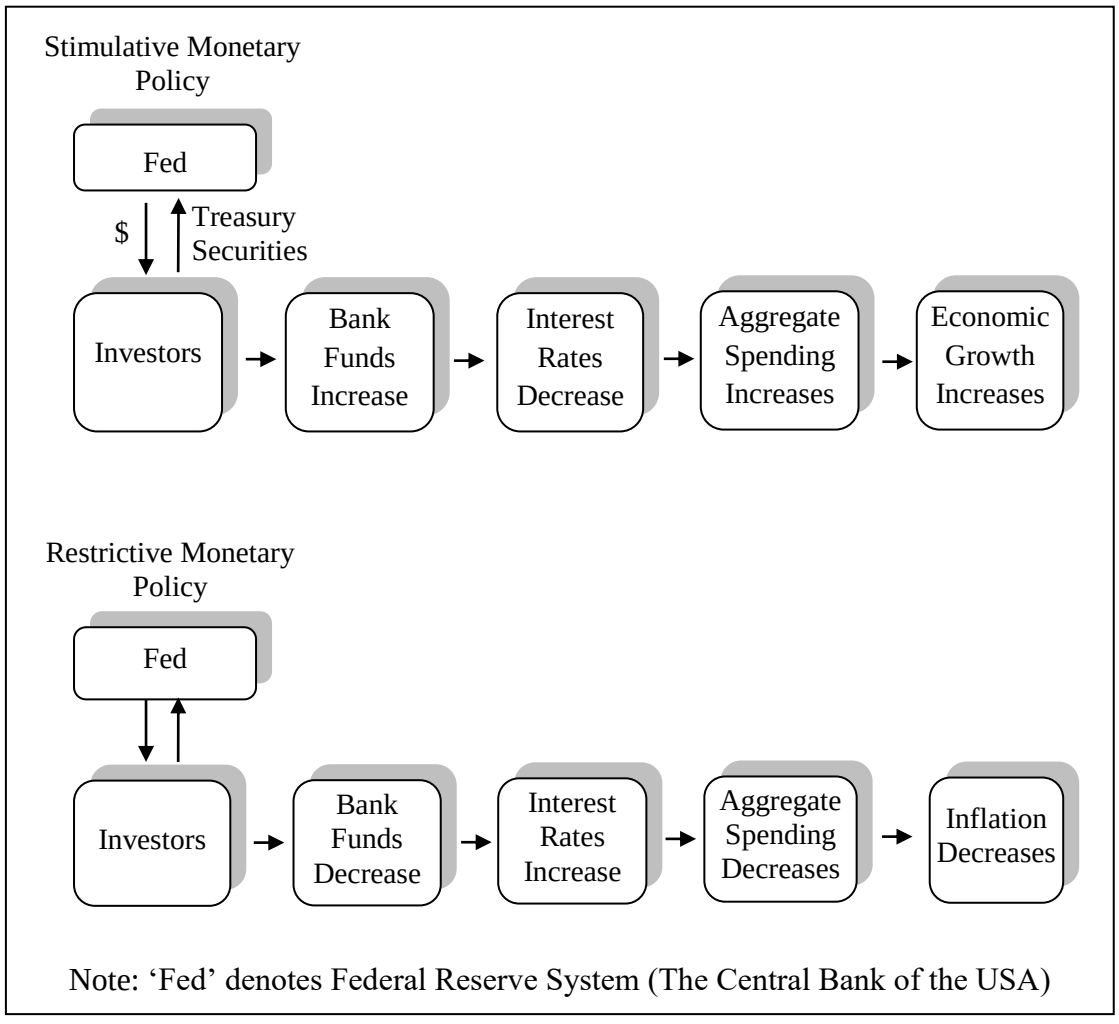


Source: *Rose and Marquis, 2006.*

3.2.2 Mechanics of Monetary Policy

Madura (2008) focuses the role of central bank to economy. One of the central bank's prime tasks is to devise monetary policy. When the economy needs to be changed, central bank operates open market operations in the secondary market (part of financial system). In poor economic status, simulative or expansionary policies are taken. Treasury securities are purchased, and funds become available to investors. Economic growth accelerates. On the contrary, economic growth can be slow by the application of contractionary or restrictive monetary policy. Sale of treasury securities makes funds less available to investors. So, interest rate hike, and reduced aggregate demand result in slow economic growth and decreased inflation. The Fig.-3.2 illustrates the scenario.

Fig.-3.2: How Monetary Policy Can Affect Economic Conditions

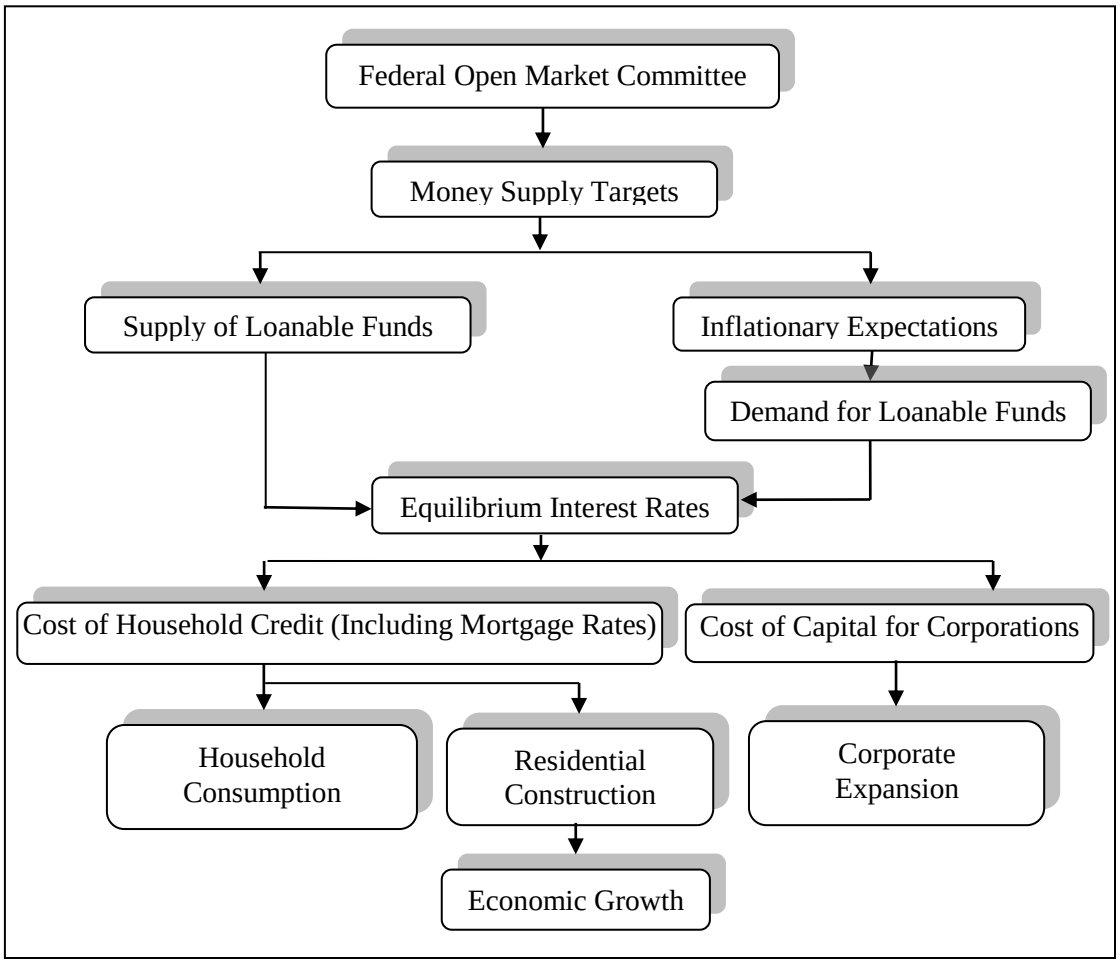


Source: *Madhura, 2008.*

3.2.3 Impacts of Monetary Policy

Madura (2008) releases the impacts of monetary policy on financial conditions and economic growth. Monetary policy is designed based on the conditions of the economy, and implemented thorough the financial system. Money supply is controlled considering the demand and supply of loanable fund. As inflation is a vital macroeconomic phenomenon, it is taken into account while formulating policies. Demand and supply of loanable fund interact to assess the rate of equilibrium interest. Many segments of the economy take financial decision after observing the announced monetary policy. Government thinks about the financing of the expenditure on society. Households borrow funds to meet consumption expenditure. Household consumption is an integral part of aggregate spending. Business entities collect funds for capital requirement. Affecting the different units of the economy, and working through the financial system, monetary policy exerts influence on economic growth. Fig.-3.3 gives a picture of the scenario.

Fig.-3.3: How Monetary Policy Affects Financial Conditions

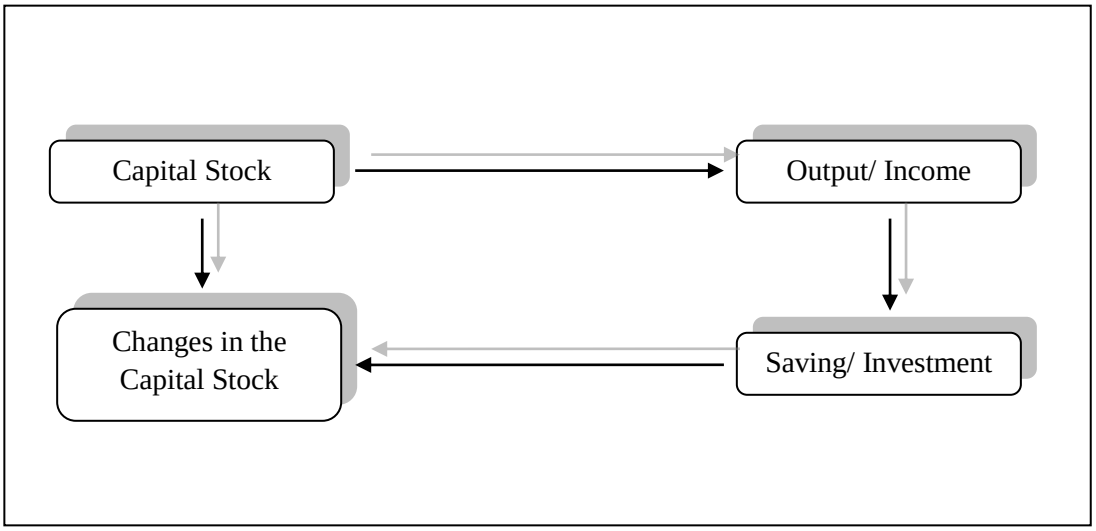


Source: *Madhura, 2008.*

3.2.4 Interactions between Output and Capital

Blanchard (2000) traces the determinants of economic growth in the long run. The reciprocal relationship between capital accumulation and the level of production is observed by the author. To find out the impacts of capital on output, it is assumed that the total population, labour force, employment rate and unemployment rate are constant. To focus more on the role of capital in growth, no technological advancement is assumed. Under this situation, per worker output, output and per capita output move proportionately. The other side of the reciprocal relation, assumes that the economy is closed. Private saving is proportional to personal disposable income. Ignoring government taxes and expenditure makes the assumption of zero public saving. Private saving fully dominates national saving. So, private saving equates with investment and investment is proportional to national output by logic. New investment makes addition to existing capital (Fig.-3.4).

Fig.-3.4: Capital, Output, and Saving/Investment

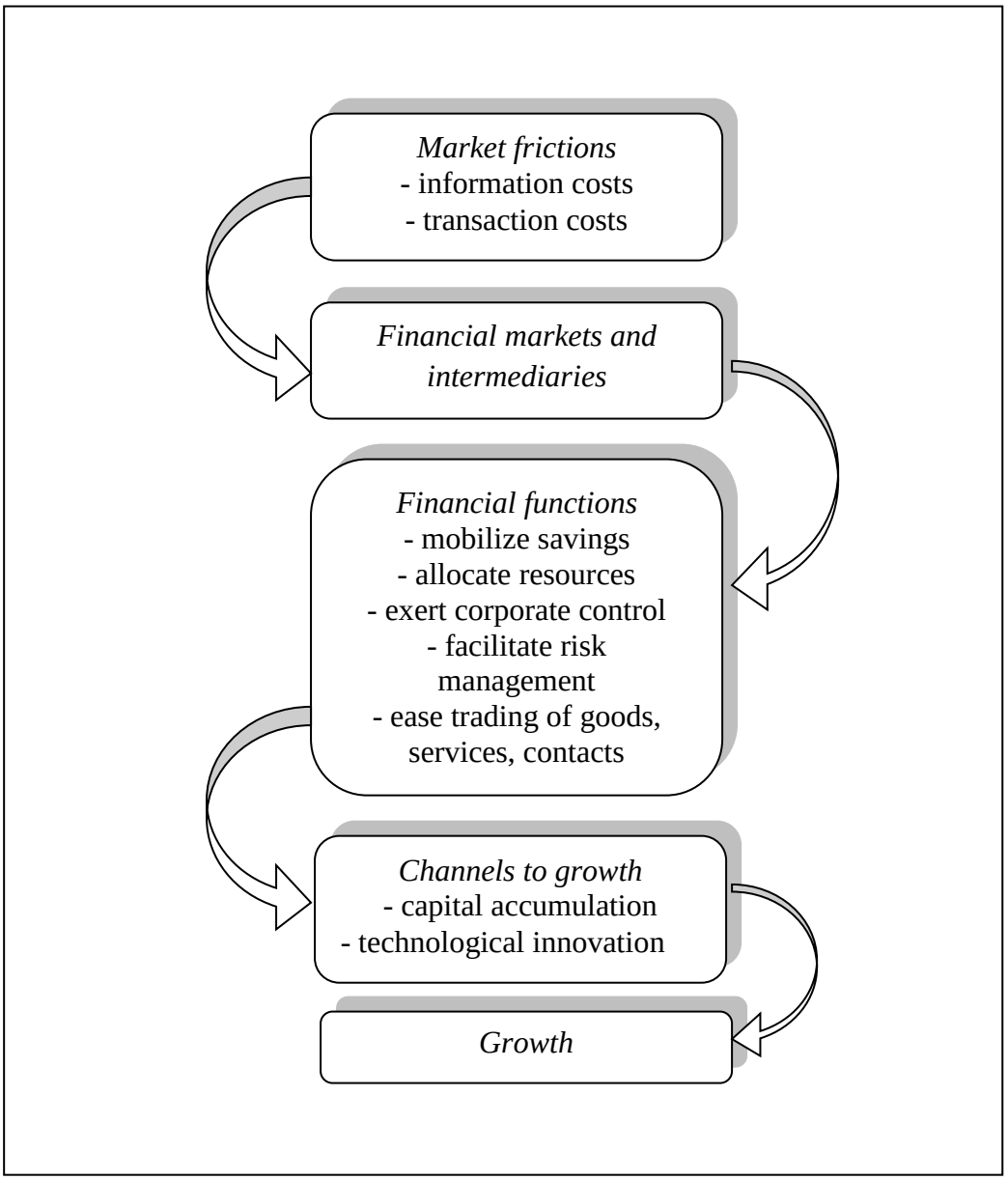


Source: *Blanchard, 2000.*

3.2.5 Relationship between Finance and Growth

Financial capital and economic growth have a strong connection. The elements of the financial system generate financial resources. A smooth financial system encourages the accumulation of capital, thereby stimulating economic development. The role of finance to growth is demonstrated in Fig.-3.5.

Fig.-3.5: A Theoretical Approach to Finance and Growth



Source: *Levine, 1997*

3.3 PROPOSED MODEL OF THE STUDY

To investigate role of PCBs in accelerating the economic growth of Bangladesh, the study has proposed a model. The model or framework is the groundwork on which the entire study is based. It is a logical development, complete explanation and elaboration of relationships among the variables considered relevant to problem situation of the study. The prior knowledge, intuition and existing literatures have guided to develop the model or the framework.

3.3.1 Variables

The variable is defined as anything that can take on changing values at different time periods for the same unit. The model of the study has considered following dependent and independent variables.

3.3.1.1 Dependent Variables

Dependent variables are the variables which carry the initial interest of the study. The goal of the study is to examine and understand the variability of dependent variables. Nominal Gross Domestic Product, Real Gross Domestic Product and Per Capita Gross Domestic Product resemble economic growth. Hence, the present study has considered the following variables as dependent variables.

Nominal Gross Domestic Product (GDP): It is the value of goods and services which are produced for final use in a specific time period within a country no matter who owns the factors of production (Goods and services are valued at current market prices).

Real Gross Domestic Product (GDP): It is the value of products and services produced within a country for final use in a particular time span, regardless of who owns the production factors (goods and services are valued at constant market prices of a base year).

Per Capita Gross Domestic Product (Nominal): It is the value of per person total final goods and services produced within a country in a specific time period. It breaks down the output per person. It is obtained by dividing the output by total population of the country (good and services are valued at current market prices).

3.3.1.2 Independent Variables

Independent variables are the variables which exert influence on dependent variable either positively or negatively. PCBs accelerate economic growth through the functions. The selective functions of PCBs are depicting the role of PCBs to growth.

Hence, following variables have been considered as independent variables in the proposed model of the study.

Deposit of PCBs: Keeping money in the depository organizations of the economy like banks is defined as deposit. Deposit denotes putting of money in the banks. Usually, there are savers in the economy. The group of savers includes individuals, households, heterogeneous business entities and the government of the country. To deposit, the savers have to make a relation with the banks by opening an account. When savers open deposit account, they become the depositors of the bank. Current accounts, saving account, fixed deposit account are the most familiar accounts offered by the banks to the depositors. Banks utilize the deposited money and pay interest to depositors. Actually banking business starts with the depositing money. Gathering deposit is the first phase of banking functions (Khan, 2009).

Loan and Advances of PCBs: The system of lending money is defined as loan. When money is loaned by the banks of the economy, it is called as bank loan. Different units of the economy such as individual, household, entrepreneurs, firms, government take loan from the banking industry for consumption and production purposes. To get loans from banks, some procedures are to be followed. At first, the unit of economy who needs money applies to the specific bank. Then the bank authority justifies the purpose and creditworthiness of the applicant. After the justification, if the applicant seems to be capable to utilize the money and repay the loan with interest along with maintaining the terms and conditions, the bank agrees to provide loan. After disbursement, the bank monitors the applicant whether the lent money is properly utilized or not. To secure the lent money, sometimes banks demand collateral. In Bangladesh, PCBs sanction loans to diversified sectors of the economy to grow, individual and household to meet consumption demand, exporters and importers to facilitate international trade and new entrepreneurs to start a business. PCBs disburse loan in urban and rural areas of Bangladesh. In this way, PCBs are operating to boost up Gross Domestic Product (GDP). Indeed providing loan is one of the prime economic activities of commercial banks to meet consumption and investment expenditure by all types of firms, households, and units of government (Rose, 1996).

Investment by PCBs: Investment defines utilization of money to buy shares and securities of firms operating in both public and private sectors. Firms operating in the economy, purchase building and real estate for the purpose of generating monetary benefits such as profits interests etc. When banks buy shares and securities traded in the money and capital market of the economy then it is termed as investment by banks. Banks earn profit by investing surplus funds. Credit risks and market risks are the two major type of risks faced by banks. Credit risk happens when there is a likelihood of non-repayment of credit provided by banks. On the contrary, if there is down turn or recession in the economy, firms face low demand of loan thereby creating market risks for banks. To minimize the risks, banks undertake investment activities. Shares and securities either long term or short term have some advantages over loan. Traditionally, loans are illiquid asset of the banks and there is a chance of loss of principal amount. On the other hand, shares and securities are more liquid. Banks can sell when necessary to meet the sudden liquidity crisis. Diversification of banks' funds, reducing liquidity risk, maintaining a stable income, increasing the wealth of the banks' shareholders are the prime benefits for banks resulting from investment. Again in the long run, more investment by banks helps to strengthen the capital market of the economy. A strong capital market generates more investment. Domestic firms get more capital for production implying higher economic growth.

Total Income of PCBs: Total income consists of gross income from providing loan (interest income), returns from investment (investment income) and earnings generated from other services (non-interest income) provided by banks. According to CAMELS ratings, earnings of banks are used to judge the managerial efficiency and a bank's capacity to perform its functions to the economy. Managerial efficiency and banks' operational performance are related to economic growth. Before sanctioning the loan, the bank justifies the feasibility and calculates the risks associated with the loan. It is a risky decision making process. After disbursement, regular monitoring and controlling is needed to reduce the probability of non-repayment or credit risk. So, interest income is a benchmark of managerial

efficiency. Again, repayment of loan implies that economy is growing as domestic firms have used the loan and returned it with interest. Similarly, returns from investment in money and capital market follow the same sequence. Lastly, PCBs are supporting the economy by providing financial services which result in more business transactions thereby non-interest income for a bank. So, total income of PCBs and economic growth are correlated.

Export Earnings by PCBs: Export denotes sending products made by domestic firms to other countries for sale. Exporting is a prime foreign currency earning tool for any economy. Reserve of foreign currency in Bangladesh Bank is one of the indicators of economic growth and development. Indeed the quantity of domestic products demanded by the rest of the world is expressed in exports. Exports are therefore part of domestic aggregate demand and of gross domestic product (Parkin, 2012). So, to promote export, PCBs receive export earnings on behalf of the economy. It facilitates the exporters by providing the service named 'Letter of Credit'. Bangladesh sells readymade garments, knitwear, woven garments, light engineering products, handicrafts, ceramic based items, leather goods, water vessels, frozen food etc. (MoF, 2018). There is a possibility of new emerging markets for SME products. As more export derives more domestic production and foreign currency, the PCBs now have a greater scope by accepting bills in foreign currency. Thus the present study considers amount of export earnings received by PCBs as a variable along with other variables to show the role of PCBs to boost up GDP.

Non-Performing Loan (NPL) of PCBs: NPL is the amount of loan which is not in operation. So, the borrowing firms cannot repay the money to banks. NPL makes the banks less safe. Banks become incapable to provide new loans to firms and consumers. So, NPL has a negative impact on domestic production and aggregate demand. NPL is also termed as classified loans. According to the regulations of Bangladesh Bank, all PCBs have to maintain provisions against NPL to combat adverse situation. NPL is categorized into three parts namely substandard, doubtful and loss amount.

Number of Branches of PCBs: A branch is the local office or division belonging to a large institution. Most of the PCBs in Bangladesh have branches in all parts such as rural and urban areas of the country. More branches in all regions ensure the PCBs to perform their functions equitably for all types of firms and consumers.

3.3.2 The Framework

The proposed framework has explained the relations among the variables to examine the role of PCBs to accelerate the economic growth of Bangladesh. A schematic diagram has been presented to get the idea rapidly.

Firms of an economy produce goods and services to meet human demand for survival. The level of goods and services is determined by the productive resources *viz.*; land, labour and capital entrepreneurship. Firms need these productive resources to continue operations. According to circular flow of macroeconomic activities, the households of the economy provide productive resources. As more resources are provided to firms, production is enlarged.

Parkin (2012) defines economic growth as the persistent expansion of production. Capital accumulation and technological change brings the expansion. Both human and physical capital growths are considered. Capital growth and technological advances boost up labour productivity which increases domestic production where capital growth necessitates saving and investment. To gain more economic growth, an economy should stimulate savings, research and development, international trade, quality of education and high technology industries. Funds are required to finance basic research. Setting up high-tech industries, on the other hand, requires funds. International trade always brings benefit to economy by exporting surplus products and purchasing foreign-made products for which there is a crisis in domestic economy. Again, funding is important for quality education. For all these jobs to be done, financial capital is the solution.

An economy encompasses heterogeneous firms. The different firms work in agriculture sector (fishing, forestry, livestock and poultry, crops and horticulture), industrial sector (mining and quarrying of oil, petroleum, gas and minerals, manufacturing such as automobiles, sports items) and service sector. All these firms

require backward linkage for production. Financial capital is the prime component of backward linkage. Now, the question is, how the economy can link up financial capital with the firms. There is an arrangement of another type of business whose main responsibility is to offer financial services to the economy. Private commercial banking is a part of this business. PCBs collect funds from the savers of the economy. The collected funds are then provided to goods and services producing firms of the economy. Apart from these two functions, PCBs offer an array of financial services to the economy which creates more business activities in domestic economy and transactions with rest of the world. If PCBs do not exist in the economy, what would be the scenario? Savers keep the money with themselves. Gradually money would lose its value. Firms could not continue the production due to unavailability of capital. There existed no market within and outside the economy. GDP would become zero. So, in a nutshell, it is not deniable that PCBs always play role for the economy to grow (Fig.-3.6).

The Fig.-3.6 shows how the PCBs operate to accelerate economic growth. Deposits flow from savers to PCBs. From PCBs, loans flow to firms and consumers of the economy. Lent money exerts positive influence on domestic production in two ways. Firms use the money to collect factors of production. Firms engage the money in production. Consumers use the lent money to buy final products and services. Consumers consist of households, firms, government and foreign countries.

Mankiw (2000) shows that according to national income accounts identity, GDP is composed of four elements:

Consumption (c);

Investment (I);

Government Purchases (G); and

Net Exports (NX).

Thus the following equation can be written as:

$GDP = C + I + G + NX$

On the contrary, Parkin (2012) states that GDP equals aggregate expenditure equals total income of the economy. The amount of consumption spending, investment expenditure, government expenditure and net exports are the Aggregate expenditure (AE). Thus the following equation can be written as:

$$AE = C + I + G + NX$$

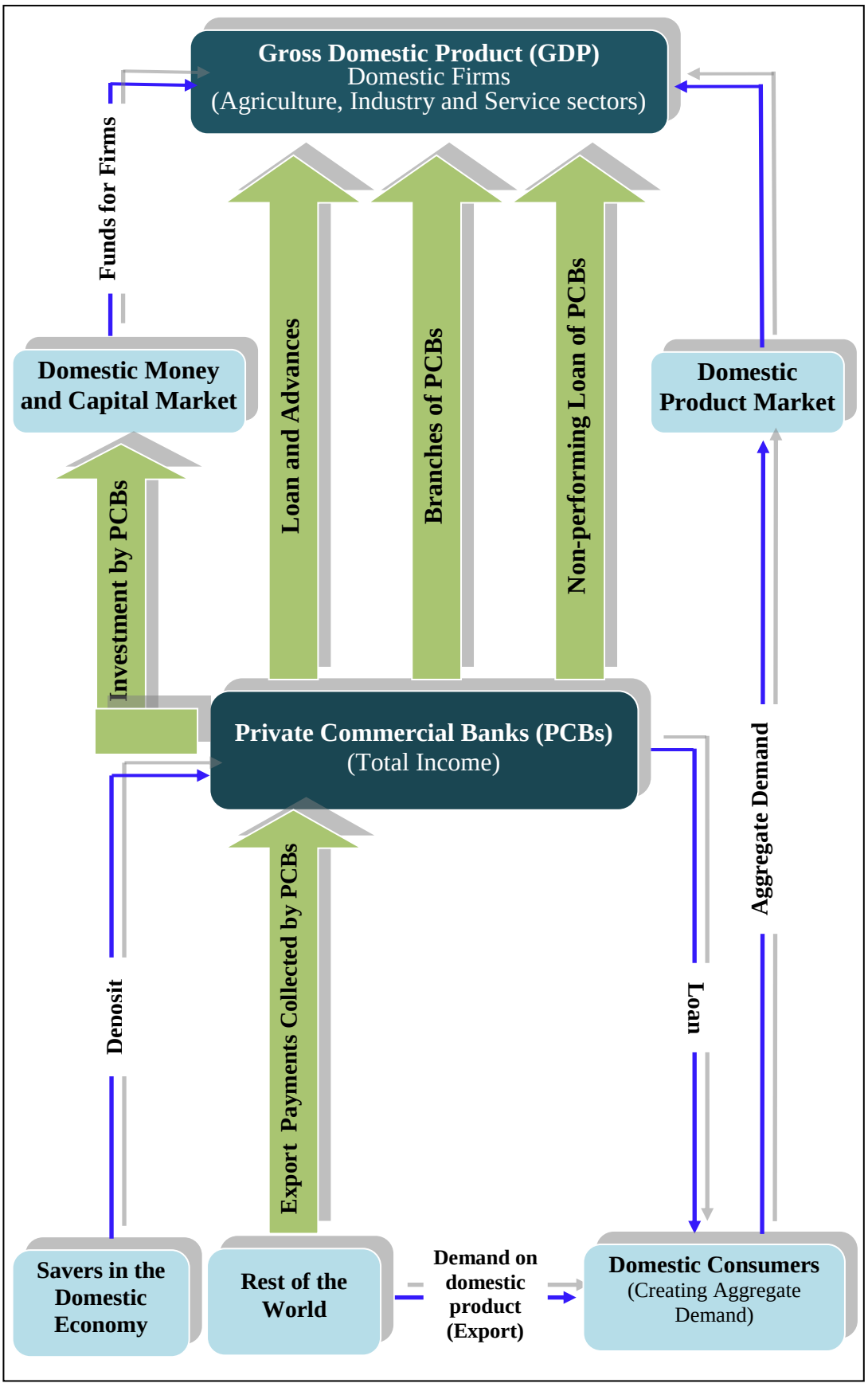
Dornbush *et al.* (1998) portray the theory of income determination developed by John Maynard Keynes. The Keynesian model postulates mutual interaction between national output and spending. Spending determines output and output determines spending. The economy is at equilibrium when total output produced is equal to total output demanded by the components of the economy which can be expressed as follows:

$$GDP = AE = C + I + G + NX.$$

Therefore it can be argued that more aggregate expenditures is twisted with more GDP. PCBs lend hand to boost up aggregate expenditure.

Turning to the framework (Fig.-3.6), PCBs collect deposits from the surplus units of the economy and disbursed the deposited money to the deficit units of the economy. Hence, deposit, and loans and advances are equivalent by logic. It is also observed that PCBs invest in money and capital market. Firms listed in stock markets and government get funds from this investment. Export earnings (written 'export payment' in the framework) come through PCBs and foreign demand generates more production by domestic firms through product market. Total income is the value created by employees of PCBs. Value created by the employees of PCBs adds value to the GDP produced by firms. To perform properly, PCBs need stability and safety of own business. To stable the business, managerial efficiency plays a crucial role. Prudent managerial decision brings income. So, it is evident that with PCBs' support, the firms can continue production in recessionary period. By opening more branches, PCBs can reach to firms in the peripheral regions of the country. But the non-performing loan of PCBs can reduce the volume of loan and investment of PCBs thereby implicating a negative impact on economic growth. In addition, a portion of loan and advances (shown in the framework) has been identified as non-performing loan by PCBs at the end of given time span. Therefore, it is the net loan and advances (deducting the amount of non-performing loan from total loan and advances) which contributes to economic growth.

Fig.-3.6: Theoretical Framework (Proposed Model)



Source: *Constructed by the author*

The following functions obey the above explanation.

- Nominal Gross Domestic Product = f(Number of Branches of PCBs, Net Loan and Advances of PCBs, Non-performing Loan of PCBs, Export Earnings by PCBs, Total Income of PCBs and Investment by PCBs).

- Real Gross Domestic Product = f(Number of Branches of PCBs, Net Loan and Advances of PCBs, Non-performing Loan of PCBs, Export Earnings by PCBs, Total Income of PCBs and Investment by PCBs).

- Per Capita Nominal Gross Domestic Product = f(Number of Branches of PCBs, Net Loan and Advances of PCBs, Non-performing Loan of PCBs, Export Earnings by PCBs, Total Income of PCBs and Investment by PCBs).

3.4 HYPOTHESES OF THE STUDY

The study has derived seven hypotheses from the model explained above. A hypothesis is defined as a statement which is tentative and testable. It can be defined also as testable statement showing rationally speculated relationship among the concerned variables. The variables of the study have been identified and defined. The relationships among the dependent and independent variables have been justified. The framework or the model has been presented with a diagram to make the concepts transparent. Finally, the hypotheses have been stated based on the theoretical framework. The present study has developed the following hypotheses:

- *Hypothesis 1*
  Number of branches of PCBs has substantial impact on economic growth.

- *Hypothesis 2*
  Net Loan and advances of PCBs have substantial impact on economic growth.

- *Hypothesis 3*
  Non-performing loan of PCBs has substantial impact on economic growth.

- *Hypothesis 4*
  Export earnings by PCBs have substantial impact on economic growth.

- *Hypothesis 5*

  Total income of PCBs has substantial impact on economic growth.

- *Hypothesis 6*

  Investments by PCBs have substantial impact on economic growth.

- *Hypothesis 7*

  A causal relationship exists between the development of PCBs and economic growth.

Chapter 4
METHODOLOGY

Methodology is a specific path and procedure through which a study is accomplished. Methodology portrays the entire structure of how a study has been conducted. The present chapter has explained elaborately the methodology adopted in the study. It has discussed the nature of the study, approach to investigation, population determination, sampling technique, data collection and source, variables' description, data processing, justification and explanation of econometric models for analysis of the data.

4.1 NATURE OF THE STUDY

The present study is causal in nature as the purpose of the present study is hypotheses testing, *i.e.,* causal study. The causal study is the core of scientific research. The study has checked the relationships among concerned variables through hypothesis testing. It has focused a current and country specific issue. Bangladesh is on a developing stage. The economy is growing at an increasing rate. Further growth is a well-timed elucidation to socio-economic development. For growth, an uninterrupted support of private banking services holds immense significance. The results of present research will rally round to detect the ways of better banking services for economic growth.

The study has been conducted in analytical manner. Information on economic growth and private commercial banks (PCBs) are collected and analyzed to examine the role of PCBs for economic growth acceleration, find out the direction of relationship between development of PCBs and economic growth and investigate the pattern of economic growth. All the information are expressed in terms of quantities. Hence, the study is quantitative in nature.

The purpose of the present study is hypotheses testing, *i.e.,* causal study. The study has justified whether the functions of PCBs have substantial impact on economic growth or not. The study has also checked the pattern of economic growth and causality between private banking sector development and economic growth.

4.2 APPROACH TO THE INVESTIGATION OF THE RESEARCH QUESTIONS OF THE STUDY

The present research has exposed properties of scientific approach 'Hypothetico-Deductive' which works in a sequential, methodical, rational and meticulous manner

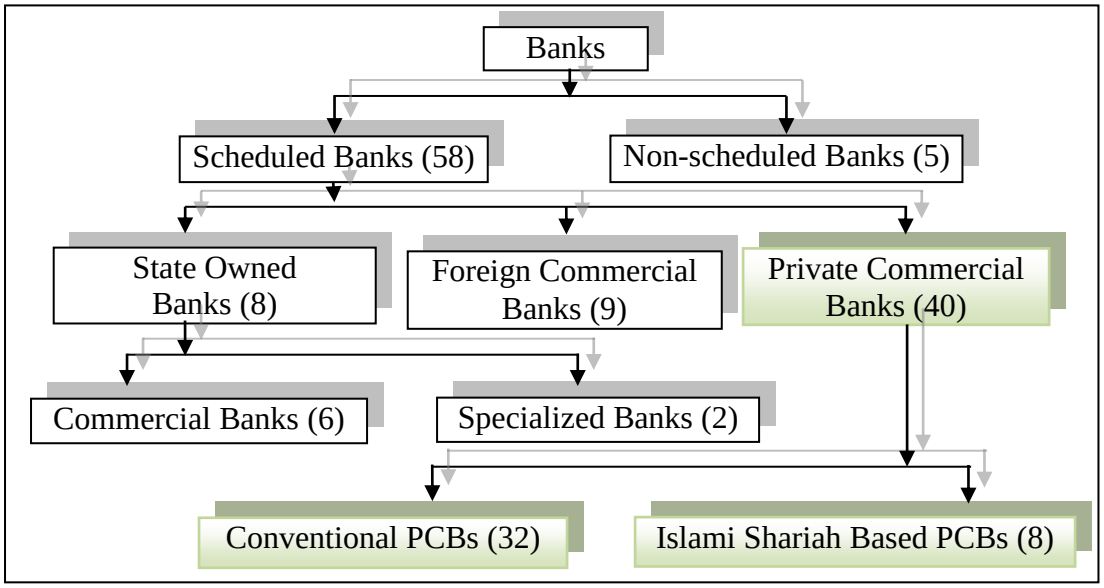
and is popularized by Austrian philosopher Karl Popper (Sekaran & Bougie, 2015). The present study has a specific destination of detecting the role of PCBs in accelerating the economic growth of Bangladesh.

The research has accommodated the findings of classical, neoclassical and modern growth theories. It expects to get the findings which will strengthen the correlations among private banking functions and economic growth. Developing countries like Bangladesh can conduct research with identical aim and get similar result. As the economy recognizes that PCBs contribute to economic growth, the research expects the results to be closed to the recognition with accuracy. The research employs both qualitative and quantitative information from different sources. The findings are based on the results, not on personal opinions, and the findings can be used by other developing countries. Finally, the research has made use of the relevant information and variables to explain the economic growth and role of PCBs to accelerate economic growth.

4.3 POPULATION OF THE STUDY

All the scheduled Private Commercial Banks incorporated in Bangladesh are the population of this research. A scheduled bank is the bank which is announced as scheduled by the central bank (BB) according to Article 36(2) of Bangladesh Bank Order 1972. The scheduled banks are licensed under bank company act 1991. In Fig.-4.1 shaded box shows the population of the study.

Fig.-4.1: Banking Structure of Bangladesh



Source: *Bangladesh Bank* (constructed by the author)

4.4 SAMPLING TECHNIQUE OF THE STUDY

The present study has conducted the nonprobability sampling design particularly the judgment sampling for various reasons. As the purpose of the study is to analyze the role of PCBs, the population consists of all the PCBs. Each PCB contains the information. From all the PCBs, required information has been collected. According to the purpose of the study, limited number of sampling units composes the population (all PCBs) and each unit has the information which has been searched. The present research concerns the specific type of questions focusing on the role of PCBs to accelerate the economic growth. Here generalizability is of minor importance. The research has interested to find out the information of causality between the development of PCBs and the acceleration of economic growth.

4.5 SAMPLE SIZE OF THE STUDY

The sample size (38) of this study is all PCBs except *ICB Islami Bank Ltd.* and *Simanto Bank Ltd.* due to unavailability of data (Table - 4.1). PCBs that have been considered in this study are *AB Bank Limited, Pubali Bank Limited, Uttara Bank Limited, The City Bank Limited, Islami Bank Bangladesh Limited, National Bank Limited, IFIC Bank Limited, United Commercial Bank Limited, Eastern Bank Limited, National Credit and Commerce Bank Limited, Prime Bank Limited, Southeast Bank Limited, Dhaka Bank Limited, Al-Arafah Islami Bank Limited, Social Islami Bank Limited, Dutch Bangla Bank Limited, Mercantile Bank Limited, Standard Bank Limited, One Bank Limited, Export Import Bank Limited, Bangladesh Commerce Bank Limited, Mutual Trust Bank Limited, First Security Islami Bank Limited, Premier Bank Limited, Bank Asia Limited, Trust Bank Limited, Shahjalal Islami Bank Limited, Jamuna Bank Limited, BRAC Bank Limited, The Farmers Bank Limited, Meghna Bank Limited, Midland Bank Limited, NRB Global Bank Limited, Modhumoti Bank Limited, NRB Bank Limited, NRB Commercial Bank Limited, Union Bank Limited, South Bangla Agricultural and Commerce Bank Limited.*

Table - 4.1: Selected PCBs with Establishment Year

Establish-ment		Name of the Bank	Establish-ment		Name of the Bank
Year	No.		Year	No.	
1982	01	AB Bank Ltd.	1999	10	Mercantile Bank Ltd.
1983	07	Pubali Bank Ltd.			Standard Bank Ltd.
		Uttara Bank Ltd.			One Bank Ltd.
		The City Bank Ltd.			Export Import Bank Ltd.
		Islami Bank Bangladesh Ltd.			Bangladesh Commerce Bank Ltd.
		National Bank Ltd.			Mutual Trust Bank Ltd.
		IFIC Bank Ltd.			First Security Islami Bank Ltd.
		United Commercial Bank Ltd.			Premier Bank Ltd.
1992	01	Eastern Bank Ltd.			Bank Asia Ltd.
1993	01	National Credit and Commercial Bank Ltd.			Trust Bank Ltd.
1995	05	Prime Bank Ltd.	2001	03	Shahjalal Islami Bank Ltd.
		Southeast Bank Ltd.			Jamuna Bank Ltd.
		Dhaka Bank Ltd.			BRAC Bank Ltd.
		Al-Arafah Islami Bank Ltd.	2013	09	The Farmers Bank Ltd.
		Social Islami Bank Ltd.			Meghna Bank Ltd.
1996	01	Dutch Bangla Bank Ltd.			Midland Bank Ltd.
Total No. of Banks (Sample Size): 38					NRB Global Bank Ltd.
					Modhumoti Bank Ltd.
					NRB Bank Ltd.
					NRB Commercial Bank Ltd.
					Union Bank Ltd.
					South Bangla Agricultural and Commerce Bank Ltd.

Source: *MoF, 2018 (organized by the author)*

4.6 DATA SOURCE AND COLLECTION

The study has required quantitative information from secondary source. To meet the objectives, time series data has been required. The present research has collected the data by scrutinizing the annual reports of PCBs. All PCBs must share the financial and non-financial conditions of the bank. Each PCB has to submit the annual report to BB. So, the data must contain accuracy. After collection of the data on relevant variables from each PCB, the study adds the numerical values of specific variable for each year and forms the time series. Both internal and external secondary sources have been used to collect data *viz*; Bangladesh Bank, Ministry of Finance of Bangladesh, Bangladesh Bureau of Statistics, Bangladesh Institute of Development Studies, World Bank, IMF etc. Sources of secondary data from these organizations for 34 years, *i.e.,* 1984 to 2017 are as follows:

- Annual Reports;
- Balance Sheet Statement;
- Income Statement;
- Notes to Financial Statements;
- Bangladesh Economic Review;
- World Development Indicators,
- IMF Database;
- Relevant Books, Journals and other publications;
- Websites, etc.

Data have been collected on solo basis (bank only) not on consolidated basis (the bank and securities) in a natural environment with minimal interference to the regular activities of the bank. As the study has employed secondary data, examination of annual reports of PCBs revealed the data. The data of nominal GDP, real GDP and per capita nominal GDP have been collected from WB database from 1960 to 2017. Data from 1960 to 2017 have been used to analyze the pattern of economic growth. The data of bank specific variables have been collected from 1984 to 2017. The data on bank specific variables and three economic growth measures, i.e., nominal GDP, real GDP and per capita nominal GDP from 1984 to 2017 have been used to analyze the role of PCBs to accelerate economic growth. The Granger Causality analysis has also applied the data from 1984 to 2017.

4.7 VARIABLES OF THE STUDY

Following variables have been selected to conduct the analysis (Table - 4.2).

Table - 4.2: Selected Variables of the Study

Variables	Description
Dependent Variable: y	• **Nominal GDP** (goods and services are priced at current market prices) is the amount of goods and services produced within a country for final use over a given period of time, regardless of who owns the factors of production. • **Real GDP** (goods and services are priced at constant base-year market prices) is the quantity of goods and services within a country for final use over a specified period of time, irrespective of who owns the production factors. • **Per capita GDP** (Nominal) is the value of total final goods and services manufactured within a nation over a given period of time per person. It breaks down the output per person. It is obtained by dividing the output by total population of the country.

Table - 4.2: Selected Variables of the Study (Continued)

Independent Variables: x (x_1 - x_6)	• **Number of Branches of PCBs (x_1):** More branches of banks make the transactions easier. It reduces the transaction, transportation and information costs. People can avail better services. More business transactions boost up the economic activities mainly production of goods and services. • **Net Loan and Advances of PCBs (x_2):** Net loan and advances is calculated by deducting the value of non-performing loan from loan and advances. PCBs provide loans and advances to productive sectors (agriculture + industry + service) to continue production and consumers to create aggregate demand. If agriculture sector can be fully mechanized, Bangladesh will be self-reliant. For mechanization, financial capital is necessary. On the other hand, Industrial sector development is one of the determinants of economic growth. From history, it is observed that developed countries in terms of economic growth are industrially developed. In Bangladesh, all types of industries like large, medium, small, micro and cottage need capital for production activities. But the capital market needs to be restructured rigorously. Therefore, PCBs are lending their hands by giving capital loan where capital is must for production activities and economic growth. • **Non-Performing Loan of PCBs (x_3):** In Bangladesh's banking sector, bankruptcy is a worrying problem. More growth could take place if the non-performing loan would be zero. It impedes the economic growth. So, the study should focus on the extent to which it impedes the economic growth. In the regression analysis, the sign of the coefficient is expected to be negative.

Table - 4.2: Selected Variables of the Study (Continued)

Independent Variables: x (x_1 - x_6)	• **Export Earnings by PCBs (x_4):** Export demand is met by a portion of GDP. Increasing export accelerates domestic production. Exporters have to take the help of banks to collect foreign currencies in exchange of domestic products by opening export LCs. The foreign currencies are channelized in the production process. On the other hand, this is expected to have a positive impact on the performance of the bank. The less developed the economy the more open it should be to promote export thereby economic growth. So, export earnings received by PCBs show the rule of PCBs to accelerate economic growth. • **Total Income of PCBs (Interest Income + Investment Income + Non-interest Income) (x_5):** The banking sector is oriented towards services. The efficiency of the employees is therefore of crucial importance. Total income denotes human efficiency and operational performance. The efficiency of employees and operational performance of PCBs are therefore crucial for economic growth. Hence, total income of PCBs and economic growth are correlated. • **Investment by PCBs (x_6):** PCBs invest in money and capital market. Purchasing government securities helps to meet budget deficit and government expenditure. Purchasing shares in capital market helps firms to accumulate capital. Capital accumulation is vital for economic growth. Hence, investment by PCBs and economic growth are correlated.

4.8 HYPOTHESES OF THE STUDY

Considering the objectives, reviewing the literature critically and forming the theoretical framework the study has justified the following hypotheses:

- *Hypothesis 1*
  Number of branches of PCBs has substantial impact on economic growth.

- *Hypothesis 2*
  Net Loan and advances of PCBs have substantial impact on economic growth.

- *Hypothesis 3*
  Non-performing loan of PCBs has substantial impact on economic growth.

- *Hypothesis 4*
  Export earnings by PCBs have substantial impact on economic growth.

- *Hypothesis 5*
  Total income of PCBs has substantial impact on economic growth.

- *Hypothesis 6*
  Investments by PCBs have substantial impact on economic growth.

- *Hypothesis 7*
  A causal relationship exists between the development of PCBs and economic growth.

4.9 TRANSFORMATION OF VARIABLES

The values of variables have been converted to natural logarithmic form (Table - 4.3). Logarithms are an opportune mode to state large numbers. The values are large. So, for simplicity, the conversion has been made. The natural logarithm of a number is the logarithm of that particular number to the base of the mathematical constant e. The e is an irrational number approximately equal to 2.718281828459. The abbreviated forms of the variables (second column, Table- 4.3) have been used in equations and analyses. Nonetheless, the abbreviated forms of variables' name

(first column, Table-4.3) are applied for this study. The results have been interpreted using the abbreviated forms (Chapter 6 and Chapter 7).

Table - 4.3: Logarithmic Transformation of Variables

Variable	Abbreviation	Meaning
Nominal GDP (NGDP)	LnNGDP	Natural logarithm of Nominal GDP
Real GDP (RGDP)	LnRGDP	Natural logarithm of Real GDP
Per Capita GDP (GDPCAP)	LnGDPCAP	Natural logarithm of Per Capita GDP
Number of Branches of PCBs (NOB)	LnNOB	Natural logarithm of Number of Branches of PCBs
Net Loan and Advances of PCBs (LAD)	LnLAD	Natural logarithm of Net Loan and Advances by PCBs
Non-performing Loan of PCBs (NPL)	LnNPL	Natural logarithm of Non-performing Loan of PCBs
Export Earnings by PCBs (EXP)	LnEXP	Natural logarithm of Export Payment Received by PCBs
Total Income of PCBs (GIT)	LnGIT	Natural logarithm of Total Income by PCBs
Investment by PCBs (INV)	LnINV	Natural logarithm of Investment by PCBs

4.10 FORMULATION OF SERIES

The study has worked on nine series. The values of dependent series NGDP, RGDP and GDPCAP have been collected from the WB database. The figures of NGDP, RGDP and GDPCAP have been converted to BDT from US$. The formulations of independent series have followed a different track. The values of observations of a specific independent variable for a particular year have been summed up (Table - 4.4).

Table - 4.4: Formulation of Series

Independent Series	Year	Observations
NOB, LAD, NPL, EXP, GIT and INV	1984-1992	Eight PCBs
	1993	Nine PCBs
	1994-1995	10 PCBs
	1996	15 PCBs
	1997-1999	16 PCBs
	2000-2001	26 PCBs
	2002-2013	29 PCBs
	2014-2017	38 PCBs

4.11 PCBs AND ECONOMIC GROWTH

The study has hypothesized a constructive role of PCBs to accelerate economic growth. PCBs accelerate economic growth through heterogeneous functions. It is to be noted that NGDP, RGDP and GDPCAP resemble economic growth. And, the role is portrayed through the functions, *i.e.,* LAD, INV, NPL, EXP, GIT and NOB. The coefficients of LAD, INV, EXP, GIT and NOB except NPL have been expected to be positive and statistically meaningful. The conceptual framework has advocated the role of PCBs in the following ways.

The following functions are showing the relations among economic growth and bank specific variables (the mentioned functions of PCBs). The equations 4.1, 4.2 and 4.3 are the mathematical model with single equation showing relations among economic growth and bank specific variables. Equation is defined as a statement showing equality of two mathematical expressions.

NGDP = f (NOB, LAD, NPL, EXP, GIT and INV)

$$NGDP = \alpha_0 + \alpha_1 NOB + \alpha_2 LAD + \alpha_3 NPL + \alpha_4 EXP + \alpha_5 GIT + \alpha_6 INV \ldots\ldots\ldots\ldots \quad (4.1)$$

RGDP = f (NOB, LAD, NPL, EXP, GIT and INV)

$$RGDP = \beta_0 + \beta_1 NOB + \beta_2 LAD + \beta_3 NPL + \beta_4 EXP + \beta_5 GIT + \beta_6 INV \ldots\ldots\ldots \quad (4.2)$$

GDPCAP = f (NOB, LAD, NPL, EXP, GIT and INV)

$$GDPCAP = \gamma_0 + \gamma_1 NOB + \gamma_2 LAD + \gamma_3 NPL + \gamma_4 EXP + \gamma_5 GIT + \gamma_6 INV \ldots\ldots\ldots \quad (4.3)$$

The following equations 4.4, 4.5 and 4.6 are the econometric specification of the equations 4.1, 4.2 and 4.3 respectively. In addition to bank specific variables, other variables are likely to exercise influence on economic growth. To allow this, a stochastic random disturbance term has been added to mathematical model.

$$NGDP = \alpha_0 + \alpha_1 NOB + \alpha_2 LAD + \alpha_3 NPL + \alpha_4 EXP + \alpha_5 GIT + \alpha_6 INV + u \ldots\ldots\ldots \quad (4.4)$$

$$RGDP = \beta_0 + \beta_1 NOB + \beta_2 LAD + \beta_3 NPL + \beta_4 EXP + \beta_5 GIT + \beta_6 INV + e \ldots\ldots \quad (4.5)$$

$$GDPCAP = \gamma_0 + \gamma_1 NOB + \gamma_2 LAD + \gamma_3 NPL + \gamma_4 EXP + \gamma_5 GIT + \gamma_6 INV + \varepsilon \ldots\ldots \quad (4.6)$$

The functional form of the equations stated above is implicitly assumed to be linear. When a model is proposed, the study might consider linearity in the functional form of the variables while estimating the model empirically. John Maynard Keynes postulated a positive relation between income and consumption but didn't specify the precise form of functional relationship between income and consumption (Gujarati, 1995). In empirical verification, the macroeconomic analysts have considered the linearity in the income consumption relationship. Hence, it is the interest of the study to assume linearity.

4.12 DATA ANALYSIS

Data analysis of this study is econometric in nature. Econometric stands for economic measurement. Econometrics deals with the empirical determination or verification of economic laws and model. The study has estimated the proposed model (theoretical framework) with the econometric estimation techniques. For analysis, several techniques have been applied to discover valuable information from the data. Data have been analyzed using the software Microsoft Excel, STATA and EVIEWS. Total analysis conducted in this study is mentioned bellow.

4.12.1 Pattern of Economic Growth

The present study has investigated the pattern of economic growth in Bangladesh. A decade-wise investigation has been conducted for three conventional measures of economic growth, *i.e.,* NGDP, RGDP and GDPCAP. To investigate the pattern of economic growth, time series graphs have been drawn (values are plotted in their original units) from the collected data of NGDP, RGDP and GDPCAP using the software STATA. NGDP, RGDP and GDPCAP are expressed in US$. The pattern of a series consists of four components, *i.e.,* trend, seasonality, cyclical variation and irregular variation. Graphs have shown all the four components. To disclose the trend, linear trend models have been estimated. If the data look like following a line; it can be estimated with a linear trend equation. The parameters have been obtained by applying ordinary least squares (OLS) technique. The estimated linear trend models have shown the absolute change in NGDP, RGDP and GDPCAP in relation to time (Gujarati, 1995). The models are given below.

$NGDP_t = \beta_1 + \beta_2 time + u_t$……..... (4.7)

$RGDP_t = \beta_1 + \beta_2 time + u_t$……..… (4.8)

$GDPCAP_t = \beta_1 + \beta_2 time + u_t$…… (4.9)

4.12.2 Summary Statistics

The study has estimated the summary of the dependent and independent variables. The summary statistics provide a quick and plain depiction of the data. The summary is used to review a set of observation, in order to get simple idea about the largest amount of information. Mean, standard deviation, minimum, maximum, and total number of observations have been shown. The summary statistics of the independent variables (NOB, LAD, NPL, EXP, GIT and INV) and dependent variables (NGDP, RGDP and GDPCAP) have been calculated from the collected data using the software STATA.

4.12.3 Time Series Analysis

Time series models have been estimated to reach the objectives of the study. To identify the suitable model, the study has followed the subsequent steps (Table - 4.5).

Table - 4.5: Selection of Time Series Model

Steps	Analysis (Selection of Time Series Model)
Step -1 Time Series Graph	Time series has four components. These are trend, seasonality, cyclical variations and irregularity. At first, graph of each series should be drawn to detect which component(s) is present.
Step -2 Stationary Test	a. Graphical Presentation: Graph is a hint to detect stationarity. b. Unit Root Test: The presence of a unit root is demonstrated by a time series having a varying mean and variance. To detect the unit root following tests are needed i. Dickey-Fuller Test (DF) ii. Augmented Dickey-Fuller Test (ADF) iii. Phillips-Perron Test

Table - 4.5: Selection of Time Series Model (Continued)

Steps	Analysis (Selection of Time Series Model)
Step -3 Multiple Regression Model (Ordinary Least Square)	If all the variables are stationary at level I(0), multiple regression analysis using ordinary least square is applied to estimate the parameter. GDP = *f* (Net loan and advances by PCBs, Investment by PCBs, Export earnings by PCBs, Number of Branches of PCBs, Non-performing loan of PCBs and Total Income of PCBs) *Probable Model* The following multiple regression model is applied. $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 +$----------$+ \beta_nX_n$ The econometric form of equation $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3$+----------$+ \beta_nX_n + e$ *Where,* Y = Regressand (Dependent Variable) $X_{1 \ldots n}$ = Regressors (Explanatory variable) e = Error term α = constant β_1 ..... β_n = coefficients
Step - 4 Johanson Cointegration Test (VECM and VAR Model)	If all the variables are stationary after first difference, I(1): (i) If cointegration exists among the variables, Vector Error Correction Model (VECM) is applied. (ii) If cointegration doesn't exist, Vector Autoregressive Model (VAR) is required.

Table - 4.5: Selection of Time Series Model (Continued)

Steps	Analysis (Selection of Time Series Model)
Step -5 ARDL Model	If variables are stationary at different level, Autoregressive Distributed Lag (ARDL) Model is applied. ARDL is applied when some variables are level stationary I(0) and some are first difference stationary I(1). But no variable is stationary at 2nd difference I(2).
Step - 6 Autoregressive Model	If some variables are stationary at 1st difference I(1) and some are at 2nd difference I(2), autoregressive model is applied.

Source: Existing literatures on econometric analysis (constructed by the author)

4.12.3.1 Stationarity Diagnostic

Before estimation of the proposed model, stationarity test has been conducted. A time series variable must be static over the periods to conduct analysis on the variable. Being static is the required feature of a series to proceed for analysis. The moving tendency of a variable over time makes it nonstationary. The empirical estimation may get spurious regression. Spurious regression shows a very high R^2 though there is no meaningful association between the variables. This problem arises due to the strong trends of the series variables. The trends result in high R^2, not a real relation.

To acquire stationarity, a series must have the following statistical attributes:

- The average value of the variable is constant over the periods
  E (Series) = Constant
  $E(Y_t) = \mu$
- The difference between the values of a period from the average value of the series is same for the entire series.
  Variance (Series) = Constant
  $Var(Y_t) = E(Y_t - \mu)^2 = r^2$

- The covariance value of two values at different time periods is related only with the time gap (the lag).
  Covariance: $rk = E [Yt - \mu) (Y_{t+k} - \mu)]$

The study has followed nine time series:

LnNGDP, LnRGDP, LnGDPCAP, Ln LAD, LnINV, LnGIT, LnNPL, LnNOB and LnEXP.

Stationarity Check with Graph

Plotting the values of a variable against the time periods provides an initial clue of stationarity. The series is declared to be stationary in the absence of the following four components:

- Trend;
- Variations due to seasonality;
- Variations arising from cycles; and
- Variations resulting from recurring unknown factors.

A visual plot of the data is usually the first step in the analysis of any time series. The first impression can be obtained from the series plotted. But the graphs are indicative not confirmative. The study should have to go for unit root test to confirm the stationarity property of the variables. There are three golden rules of econometric analysis, test, test, and test (Hendry, 1980).

The Unit Root Test

The series has a unit root when the value of a specific time period depends on the value of previous time periods. The presence of unit root assures non-stationarity. The presence of unit root can be detected with the help of following equation:

$$Y_t = \rho Y_{t-1} + u_t$$

Value of the variable of time period t = Coefficient (value of the variable at time period t-1) + Influence of unknown and irregular factors

If the value of the coefficient $\rho = 1$, a unit root belongs to the series Y_t thus making Y_t nonstationary. The error term follows the classical postulation- having zero mean, constant variance and no autocorrelation. In econometric terminology, Y_t is a random walk time series. To detect unit root, the following tests have been conducted:

- Dickey-Fuller (DF) Test;
- Augmented Dickey-Fuller Test (ADF); and
- Phillips Peron Test (PP Test)

Dickey-Fuller Test

D. A. Dickey and W. A. Fuller introduced the test to detect unit root in 1979 (Dickey & Fuller, 1979). The test is widely used to assess the stationarity properly of time series. The Dickey – Fuller test is conducted by estimating the following equations:

$$\Delta Y_t = \delta Y_{t-1} + u_t$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + u_t$$

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + u_t$$

Null Hypothesis (H_0): The series has a unit root ($\delta = 0$).

Alternative Hypothesis (H_1): The series has not a unit root ($\delta \neq 0$).

Decision Rule

The decision is taken based on the τ (tau) statistic not on the traditionally computed t statistic. The critical values of τ statistic have been obtained by the discoverers Dickey and Fuller based on Monte Carlo simulations.

The present study has estimated following equations to conduct the Dickey-Fuller test.

$$\Delta LnNGDP_t = \beta_1 + \delta LnNGDP_{t-1} + \beta_2 t + u_t \quad \text{(4.10)}$$

$$\Delta LnRGDP_t = \beta_1 + \delta LnRGDP_{t-1} + \beta_2 t + u_t \quad \text{(4.11)}$$

$$\Delta LnGDPCAP_t = \beta_1 + \delta LnGDPCAP_{t-1} + \beta_2 t + u_t \quad \text{(4.12)}$$

$\Delta LnNOB_t = \beta_1 + \delta LnNOB_{t-1} + \beta_2 t + u_t$……. (4.13)

$\Delta LnLAD_t = \beta_1 + \delta LnLAD_{t-1} + \beta_2 t + u_t$……... (4.14)

$\Delta LnEXP_t = \beta_1 + \delta LnEXP_{t-1} + \beta_2 t + u_t$…… (4.15)

$\Delta LnINV_t = \beta_1 + \delta LnINV_{t-1} + \beta_2 t + u_t$……. (4.16)

$\Delta LnGIT_t = \beta_1 + \delta LnGIT_{t-1} + \beta_2 t + u_t$…….. (4.17)

$\Delta LnNPL_t = \beta_1 + \delta LnNPL_{t-1} + \beta_2 t + u_t$…… (4.18)

Augmented Dickey-Fuller Test

If the error term breaks the postulation of autocorrelation, that is presence of auto correlated u_t, the Dickey-Fuller test is estimated by using equation.

$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t$

The idea of including enough lagged difference terms so that the error term is serially independent (Gujarati, 1995)**.**

The study has estimated the following equations

$\Delta LnNGDP_t = \beta_1 + \beta_2 t + \delta LnNGDP_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnNGDP_{t-i} + \varepsilon_t$ ……..... (4.19)

$\Delta LnRGDP_t = \beta_1 + \beta_2 t + \delta LnRGDP_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnRGDP_{t-i} + \varepsilon_t$ …… (4.20)

$\Delta LnGDPCAP_t = \beta_1 + \beta_2 t + \delta LnGDPCAP_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnGDPCAP_{t-i} + \varepsilon_t$ … (4.21)

$\Delta LnLAD_t = \beta_1 + \beta_2 t + \delta LnLAD_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnLAD_{t-i} + \varepsilon_t$ ……... (4.22)

$\Delta LnINV_t = \beta_1 + \beta_2 t + \delta LnINV_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnINV_{t-i} + \varepsilon_t$ …….. (4.23)

$\Delta LnNPL_t = \beta_1 + \beta_2 t + \delta LnNPL_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnNPL_{t-i} + \varepsilon_t$ ……. (4.24)

$\Delta LnGIT_t = \beta_1 + \beta_2 t + \delta LnGIT_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnGIT_{t-i} + \varepsilon_t$ …… (4.25)

$\Delta LnNOB_t = \beta_1 + \beta_2 t + \delta LnNOB_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnNOB_{t-i} + \varepsilon_t$ …….. (4.26)

$\Delta LnEXP_t = \beta_1 + \beta_2 t + \delta LnEXP_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta LnEXP_{t-i} + \varepsilon_t$ ……. (4.27)

Phillips-Peron Test

Peter Charles Bonest Phillips and Pierre Peron introduced another test to detect unit root in a series in 1988 (Phillips & Peron, 1988). It is known as Phillips-Peron unit root test. Using nonparametric statistical technique, the test considers auto correlated error term without adjustment of lagged difference terms. But ADF test works well in finite sample than Phillips-Peron test.

Null Hypothesis (H_0): Unit root exists in series.

Alternative Hypothesis (H_1): Unit root doesn't exist in series.

The test uses the following equation:

$$Y_t = \alpha + \rho Y_{t-1} + \varepsilon_t$$

The present study has estimated the following equations for Phillips-Peron test.

$$LnNGDP_t = \alpha + \rho LnNGDP_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.28)$$

$$LnRGDP_t = \alpha + \rho LnRGDP_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.29)$$

$$LnGDPCAP_t = \alpha + \rho LnGDPCAP_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.30)$$

$$LnNOB_t = \alpha + \rho LnNOB_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.31)$$

$$LnLAD_t = \alpha + \rho LnLAD_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.32)$$

$$LnEXP_t = \alpha + \rho LnEXP_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.33)$$

$$LnINV_t = \alpha + \rho LnINV_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.34)$$

$$LnGIT_t = \alpha + \rho LnGIT_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.35)$$

$$LnNPL_t = \alpha + \rho LnNPL_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.36)$$

The study has drawn the graphs of the variables and estimated all the equations of stationarity diagonostic from the collected data using the software STATA.

4.12.3.2 Conversion to Stationarity

Non-stationarity provides misleading results. As a remedy, the present study has followed difference stationary process. When the variable has a unit root, then taking the difference of value of the variable of consecutive periods (and checking for stationarity using DF and ADF technique) makes the series stationary. If, after conducting first difference process, the variable remains nonstationary, then go for the calculation of difference of first difference and test stationarity. When a variable is stationary at the initial stage then it is termed as stationary at level or I(0). If the series variable becomes stationary after first difference process then it is I(1) and so on.

The study has proceeded based on the findings of ADF test as it is widely recognized test of unit root. Additionally ADF test operates better than P-P test. ADF test operates better than P-P test in finite sample (Davidson & Mackinnon, 2004).

According to the result of stationarity tests mainly the Augmented Dickey-Fuller (ADF) test, the study has selected the Autoregressive Distributive Lag Model (ARDL) for estimation.

4.12.4 Autoregressive Distributive Lag Model (ARDL)

The term auto is a Greek word meaning self. The autoregressive model embraces one or more lagged values of the dependent variables among its independent variables. The model is also termed as dynamic model since it depicts the time path of the dependent variable in relation to its past values. The model openly considers the attitude of a variable over time. If the model embraces not only the current period but also the previous periods' (lagged) values of the explanatory variables, it is called the distributed lag model. The term distributed refers to the fact that the effect of explanatory variable on dependent variable is spread over a period of time.

The model which employs the lagged values of dependent and independent variables along with the present value of independent variables to explain the present value of dependent variable is known as ARDL model. Pesaran and Shin (1995) introduced the model for cointegration analysis. Now the model is widely used to explain the macroeconomic phenomena. The explanatory segment of the model consists of autoregressive and distributed lag part. The autoregressive passes on the lags in the regresand. The following equation portrays an autoregressive model:

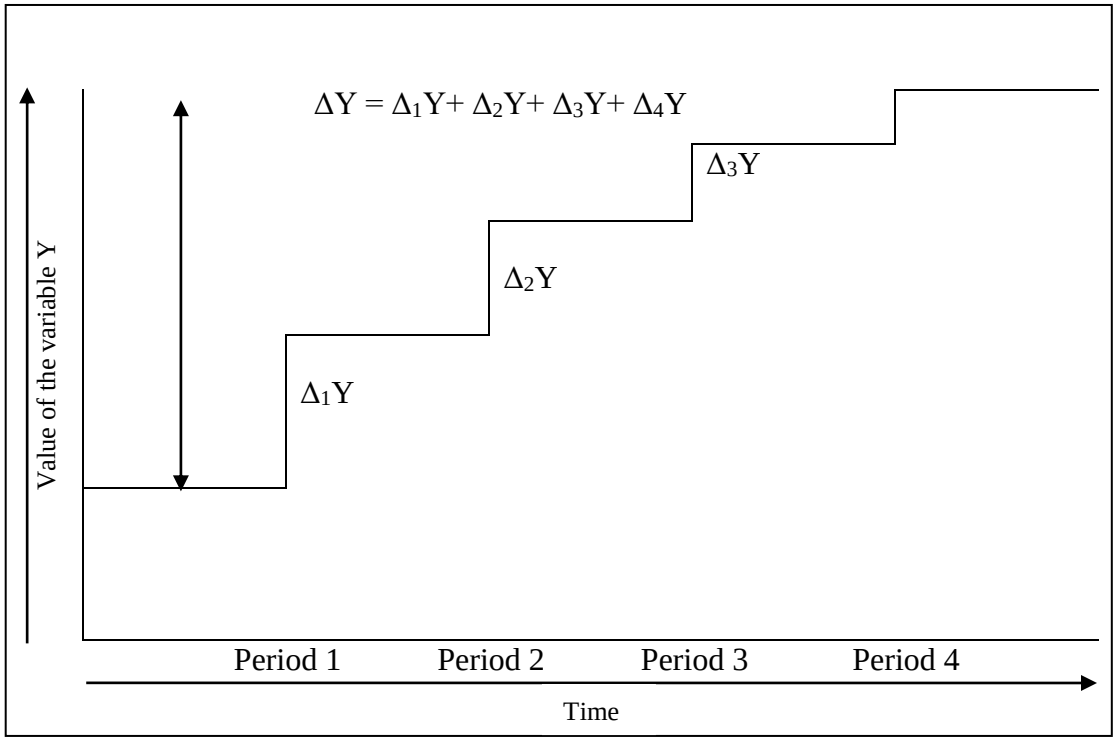
$$Y_t = \alpha + \beta X_t + \gamma Y_{t-1} + \varepsilon_t$$

The distributed lag passes on the lags of the regressors. The following equation portrays the distributed lag model.

$$Y_t = \alpha + \beta_1 X_t + \beta_2 X_{t-1} + \cdots\cdots\cdots\cdots + \beta_n X_{t-n} + u_t$$

The following figure **(**Fig. - 4.2**)** makes the explanation of distributed lag model more clearly.

Fig.-4.2: Depiction of Autoregressive Distributive Lag Model



Source: *Gujarati, 1995.*

4.12.4.1 Lag Choice

The reliance of a variable Y (dependent variable) on other variables X (explanatory variables) is rarely immediate. Very often, Y reacts to X with a lapse of time. Such a lapse of time is called a lag.

In some economic phenomena, dependent variable acts in response to change in independent variable not immediately. It takes time for dependent variable to change due to the nature of change of independent variable, adaptive capability of the

dependent variable, condition of the economy at present and future. The time difference of shock and response is known as lag. In time series investigation, the present value of a dependent variable many be determined by previous values of the independent variable. Now the question is, how many pervious values of different periods exercise influence. What is the maximum length of the lag? How far back into the past, the study should go? Prior to the empirical estimation, it is essential to find out the number of previous periods or the number of lags. The following are the statistical techniques used to determine the lag.

The following are the statistical techniques used to determine the lag.

- Akaike Information Criterion (AIC)
- Schwarz Information Criterion (SBIC)
- Hannan-Quinn Criterion (HQC)
- Log Likelihood (LIK)
- Root Mean Square Errors (RMSE)

The AIC has been observed to be used most widely in empirical literature. The study has applied the AIC for model selection. The Akaike information criterion (AIC) is an estimator of in-sample prediction error and thereby the judgment of relative quality of statistical models for a given set of data (Cavanaugh & Neath, 2019). Thus, AIC presents a means for model selection. Model selection is the procedure of selecting an appropriate model from a set of candidate models to avoid error in statistical inference (Konishi & Kitagawa, 2008). Given a set of candidate models for the data, the preferred model is the one with the minimum AIC value. Statistician Hirotugu Akaike introduced the criterion AIC.

4.12.4.2 Application of ARDL

The study has applied ARDL bounds test approach for cointegration among the variables The variables (LnGIT, LnNPL and LnNOB) are level stationary or I(0) and the variables (LnNGDP, LnRGDP, LnGDPCAP, LnLAD, LnEXP and LnINV) are first difference stationary or I(1). ARDL requires no variable stationary after second difference or I(2). The sample is comparatively small consisting of 34 years of observations (1984 to 2017). After determination of the model based on AIC criterion, the first task is to find out the F-statistic by estimating the determined model using

OLS technique. The obtained F-statistics are compared with tabulated values given by Pesaran *et al.* in 2001 to verify the long-term relation. If the obtained F-statistic value is greater than the tabulated upper bound value, long run association exists among the variables. The study has estimated the equations 4.37, 4.38 and 4.39 which are the ARDL forms of the equations of 4.4, 4.5 and 4.6 respectively.

$$\begin{aligned}\boldsymbol{\Delta}\mathrm{LnNGDP}_t = {} & \beta_0 + \sum_{i=1}^{n}\beta_1\,\Delta\mathrm{LnNGDP}_{t-i} + \sum_{i=1}^{n}\beta_2\,\Delta\mathrm{LnNOB}_{t-i} + \\ & \sum_{i=1}^{n}\beta_3\,\Delta\mathrm{LnLAD}_{t-i} + \sum_{i=1}^{n}\beta_4\,\Delta\mathrm{LnNPL}_{t-i} + \sum_{i=1}^{n}\beta_5\,\Delta\mathrm{LnEXP}_{t-i} + \\ & \sum_{i=1}^{n}\beta_6\,\Delta\mathrm{LnGIT}_{t-i} + \sum_{i=1}^{n}\beta_7\,\Delta\mathrm{LnINV}_{t-i} + \alpha_1\mathrm{LnNGDP}_{t-1} + \\ & \alpha_2\mathrm{LnNOB}_{t-1} + \alpha_3\mathrm{LnLAD}_{t-1} + \alpha_4\mathrm{LnNPL}_{t-1} + \alpha_5\mathrm{LnEXP}_{t-1} + \\ & \alpha_6\mathrm{LnGIT}_{t-1} + \alpha_7\mathrm{LnINV}_{t-1} + \mathrm{u_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.37)\end{aligned}$$

$$\begin{aligned}\boldsymbol{\Delta}\mathrm{LnRGDP}_t = {} & \gamma_0 + \sum_{i=1}^{n}\gamma_1\,\Delta\mathrm{LnRGDP}_{t-i} + \sum_{i=1}^{n}\gamma_2\,\Delta\mathrm{LnNOB}_{t-i} + \\ & \sum_{i=1}^{n}\gamma_3\,\Delta\mathrm{LnLAD}_{t-i} + \sum_{i=1}^{n}\gamma_4\,\Delta\mathrm{LnNPL}_{t-i} + \sum_{i=1}^{n}\gamma_5\,\Delta\mathrm{LnEXP}_{t-i} + \\ & \sum_{i=1}^{n}\gamma_6\,\Delta\mathrm{LnGIT}_{t-i} + \sum_{i=1}^{n}\gamma_7\,\Delta\mathrm{LnINV}_{t-i} + \\ & \delta_1\mathrm{LnRGDP}_{t-1} + \delta_2\mathrm{LnNOB}_{t-1} + \delta_3\mathrm{LnLAD}_{t-1} + \delta_4\mathrm{LnNPL}_{t-1} + \\ & \delta_5\mathrm{LnEXP}_{t-1} + \delta_6\mathrm{LnGIT}_{t-1} + \delta_7\mathrm{LnINV}_{t-1} + \mathrm{u_t} \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.38)\end{aligned}$$

$$\begin{aligned}\boldsymbol{\Delta}\mathrm{LnGDPCAP}_t = {} & \theta_0 + \sum_{i=1}^{n}\theta_1\,\Delta\mathrm{LnGDPCAP}_{t-i} + \sum_{i=1}^{n}\theta_2\,\Delta\mathrm{LnNOB}_{t-i} + \\ & \sum_{i=1}^{n}\theta_3\,\Delta\mathrm{LnLAD}_{t-i} + \sum_{i=1}^{n}\theta_4\,\Delta\mathrm{LnNPL}_{t-i} + \sum_{i=1}^{n}\theta_5\,\Delta\mathrm{LnEXP}_{t-i} + \\ & \sum_{i=1}^{n}\theta_6\,\Delta\mathrm{LnGIT}_{t-i} + \sum_{i=1}^{n}\theta_7\,\Delta\mathrm{LnINV}_{t-i} + \rho_1\mathrm{LnGDPCAP}_{t-1} + \\ & \rho_2\mathrm{LnNOB}_{t-1} + \rho_3\mathrm{LnLAD}_{t-1} + \rho_4\mathrm{LnNPL}_{t-1} + \rho_5\mathrm{LnEXP}_{t-1} + \\ & \rho_6\mathrm{LnGIT}_{t-1} + \rho_7\mathrm{LnINV}_{t-1} + \mathrm{u_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.39)\end{aligned}$$

ARDL shows both short and long run relationship. To integrate short run changes with long run equilibrium, a linear transformation derives error correction model (ECM) from ARDL. ECM incorporates short run shocks with long run stability. After confirmation of long run relation, ECM and short coefficient are found out. At this stage the following ECM models have been estimated.

$$\begin{aligned}\boldsymbol{\Delta}\mathrm{LnNGDP}_t = {} & \beta_0 + \sum_{i=1}^{n}\beta_1\,\Delta\mathrm{LnNGDP}_{t-i} + \sum_{i=1}^{n}\beta_2\,\Delta\mathrm{LnNOB}_{t-i} + \\ & \sum_{i=1}^{n}\beta_3\,\Delta\mathrm{LnLAD}_{t-i} + \sum_{i=1}^{n}\beta_4\,\Delta\mathrm{LnNPL}_{t-i} + \sum_{i=1}^{n}\beta_5\,\Delta\mathrm{LnEXP}_{t-i} + \\ & \sum_{i=1}^{n}\beta_6\,\Delta\mathrm{LnGIT}_{t-i} + \sum_{i=1}^{n}\beta_7\,\Delta\mathrm{LnINV}_{t-i} + \alpha\mathrm{ECM}_{t-1} + \mathrm{u_t} \ldots\ldots\ldots \quad (4.40)\end{aligned}$$

$$\Delta \mathrm{LnRGDP}_t = \gamma_0 + \sum_{i=1}^{n} \gamma_1 \, \Delta \mathrm{LnRGDP}_{t-i} + \sum_{i=1}^{n} \gamma_2 \, \Delta \mathrm{LnNOB}_{t-i} + \sum_{i=1}^{n} \gamma_3 \, \Delta \mathrm{LnLAD}_{t-i} + \sum_{i=1}^{n} \gamma_4 \, \Delta \mathrm{LnNPL}_{t-i} + \sum_{i=1}^{n} \gamma_5 \, \Delta \mathrm{LnEXP}_{t-i} + \sum_{i=1}^{n} \gamma_6 \, \Delta \mathrm{LnGIT}_{t-i} + \sum_{i=1}^{n} \gamma_7 \, \Delta \mathrm{LnINV}_{t-i} + \delta \mathrm{ECM}_{t-1} + u_t \ldots\ldots\ldots \quad (4.41)$$

$$\Delta \mathrm{LnGDPCAP}_t = \theta_0 + \sum_{i=1}^{n} \theta_1 \, \Delta \mathrm{LnGDPCAP}_{t-i} + \sum_{i=1}^{n} \theta_2 \, \Delta \mathrm{LnNOB}_{t-i} + \sum_{i=1}^{n} \theta_3 \, \Delta \mathrm{LnLAD}_{t-i} + \sum_{i=1}^{n} \theta_4 \, \Delta \mathrm{LnNPL}_{t-i} + \sum_{i=1}^{n} \theta_5 \, \Delta \mathrm{LnEXP}_{t-i} + \sum_{i=1}^{n} \theta_6 \, \Delta \mathrm{LnGIT}_{t-i} + \sum_{i=1}^{n} \theta_7 \, \Delta \mathrm{LnINV}_{t-i} + \rho \mathrm{ECM}_{t-1} + u_t \ldots\ldots\ldots \quad (4.42)$$

To assure the acceptability of the model, some diagnostic tests have been carried out. The models have been tested to detect autocorrelation, heteroscedasticity, residual normality, coefficients' stability and functional form.

The tasks of optimal lag choice, model selection, estimation of the ARDL equations and all the diagonostic tests of the three ARDL models have been accomplished using the collected data with the help of the software EVIEWS.

4.12.5 Granger Causality Test

The study has applied the Granger Causality test to detect existence of either the demand following or the supply leading hypothesis. To determine the causality, this test is commonly used. In order to assess the causality between the development of the private banking sector and economic growth, this test can be carried out. Distributed or autoregressive lag model lifts the question of causality as the lag involved (Granger, 1969). In a nutshell, the question is whether statistically one can detect the direction of causality, when in the interim; a lead lag relationship exists between the two variables. Econometrician Leamer (1985) prefers the term precedence over causality. More generally future cannot predict the past; if variable X causes variable Y then changes in X should precede changes in Y.

The study has analyzed the role of PCBs to accelerate economic growth. The smooth functions of PCBs may result in economic growth and economic growth can assist PCBs' development. In time series analysis, if the variables are cointegrated in long and short run, one variable may cause the other and vice versa. As PCBs push the economy to grow, economic growth may necessitate PCBs to scale the operations up. The study aims at knowing the causation using the Granger Causality test. The study

has estimated the following pair of regressions for three dependent variables and six independent variables.

The estimation has been conducted using the collected data with the assistance of the software EVIEWS.

4.12.5.1 Nominal Gross Domestic Product (NGDP)

The study has estimated the following twelve pair-wise equations (Eqn.- 4.43 to Eqn.- 4.54) to detect Granger causation.

$$LnNGDP_t = \sum_{k=1}^{n} \alpha_k NOB_{t-k} + \sum_{j=1}^{n} \beta_j NGDP_{t-j} + \varepsilon_t \quad (4.43)$$

$$LnNOB_t = \sum_{k=1}^{n} \alpha_k NGDP_{t-k} + \sum_{j=1}^{n} \beta_j NOB_{t-j} + \varepsilon_t \quad (4.44)$$

$$LnNGDP_t = \sum_{k=1}^{n} \alpha_k LnLAD_{t-k} + \sum_{j=1}^{n} \beta_j LnNGDP_{t-j} + \varepsilon_t \quad (4.45)$$

$$LnLAD_t = \sum_{k=1}^{n} \alpha_k \beta\, LnNGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnLAD_{t-j} + \varepsilon_t \quad (4.46)$$

$$LnNGDP_t = \sum_{k=1}^{n} \alpha_k NPL_k + \sum_{j=1}^{n} \beta_j LnNGDP_{t-j} + \varepsilon_t \quad (4.47)$$

$$LnNPL_t = \sum_{k=1}^{n} \alpha_k NGDP_{t-k} + \sum_{j=1}^{n} \beta_j\, LnNPL_{t-j} + \varepsilon_t \quad (4.48)$$

$$LnNGDP_t = \sum_{k=1}^{n} \alpha_k LnEXP_{t-k} + \sum_{j=1}^{n} \beta_j LnNGDP_{t-j} + \varepsilon_t \quad (4.49)$$

$$LnEXP_t = \sum_{k=1}^{n} \alpha_k LnNGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnEXP_{t-j} + \varepsilon_t \quad (4.50)$$

$$LnNGDP_t = \sum_{k=1}^{n} \alpha_k\, LnGIT_{t-k} + \sum_{j=1}^{n} \beta_j\, LnNGDP_{t-j} + \varepsilon_t \quad (4.51)$$

$$LnGIT_t = \sum_{k=1}^{n} \alpha_k\, LnNGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnGIT_{t-j} + \varepsilon_t \quad (4.52)$$

$$LnNGDP_t = \sum_{k=1}^{n} \alpha_k\, LnINV_{t-k} + \sum_{j=1}^{n} \beta_j LnNGDP_{t-j} + \varepsilon_t \quad (4.53)$$

$$LnINV_t = \sum_{k=1}^{n} \alpha_k LnNGDP_{t-k} + \sum_{j=1}^{n} \beta_j\, LnINV_{t-j} + \varepsilon_t \quad (4.54)$$

4.12.5.2 Real Gross Domestic Product (RGDP)

The study has estimated the following twelve pair-wise equations (Eqn.- 4.55 to Eqn.- 4.67) to detect Granger causation.

$$LnRGDP_t = \sum_{k=1}^{n} \alpha_k NOB_{t-k} + \sum_{j=1}^{n} \beta_j LnRGDP_{t-j} + \varepsilon_t \quad (4.55)$$

$$LnNOB_t = \sum_{k=1}^{n} \alpha_k LnRGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnNOB_{t-j} + \varepsilon_t \quad (4.56)$$

$$LnRGDP_t = \sum_{k=1}^{n} \alpha_k LnLAD_{t-k} + \sum_{j=1}^{n} \beta_j Ln\ RGDP_{t-j} + \varepsilon_t \quad (4.57)$$

$$LnLAD_t = \sum_{k=1}^{n} \alpha_k\ LnRGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnLAD_{t-j} + \varepsilon_t \quad (4.58)$$

$$LnRGDP_t = \sum_{k=1}^{n} \alpha_k NPL_k + \sum_{j=1}^{n} \beta_j LnRGDP_{t-j} + \varepsilon_t \quad (4.59)$$

$$LnNPL_t = \sum_{k=1}^{n} \alpha_k\ LnRGDP_{t-k} + \sum_{j=1}^{n} \beta_j\ LnNPL_{t-j} + \varepsilon_t \quad (4.60)$$

$$LnRGDP_t = \sum_{k=1}^{n} \alpha_k LnEXP_{t-k} + \sum_{j=1}^{n} \beta_j LnRGDP_{t-j} + \varepsilon_t \quad (4.61)$$

$$LnEXP_t = \sum_{k=1}^{n} \alpha_k LnRGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnEXP_{t-j} + \varepsilon_t \quad (4.62)$$

$$LnRGDP_t = \sum_{k=1}^{n} \alpha_k\ LnGIT_{t-k} + \sum_{j=1}^{n} \beta_j\ LnRGDP_{t-j} + \varepsilon_t \quad (4.63)$$

$$LnGIT_t = \sum_{k=1}^{n} \alpha_k\ LnRGDP_{t-k} + \sum_{j=1}^{n} \beta_j LnGIT_{t-j} + \varepsilon_t \quad (4.64)$$

$$LnRGDP_t = \sum_{k=1}^{n} \alpha_k\ LnINV_{t-k} + \sum_{j=1}^{n} \beta_j LnRGDP_{t-j} + \varepsilon_t \quad (4.65)$$

$$LnINV_t = \sum_{k=1}^{n} \alpha_k LnRGDP_{t-k} + \sum_{j=1}^{n} \beta_j\ LnINV_{t-j} + \varepsilon_t \quad (4.67)$$

4.12.5.3 Per Capita Nominal Gross Domestic Product (GDPCAP)

The study has estimated the following twelve pair-wise equations (Eqn.- 4.68 to Eqn.- 4.79) to detect Granger causation.

$$LnGDPCAP_t = \sum_{k=1}^{n} \alpha_k \, LnNOB_{t-k} + \sum_{j=1}^{n} \beta_j LnGDPCAP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots \quad (4.68)$$

$$LnNOB_t = \sum_{k=1}^{n} \alpha_k LnGDPCAP_{t-k} + \sum_{j=1}^{n} \beta_j \, LnNOB_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.69)$$

$$LnGDPCAP_t = \sum_{k=1}^{n} \alpha_k LnLAD_{t-k} + \sum_{j=1}^{n} \beta_j Ln\ GDPCAP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots \quad (4.70)$$

$$LnLAD_t = \sum_{k=1}^{n} \alpha_k \, LnGDPCAP_{t-k} + \sum_{j=1}^{n} \beta_j LnLAD_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.71)$$

$$LnGDPCAP_t = \sum_{k=1}^{n} \alpha_k LnNPL_{t-k} + \sum_{j=1}^{n} \beta_j LnGDPCAP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.72)$$

$$LnNPL_t = \sum_{k=1}^{n} \alpha_k \, LnGDPCAP_{t-k} + \sum_{j=1}^{n} \beta_j \, LnNPL_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.73)$$

$$LnGDPCAP_t = \sum_{k=1}^{n} \alpha_k LnEXP_{t-k} + \sum_{j=1}^{n} \beta_j LnGDPCAP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots \quad (4.74)$$

$$LnEXP_t = \sum_{k=1}^{n} \alpha_k LnGDPCAP_{t-k} + \sum_{j=1}^{n} \beta_j LnEXP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.75)$$

$$LnGDPCAP_t = \sum_{k=1}^{n} \alpha_k \, LnGIT_{t-k} + \sum_{j=1}^{n} \beta_j \, LnGDPCAP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots \quad (4.76)$$

$$LnGIT_t = \sum_{k=1}^{n} \alpha_k \, LnGDPCAP_{t-k} + \sum_{j=1}^{n} \beta_j LnGIT_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.77)$$

$$LnGDPCAP_t = \sum_{k=1}^{n} \alpha_k \, LnINV_{t-k} + \sum_{j=1}^{n} \beta_j LnGDPCAP_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots \quad (4.78)$$

$$LnINV_t = \sum_{k=1}^{n} \alpha_k LnGDPCAP_{t-k} + \sum_{j=1}^{n} \beta_j \, LnINV_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.79)$$

Chapter 5

OVERVIEW OF PRIVATE COMMERCIAL BANKS

The chapter has discussed in brief the profile, functions, and financial information of sample PCBs taking into account the 2017 data with the exception of The Farmers Bank Ltd. Where data from 2016 was considered. All the scheduled Private Commercial Banks (PCBs) incorporated in Bangladesh are the population of this research. The sample size (38) of this study is all PCBs except *ICB Islami Bank Ltd.* and *Simanto Bank Ltd.* due to unavailability of data. So, the chapter has provided an overview of all the PCBs except *ICB Islami Bank Ltd.* and *Simanto Bank Ltd.* A commercial bank is an institution that offers services such as the acceptance of deposits, the provision of business loans, and the provision of basic investment products. The main function of a commercial bank is to accept public deposits in order to lend borrowers money. Commercial bank can also refer to a bank, or a division of a large bank, which more specifically deals with deposit and loan services provided to corporations or large/middle-sized business - as opposed to individual members of the public/small business. Out of 40 PCBs in Bangladesh 38 PCBs are studied. They are majorly owned by private entities, and classified into two types i) Conventional PCBs; ii) Islamic Shariah Based PCBs. There are now 32 conventional PCBs operation in the industry in total. They perform the banking functions in conventional fashion, *i.e.,* interest based operations. There are 8 Islamic Shariah-based PCBs in Bangladesh and according to Islamic Shariah-based principles, they carry out banking activities, *i.e.,* Mode of Profit-Loss Sharing (PLS). The studied PCBs are classified on the basis of establishment as follows:

- PCBs of 1980s;
- PCBs of 1990s;
- PCBs of 2000s; and
- PCBs of 2010s.

5.1 PCBs OF 1980s

The profile, functions and financial information of PCBs of 1980s have been discussed in this section. The PCBs of 1980s includes AB Bank Limited (ABBL), Pubali Bank Limited (PBL), National Bank Limited (NBL), International Finance Investment and Commerce Bank (IFIC), Islami Bank Bangladesh Limited (IBBL),

United Commercial Bank Limited (UCBL), Uttara Bank Limited (UBL), and The City Bank Limited (CBL). The Profile, functions, and financial information of PCBs of 1980s are discussed below.

5.1.1 Arab Bangladesh Bank Limited

Incorporation of Arab Bangladesh Bank Limited took place at the end of the year 1981. The bank started banking operations in the following year (12 April 1982). *Karwan Bazar* branch is the first branch of the bank which was opened on 12 April 1982. Mumbai branch in India is the foreign branch. The bank has two representative offices at Yangon and London in Myanmar and England respectively. The bank has established four subsidiaries, and one UK based Exchange Company. AB bank was named Arab Bangladesh Bank Limited from 1982 to 2007. The logo represents the intermingling of connectivity and reliance. In 1995, the bank got an overseas financial house at Hong Kong. Since 2002, merchant banking operation has been started. For the first time the bank invested outside Bangladesh in Sri Lanka in 2011. At present seven directors and four committees are working to run the business. The directors make the policy. The committees deal with risk, auditing, decision making etc. The bank arrange seminar workshop, training programs to enhance the efficiency of employees. The bank is rendering services to economy through 105 branches with 2,354 employees. It established 276 ATMs, 11 SME centres and five branches for agent banking. The shares are held by sponsors and directors (36.468%), local institutions (25.536%), GoB (0.573%), foreign institutions (1.97%), non-residential Bangladeshi (0.314%) and general public (34.317%). Beside regular activities, the bank takes care of the victims of *Raza Plaza* and BDR tragedy, supplies clothes in winter in *Ramu* and assists the injured of the terrible *Nimtali* fire. The bank focuses development in health, education and extracurricular activities such as sports. The bank serves to all segments of the country. Large progressive industries such as Pharmaceuticals, Textiles, are provided financial support through cooperate finance. Entrepreneurs, small business are offered special opportunities to grow. Retail banking encourages saving of households, and taking loan for accessories, education, etc. The bank follows conventional and Islamic banking system. To provide more financial services, bank operates e-business, agent banking and internet banking (ABBL, 2017).

Total assets of the bank were BDT 314,565 million in 2017. The bank collected BDT 235,954 million as deposit. The mobilized fund as loan was BDT 229,647 million. ROI, ROA and ROE were 56.74%, 10.18% and 0.13% respectively. The bank earned profit BDT 30 million after tax adjustment. The bank invested BDT 45,749 million. The bank created a surplus of capital (BDT 1,310 million). NPL was BDT 16,049 (7.15%). Ratio of utilization of assets is 85.86% (ABBL, 2017).

5.1.2 Pubali Bank Limited

Pubali Bank Limited primarily started its journey in 1959. At the end of 1960s, entrepreneurs of East Pakistan formed Eastern Mercantile bank according to Bank Company Act 1913. In 1972, GoB took the ownership under the nationalization policy and gave new name 'Pubali Bank'. For eleven years, the bank was under government ownership. In 1983, to promote privatization, the bank became a private bank and was given again a new name 'Pubali Bank Limited'. In Bangladesh, the bank has 465 branches, 116 ATMs, 2 OBU, 30 foreign correspondents units, and one subsidiary company. The bank is registered in two capital markets of the country. At present a total manpower of 7,652 persons is contributing to bank with 15 directors. The bank has 20 divisions to manage the operations. The shares are held by directors (30.05%), general public (45.62%) and institutions (24.33%). The bank has rated 'ST-1' for short run and 'AA' for the long run. The bank has been awarded by many domestic and international agencies. A quarterly periodical named 'Pubali Barta' is published by the bank. The bank follows both conventional and Islamic banking system. The bank emphasizes more on financing equipment for medical use. The banks provide loans to manufacturing sector, individuals and small businesses. 'Pubali Subarna' and 'Pubali Prochesta' are among the special schemes to SME development. The CSR activities of the bank are concentrated to health sector. The bank took initiatives for green banking to protect environmental decay. The bank acknowledges social and economic obligations. It aims to cover almost all sectors in the financial arena (PUBL, 2017).

Total income and total expenses of the bank were BDT 2,731,089 million and BDT 19,126 million respectively. Collected deposit and disbursed loan were BDT 271,539.96 million, and 239,539.6million respectively. Paid up capital was BDT 9,508.04 million. Maintained capital (BDT 31,975.20 million) was greater than

required capital (BDT 24,724.58 million). NPL was 8.68%. ROA, ROE and ROI were 0.4%, 5.58%, and 5.58% respectively. EPS was TK 1.53. Bangladesh's economy got inward remittance of BDT 36,593 million. Export earnings through the bank were BDT 96,127.5 million. It has invested BDT 53,527.2 million in 2017 (PUBL, 2017).

5.1.3 National Bank Limited

National Bank Limited was established in the beginning of 1980s. The bank started banking activities on 23.03.1983 before formal inauguration which occurred on 28 March 1983. The bank was the first private bank which was fully owned by Bangladeshi people. At present, the bank has 200 branches. It has made agreements with 415 Exchange Companies outside Bangladesh. To ease secure channeling of remittance, NBL among the local private commercial banks conducted deal with Western Union for the first time. Bangladeshi people mostly working in Greece, Malaysia, Oman and other countries send remittance through NBL. The bank currently has 2 Off-shore Banking Units (OBU), 7 subsidiaries, 587 correspondents from abroad and 4,602 employees. It has been assigned 'ST-2' rating for short term and 'AA' for long term. A group of 14 eminent personnel are leading the functions of the entity. It has 39 ATMs and seven subsidiaries. NBL follows conventional banking. The bank has a variety of loan items for housing purpose, consumers' essentials and international transactions. The NBL has project and syndicate financing for energy sector, telecommunications, infrastructural progress, textiles, real estate growth, food processing and entrepreneurial development. It formed National Bank Foundation in 1989 to promote social developmental activities. The foundation operates a school and a college. The NBL has got appreciation and award for clearness and responsibility to economy. The NBL collects saving through various deposit offers and provide loans to manufacturing industry, agriculture sector and SME. It started internet banking and different card facility to boost up transactions. The NBL is aware of CSR. The bank has assisted the victims of natural calamities (NBL, 2017).

The bank collects deposit of BDT 272,771.3 million and disburses loan of BDT 248,467.15 million. It invests BDT 60,338.4 million as at December 2017. Total income and total expenses are BDT 22,546.17 million and 16,107.01 million respectively. Total regulatory capital is BDT 42,173.86 million. CAR is 12.20%. NPL

is 16.64% of total credit. ROA, ROE are 1.43% and 12.27% respectively. Ratio of cost to income is 36.02%. Yield of credit is 10.80%. Export earnings through NBL are BDT 88,477.3 million where remittance is BDT 38,262.10 million (NBL, 2017).

5.1.4 Islami Bank Bangladesh Limited

The IBBL is the first commercial bank under private ownership in south-eastern part of Asia. It started business in March, 1983. DSE enlisted the bank on 2 July 1985. After 11 years, CSE enlisted the bank on 3 March 1996. The shares of the bank are held by foreigners (46.15%), and local general people (53.85%). Including one exchange house in Singapore, three subsidiary organizations are working under IBBL supervision. The bank is running operations through 332 branches across the country. Among the branches 30 branches are specialized to provide service to SME and agriculture sector. It has 562 ATMs and three units for offshore banking. Twenty directors are managing the business with 17,760 employees. The bank has established relation with 611 foreign medias. Besides regular activities, IBBL arranges special schemes for rural development. *'Sheba Ghar'* is a special arrangement of IBBL for retail banking. At present the number of *'Sheba Ghar'* is 52. The IBBL has started to offer welfare oriented, need based and mass banking facilities. It tries to invest in socially desirable and financially feasible projects. It has worked for sustainable and inclusive socio-economic development (IBBL, 2017).

In 2017, IBBL had total assets BDT 1,069,709.07 million. The bank retained BDT 1,609.99 million. The bank collected BDT 755,022.25 as deposit. Invested (loan) fund was BDT 748,672.54 million. Capital surplus stood at BDT 234.33 million. Classified investment (non- performing loan) was 3.59% of total investment. After tax adjustment, the bank made a profit of BDT 4,692.95 million. Including export, import and remittance, the bank operated foreign exchange operation of BDT 858,272 million. ROE, ROA and spread were 9.63%, 0.53% and 3.23% respectively (IBBL, 2017).

5.1.5 IFIC Bank Limited

International Finance Investment and Commerce (IFIC) Bank Limited started operation as a fully private commercial bank in 1983. From 1976 to 1983 the bank

was working as a financial organization with joint venture between GoB and private sector. Now, the share capital of the bank is composed of share of GoB (32.75%), share of directors and sponsors (11.31%) and share of general people (55.94%). The bank has 141 branches, 88 ATMs and two subsidiaries. The board of directors consists of eight members. A team of 2,512 employees are working within the bank. The bank is enlisted in DSE and CSE. The bank established OBU in 2010. It follows conventional banking only. It started internet banking to facilitate transactions. Outside Bangladesh, the bank has established joint ventures with Nepal, Oman, Pakistan and Maldives. In Oman, the bank has 25% shares of Oman Exchange LLC. The bank has 40.90% shares in Nepal Bangladesh Bank Ltd which was formed on 6 June 1994 and situated in Nepal. The bank closed operation with Maldives in 1992. To collect remittances, the bank has formed a partnership with nine exchange houses. The bank operates corporate, retail and SME banking. It has emphasized on technology driven modern facilities including real-time online banking, Point of Sale (POS), credit, debit and prepaid card. It offers comprehensive corporate banking solutions to manufacturing and service sectors. The functions include finance for working capital, lease finance, finance for trade, industrial project based finance, treasury banking and syndication and structured finance. The bank has created a fund for donation to autistic children, cold-hit people, day-care centre and poor students' stipends (IFIC, 2017).

The bank pulled deposit of BDT 160,155 million and disbursed loan of BDT 137,118 million as at December 2016. Investment of bank was BDT 25,205 million which was lower than that of 2015. The bank generated BDT 3,420 million as operating profit and BDT 1,214 million as profit after tax payment. The foreign exchange business stood at BDT 208,672 million including export, import remittance and guarantee business. The CRAR was 11.25%. ROA and ROE was 0.55% and 9.91% respectively. The maintained SLR was 14.98%. The ratio of NPL to total credit was 5.29%. Regulatory capital was BDT 16,928 million (IFIC, 2017).

5.1.6 United Commercial Bank Limited

The UCBL was integrated on 26 June 1983 as a private commercial bank in the financial arena of the country. The bank started business on 27 June 1983. DSE and

CSE registered the bank in 1986 and 1995 respectively. The bank has 183 branches, 253 ATMs, one OBU, and two subsidiaries. Twenty directors are controlling the business with a total manpower of 4,459. The bank has relationship with 535 overseas reporters. The bank follows conventional banking system. The share capital of the bank is composed of share of sponsors and directors (37.02%), institutions (20.93%), general public (41.24%) and GoB (0.81%). The bank has diversified the activities in order to achieve sustainable development. It has a lucrative basket of loan offers which include finance of SME, project financing, trade finance, finance for consumer essentials, agro oriented activities and manufacturing. The bank has facilitated remittance flows both inward and outward. It has taken care of society by adopting a timely CSR policy. UCBL has initiated to conduct green banking. UCBL has widened the activities in versatile aspects of banking. The bank operates corporate, retail, SME, Green, Internet, NRB and agent banking. UCB imperial is a lucrative package of the bank. The bank introduces mobile phone based digitalized system of payment named 'Upay' (UCBL, 2017).

UCBL earned BDT 2,433.91 million as net profit as at December 2017. Gross income was BDT 29,469.66 million. Saving deposited at UCBL was worth of BDT 278,195.49 million. The bank provided credit of BDT 261,002.88 million. Total assets become BDT 363,314.80 million. Market capitalization was BDT 24,877.49 million. ROA and ROE were 0.70% and 9.31% respectively. The bank had a capital surplus of BDT 2,511.68 over capital required. Bangladesh received BDT 199,188 million and BDT 5,595.48 million as export and remittance respectively through the bank. The NPL was 7.38% of total credit. UCBL invested BDT 42,911.75 million as at December 2017 (UCBL, 2017).

5.1.7 Uttara Bank Limited

Uttara Bank Limited emerged as a private commercial bank in the mid-1983. The bank has a prosperous record. In 1965, the 'Eastern Banking Corporation' was founded by some famous East Pakistani businessmen to assist the underprivileged people in East Pakistan. The GoB, after the liberation war took the ownership according to nationalization policy and gave a new name 'Uttara Bank' to the previous corporation in 1972. After 11 years, the bank was privatized and given

another name ‘Uttara Bank Limited’ in 1983. Now the bank is rendering services through 233 branches. The bank has established relations with 600 correspondents outside Bangladesh. The number of the directors is 15. A group of 3,542 employees are contributing. It has been listed in DSE and CSE. The bank has 25 ATMs. The bank is rated ‘AA’. The bank has two subsidiary and one offshore banking unit. The bank is aware of green banking. The bank has invested approximately BDT 1,175.9 million named as green finance. The bank has regularly provided loan facility for new industry, working capital for enterprises of different structures and international trade. It has spatial focus on rural people, SME units, women empowerment and poverty alleviation. It has designed attractive deposit packages for all the segments of the economy (UBL, 2017).

Gross income and expenditure were BDT 14,916.3 million and 12,086.1 million respectively. The bank’s capital (paid up) was BDT 4,000.8 million. Collected deposit is worth of BDT 148,514.9 million. Gross loan and investment were BDT 195,260.9 million and 32,603.9 million respectively. The bank maintained the capital which was greater than required. NPL was BDT 7,104.6 million. ROA and ROE were 0.87% and 11.20% respectively. Total assets of the bank were BDT 178,879.6 million as at December 2017. Per share income is BDT 3.89 (UBL, 2017). The export earning is of BDT 11,590.7 million.

5.1.8 The City Bank Limited

The City Bank Limited got incorporation on 14 March 1983. The bank began banking functions on 27 March 1983. The bank is running 130 branches and three subsidiary companies under its full ownership. The total share of the bank is composed of the share of directors (30.53%), general people (35.69%), financial entities (18.62%) and foreigners (16.165%) as on 31 December 2017. The general people have the largest amount of shares. The DSE and CSE enlisted the bank on 3 February 1987 and 27 December 1995 respectively. Among the 130 branches 11 branches provide services to SME and agriculture sector. The number of bank’s own ATM is 339. Including chairman, 13 directors are engaged in overall policy making of the bank. Not following the traditional system of business, it runs the operations forming five separate units with 3,230 employees. The bank creates options both for conventional

and Islamic banking system. It has set up relations with 482 overseas reporters. Many domestic and international organizations recognize the bank as one of the best banks in Bangladesh. The bank suggests a variety of depository items, loan items, and card facility. At present, it has more than 16 lakhs customers. 'City touch' is platform for digital banking. 'Citygerm' is a priority banking option. The bank includes all types of banking segment such as corporate, retail, agent, digital, NRB, SME, and priority banking (CBL, 2017).

The bank has pulled a fund of BDT 183,493 million as deposit in 2017. The bank has channeled fund as loan BDT 196,596 million. It has invested BDT 25,508 million. BDT 14,916 million and BDT 8,047 million are the operating income and expenses respectively. After tax payment the bank has gained profit BDT 3,626 million. It has maintained the regulatory capital at BDT 29,755 million. NPL was BDT 10,678 million (5.4% of total loan). Bangladesh has earned BDT 98,593 million and BDT 30,464 million as export payment and remittance respectively through the bank in 2017. ROE and ROA was 15.9% and 1.4% respectively in 2017 (CBL, 2017).

5.2 PCBs OF 1990s

The Profile, functions, and financial information of PCBs of 1990s have been discussed in brief in this section. The banks include Eastern Bank Limited (EBL), National Credit and Commerce Bank Limited (NCC), Prime Bank Limited (PBL), Southeast Bank Limited (SBL), Dhaka Bank Limited (DBL), Al-Arafah Islami Bank Limited (AIBL), Social Islami Bank Limited (SIBL), Dutch Bangla Bank Limited (DBBL), Mercantile Bank Limited (MBL), Standard Bank Limited (SBL), One Bank Limited (OBL), Export Import Bank Limited (EXIM), Bangladesh Commerce Bank Limited (BCBL), Trust Bank Limited (TBL), First Security Islami Bank Limited (FSIBL), Premier Bank Limited (PBL), Bank Asia Limited (BAL), and Trust Bank Limited (TBL).

5.2.1 Eastern Bank Limited

The EBL was registered on 8 August 1992 for the application of private sector banking functions. The bank began banking activities on 16 August 1992. The bank became enrolled in DSE on 20 March 1993. After 11 years, CSE enlisted the bank on

11 September 2004. The directors, general people and financial organizations have 31.56%, 58.02% and 10.42% share respectively. The bank is running operations through 200 branches in Bangladesh. It establishes 200 ATMs. It began online activities in 2003. Operations of offshore banking were started in 2004. The bank is the pioneer to put into operation of UBS in Bangladesh. It has 4 subsidiaries. The bank establishes its first overseas subsidiaries in Hong Kong. It has a representative centre at Yangon in Myanmar. At present, 10 representatives, including chairman, play the role of directors. The bank is aware of the quality of manpower. Up to 2017, it arranged 310 training programs. The bank creates relations with 522 overseas reporters. It has 14 priority oriented centres. Corporate, commercial and consumer banking are at core of business functions. As a part of CSR, it regularly donates to enhance human welfare. It is cautious about the duties to state. It clears the tax payments regularly. The bank is trying to combat with environmental decay. To encourage new ideas and creativity the bank formed 'EBL Nest' in 2015 (EBL, 2017).

The bank earned profit of BDT 2,428 million after paying tax in 2017. The growth rate of profit is -10.60%. The bank gathered a fund of BDT 166,959 million offering different deposit items. BDT 256,300 million is the value of total asset. The ratio of NPL to total loans is 2.41%. BDT 23,302 million is the value of regulatory capital. The bank collected BDT 98.493 million as export payment to Bangladesh's economy. ROE and ROA were 11.41% and 1.04% respectively. The bank made an investment of BDT 24361 million in 2017. It has disbursed loan and advances of BDT 209, 306 million in 2017 (EBL, 2017).

5.2.2 National Credit and Commerce Bank Limited

The NCC Bank originated from investment company to banking entity in private sector on 15 May 1983. In 1985, an investment company was formed to facilitate resource mobility in financial system. After eight years the company became bank with the permission of BB in 1993. DSE enlisted the bank as member on 9 December 1997. CSE enlisted on 16 May 2000. DSE registered on 28 May 2000. The NCC Bank got membership in CSE on 11 October 2007. The subsidiaries of the bank (two) started operation in 2010. The bank introduced mobile banking in 2013. At present, 109 branches are in operation. The bank has set up 74 ATMs and relationship with

377 foreign medias. Including chairman, 15 members are playing the role of directors. A team of 2,146 employees are working within the bank. To promote international business, the bank has agreements with exchange house in different countries. The bank established NCCB Exchange Limited in UK in 2011. The NCC Bank is rated 'AA' (long term). Every year, the bank organizes training programs, sessions, seminars, workshops to enhance skill of the employees. The bank believes in integrity, accountability, mutual respect, secrecy, caring of nature and professionalism. The bank operates in various aspects such as corporate, retail, NRB, offshore and internet banking. The bank considers the sustainability in banking. The bank has taken different policies related to green banking. Under 'Green Finance' activity, the bank is always interested to finance the projects such as Bio-gas, Solar, Recycling etc. (NCCBL, 2017).

The bank's fixed assets amounted to BDT 2,486.89 million in 2017. By offering an array of depository items, the bank collected BDT 159,988.95 million. The bank assisted to the deficit units of the economy by providing loan of BDT 146,633.84 million. The NCC Bank maintained total capital of BDT 18,195.41 million. NPL was BDT 8,490.07 million (3.16%). The profit after the tax payment stood at BDT 1,763.45 million. ROE and ROA are 10.48% and 0.94% respectively. The bank collected BDT 25,893.6 million as export earnings. It has made an investment of BDT 29,403.28 million. Bangladesh's economy got remittance of BDT 27,012.09 million in 2017 (NCCBL, 2017).

5.2.3 Prime Bank Limited

The PBL began its operations on 17 April 1995 in private sector. After getting the license, the bank started the journey in private banking sector in full swing. CSE and DSE enlisted the bank on 15 November 1999 and 27 March 2000 respectively. In 2017, the composition of share of the bank was sponsors (38.04%), financial entity (24.32%), foreigners (3.75%), NRB (0.27%), and general people (33.62%). The PBL is running six subsidiary companies among which three are operating in Bangladesh and three outside Bangladesh in Singapore, UK and Hong Kong. The PBL is rated 'AA' (long term) and ST-2 (short term). Including chairman, 18 members are doing the role of directors to manage the business. One hundred and twenty-eight branches,

of which 18 are SME-based, are in service. One hundred and seventy ATMs are set up by the bank. It has five subsidiaries and 650 foreign correspondents. A group of 3,124 employees are working within the entity. The bank is associated with 687 overseas medias. Both the conventional and Islamic banking systems are followed by the PBL. The bank includes all aspects of banking such as retail, wholesale, NRB, MSME, SME, offshore, and internet banking. 'ALTITUDE' means the bank's unique internet banking activities. As a part of CSR, the bank provides scholarship to promote education, assists handicap segments of population, lends hand for better health and support financially the families of martyr's. The bank initiates green banking to save the natural environment (PBL, 2017).

Operating income and operating expenses are BDT 12,207 million and 6,834 million respectively in 2017. The PBL earned profit BDT 1,059 million after tax adjustment. Total assets are BDT 281,275 million. Total liabilities are BDT 256,567 million. The bank collected BDT 199,014 million as deposits. The amount of credit provided by the bank is BDT 198,323 million. SLR is 14.96%. The ratio of equity to debt is 9.63. NPL is BDT 10,799 million (5.45%). The excess capital over required capital is BDT 9,229 million. The EPS is Taka 1.03. The yield of dividend in percentage is 6.20. ROA and ROE were 0.38 and 4.24 respectively in 2017. It has invested BDT 48,429 million (PBL, 2017).

5.2.4 Southeast Bank Limited

The SBL got inception on 12 March 1995. Since then, the bank has been providing services to economy. Now, it has 134 branches in operation. The bank had enrollment in DSE and CSE on 10 April 2000 and 24 April 2000 respectively. Among four subsidiaries, one is situated in Bangladesh and another three are operating outside Bangladesh in UK, Australia and South Africa. It has conducted agreements with 825 foreign medias. Among the branches, five branches are running through Islamic banking criteria. To provide service more, the bank set up two offshore banking units. It follows both conventional and Islamic banking system. A group of 2704 employees are working according to the guidance of the directors. The share capital of SBL is composed of share of directors (15.33%), general public (48.82%) and financial institutions (35.85%). The SBL provides variety of services such as locker facility,

instant banking, card facility, loans and advances to manufacturing sector and corporate bodies and internet facility. 'Tele Cash' is a mobile supported financial service of the bank CSR activities of the bank are implemented giving special emphasis on poverty, environmental safety and woman empowerment (SBL, 2017).

In 2017, the bank had total assets BDT 339,288.05 million. The bank maintained reserve fund at BDT 24,595.63 million. After tax payment and deducting provision, profit was BDT 1,168.63 million. The SBL pulled a fund of BDT 269,828.08 million as deposit. To help the deficit group of the economy, the bank assisted BDT 234,316.72 as loan. NPL was 5.99% of total loan. ROE, ROA and CAR were 4.46%, 0.37%, and 10.84% respectively. Bangladesh earned BDT 167,562.98 million as export earnings through the bank. Bangladesh nationals remitted BDT 95,405.40 million. The bank invested BDT 62,911.04 million in 2017 (SBL, 2017).

5.2.5 Dhaka Bank Limited

Incorporation of DBL took place on 6 April 1995. The bank initiated operations on 5 July 1995. On 10 April 2000 and 6 July 2000, respectively, the bank registered with DSE and CSE. Since 2004, the bank has been performing online banking. The bank initiated offshore banking operations on May 2006. The bank began internet based banking business on 5 September 2007. Sponsors and directors (39.62%), general people (37.88%), financial organizations (18.09%) and foreigners (0.19%) made the composition of shares in 2017. The bank is running operations through 100 branches. Out of 100 branches 63 branches are located in urban areas and the remaining branches in rural areas. The bank has owned two subsidiary companies. Including chairman, 18 members are leading the corporate voyage of the bank. There are 56 total ATMs. It has relationships with 527 correspondents abroad. A group of 1,771 employees are working within the bank. It has been assigned long term rating 'AA' and short term rating 'ST-2'. The bank conducts corporate, consumers, SME, offshore and digital banking. It follows both conventional and Islamic mode of operations. It focuses on digitization of SME, innovation, entrepreneurial growth and manufacturing sector development. It has taken initiatives to green banking functions (DBL, 2017).

In 2017, the bank earned BDT 1,495 million profit after tax deduction. The operating income and operating expenses were BDT 9,376 and 4,171 million respectively. The bank pulled BDT 170,035 million as deposit. The bank assisted the deficit unit of the economy by providing BDT 154,017 million as loan. It invested BDT 23,182 million in 2017. Total assets of BDT 229,453 million belonged to bank. The bank maintained regulatory capital at BDT 21,884 million. The ratio of NPL to total credit was 5.98%. The bank's return on employed capital was 13%. ROA and ROE were 0.69% and 9.21% respectively. Bangladesh got a remittance of BDT 10,806 million through the bank. The bank facilitated international business by collecting export earnings of BDT 130,573 million where import payments through bank were BDT 130,573 million (DBL, 2017).

5.2.6 Al-Arafah Islami Bank Limited

Registration of AIBL occurred on 18 June 1995. It started operations on 27 September, 1995. The bank got enrolled in DSE and CSE in 1998. It is providing banking services through 154 branches to all regions of the country. The bank opened its first branch at Motijheel in Dhaka. A team of 21 members are working as directors. A group of 3,446 efficient, well-educated and dedicated employees are operating the functions under the keen supervision of the directors. It follows Islamic mode of operations. At present, it has three subsidiary companies and one OBU. The bank has been assigned long term rating 'AA' and short term rating 'ST-2'. The bank has made significant contribution to national economy. All operations of the bank are conducted in accordance with Islamic shariah. It has special focus on people of low income. It invests usually in fishing, forestry, construction, water works & sanitary service and storage (AIBL, 2017).

In 2017, AIBL made a profit of BDT 3,169.5 million after tax deduction. The AIBL collected BDT 244,806.26 million as deposit. It helped the deficit units of the economy by providing BDT 235,905.23 million as investment. It invested (shares and securities) BDT 10,145.49 million. Total assets of the bank stood at BDT 319,255.29 million. The bank had BDT 27,029.27 million regulatory capitals. The ratio of NPIs (Non-performing Investment) to total investment was 4.10%. ROE and ROA were 14.07% and 0.99% respectively. As income tax, the bank contributed to government

BDT 2,431.38 million. The bank gathered BDT 104,540 million as export earnings. Bangladeshi nationals remitted BDT 20,700 million through AIBL (AIBL, 2017).

5.2.7 Social Islami Bank Limited

The SIBL got permission to conduct banking business on 7 May 1995. It started banking functions on 22 November 1995. DSE enlisted the bank on 18 November 2000. After five years, CSE registered the bank on 4 October 2005. The shares of the bank belong to sponsor and placement (22.42%), sponsor and placement company (18.17%), foreigners (1.39%), general people (14.63%) and different organization (42.76%). The bank operates the function through 138 branches located in different regions of the country. At present, it has two subsidiary companies. SIBL introduces online banking on 1 March 2004. It establishes relationships with 406 overseas correspondents. A group of 2599 efficient employees are conducting the functions under the supervision of 14 directors. It has been rated 'ST-2' for short term and 'AA-' for long term. The bank provides a variety of services such as school banking, mobile banking, offshore banking, agent banking and internet banking. It conducts functions in accordance with Islamic financial principle. It offers a variety of deposit products. The 'Subarna Rekha' is one of the special deposit offers of SIBL. The SIBL has significant contribution to health, sports, education, culture and environmental development. To facilitate inward remittance SIBL makes agreements with different exchange houses situated in UK, Spain, Malaysia, Bahrain etc. (SIBL, 2017).

In 2017 SIBL pulled BDT 228798.9 million as deposits. The bank invested BDT 210045.51 million. Investment in shares and securities stood at BDT 13082.52 million. The bank made a profit (before tax) of BDT 3,535.13 million. Total assets of the bank were BDT 276348.95 million. The bank created a capital base of BDT 21,725.08 million. Classified investment to total investment was 8.20%. It has earned BDT 49,766 million as export payment. The ROA and ROE were 2.06% and 16.16% respectively. Bangladesh obtained BDT 13345.7 million as remittance through SIBL (SIBL, 2017).

5.2.8 Dutch Bangla Bank Limited

The DBBL got licensed on 23 July 1995 as a first joint venture bank between Bangladesh and the Netherlands. The bank began its banking functions on 3 June 1996. The bank is running functions through 175 branches. The shares of the bank belong to local sponsors (61.3%), foreign sponsors (25.7%), different institutions (4.7%) and individuals (8.3%). A group of 6,816 dedicated employees are working under the supervision of 13 directors. The bank has 175 ATM units. The DBBL is the first to introduce mobile banking in Bangladesh. It has been rated 'AA+' for long term and 'ST-1' for short term. It is enlisted in DSE and CSE. The DBBL is committed to render services in rural area to support SMEs. Besides regular financial services, it has taken initiatives for green financing. The bank is considered a role model of the country for CSR activities. The bank is not only for profit rather it fall 'People-planet-profit' (DBBL, 2017).

In 2017, DBBL obtained total revenue BDT 23,550.5 million. Out of the total revenue, the bank incurred costs of BDT 17,867 million. Net profit after tax and provisions was BDT 2,455.2 million. The bank gathered BDT 233,796.4 million as deposit. It provided BDT 207,257.4 million as loan. NPL was 4.7% of total loan. The bank created a surplus capital of BDT 5,842.0 million. ROI, ROE, ROA were 7%, 13.2%, and 0.9% respectively. It has accumulated BDT 144931.8 million as export payment. It invested BDT 26,197.9 million in 2017 (DBBL, 2017).

5.2.9 Mercantile Bank Limited

Incorporation of MBL took place on 20 May 1999. The bank initiated banking functions on 2 June 1999. DSE registered the bank on 16 February 2004. CSE enlisted the bank on 26 February 2004. The shareholding of the bank is composed of share of directors (37.46%), organizations (19.26%), foreigners (8.30%) and general people (34.98%). The bank is running operations through 129 branches. The bank has established two subsidiaries, two offshore banking units and 163 ATMs. The bank started offshore banking operations on 20 March 2011. Mercantile exchange house was formatted on 6 December 2011. The bank has set up relationships with 640 overseas correspondents. A team of 2,192 employees are conducting the functions under the supervision of 11 eminent directors. The bank has substantial funding for

economic activities. It has designed a range of items for deposits and loans. In order to keep the health of the bank as well as the economy sound, it innovates innovative investment ventures (MBL, 2017).

In 2017, MBL earned BDT 3,017.72 million after maintaining provisions and deducting tax. The bank pulled BDT 220,516.63 million as deposit. The bank helped the corporate clients and consumer by offering loans of BDT 199,660.72 million. The bank invested BDT 38,322.15 million. Total assets of BDT 260,169.93 million belonged to bank. The bank maintained regulatory capital at BDT 24,581.38 million. NPL of the bank was BDT 7,564.72 (3.79%) million in 2017. Yield on credit was BDT 9.06%. Average assets brought a return of 1.30% where average equity brought 17.55% (MBL, 2017).

5.2.10 Standard Bank Limited

The SBL got permitted to conduct banking business on 11 May 1999. The bank started voyage of banking business on 3 June 1999. DSE and CSE enlisted the bank in 2003. The bank is performing the functions through 122 branches situated in different regions of Bangladesh. The bank started to provide offshore banking services on 23 March 2015. The shares are held by sponsors and directors (39.22%), ICB units (4.19%), general public (46.76%) and miscellaneous institutions (9.83%). A team of 2076 employees is working under the leadership of eminent directors. The bank has made relationship with 21 foreign medias. The bank has 6 overseas houses and 4 subsidiary companies. It is assigned ‘AA’ rating for long term and ‘ST-2’ for short term. The bank follows both conventional and Islamic banking. The SBL is emphasizing on manufacturing and value chain in the era of technological advances. It offers diversified deposit and loan products under corporate, foreign trade, industrial project, syndication, real estate and work order finance. In 2014, the bank introduced ‘Spot Cash’, financial services through mobile, to include the unbanked group of the country (STBL, 2017).

The bank collected deposits BDT 134,731 million in 2017. Loans and advances by bank were BDT 128,228 million. The bank invested BDT 20,234 million. The bank earned BDT 1,238 million as profit after maintaining provisions and tax. The bank’s fixed assets stood at BDT 3,690 million. The bank maintained BDT 20,404 million as

regulatory capital. NPL was BDT 9,365 million (7.42% of total loan). ROE, ROA and ROI were 9.24%, 0.75% and 8.91% respectively. The bank collected BDT 43,807 million as export earnings. Bangladesh nationals send BDT 7,563 million as remittance through the bank. The bank paid BDT 155,419.092 as tax (STBL, 2017).

5.2.11 One Bank Limited

Incorporation of OBL occurred on 12 May 1999. The bank initiated banking business on 14 July 1999. The bank got listed in DSE and CSE in 2003. The bank got permitted to render offshore banking services in 2010. At present, it has two offshore banking units and one subsidiary company. The bank is conducting operations through 95 branches situated in different locations of the country. The bank began internet banking on 23 March 2012. A team of 2101 efficient employees are providing the banking services. The bank was recognized by many national and international entities. The bank has made relationship with 52 local medias and 414 foreign correspondents. The bank has ATM in 92 locations of the country. The bank is rated 'AA' for long term and 'ST-2' for short term. The bank regularly launches new banking products and services. The bank offers diversified services to corporate clines. It covers working capital, lease, project, trade, syndication, mezzanine and offshore finance. On 5 September 2013, the bank launched 'OK Banking' which provides financial services via mobile, in order to promote banking services to the unbanked community of the country. It provides support to flood victims, poor people for health issues, cold stricken group and *rohingya* refugees as a part of CSR (OBL, 2017).

In 2017, the bank collected BDT 182,675 million as deposits. It assisted the deficit units of the country by offering BDT 170,393 million as loan. The bank invested BDT 26,144 million. The bank maintained statutory reserve at BDT 5,104 million. Total regulatory capital was BDT 21,366 million. The bank earned BDT 2,181 million as profit after maintaining provisions and tax. ROA, ROI and CAR were 1.05%, 9.62% and 11.56% respectively. NPL was 5.31% of total loan. The bank handled import and export business of BDT 150,633 and 93,806 million respectively (OBL, 2017).

5.2.12 Export Import Bank of Bangladesh Limited

On 2 June 1999, the incorporation of EXIM Bank took place. The bank began banking business on 3 August 1999 when it was named Bengal Export Import Bank Limited. It was given a new name Export Import Bank of Bangladesh Limited on 16 November 1999. From 1999 to mid-2004, bank operates conventional banking system. The bank shifted its entire function to Islamic Banking in July 2004. The bank got listed in DSE and CSE in 2004. The bank is carrying out functions through 118 branches situated in different location of the country. The bank has three offshore banking units. At present, three subsidiary companies are working under Bank's supervision. The bank supports all segments of the economy. The bank operates corporate, retail, SME and agriculture banking. 'EXIM Cash' introduced by the bank, is targeted to provide financial services through mobile to unbanked people on 18 June 2013. A group of 2,794employees are working in the bank. It has created relationship with 393 overseas correspondents. Diversification of loan and deposit package is a regular practice of the EXIM Bank. Various bodies have awarded the bank for notable contribution to the economy (EXIM, 2017).

In 2017, the bank collected BDT 283,643.96 million. The bank mobilized BDT 255,033.17 million to different sectors of the economy as investment. The bank invested BDT 21,605.36 million in shares and securities. Bank's total assets stood at BDT 333, 892.61 million. The bank earned BDT 3,298.43 million as profit after maintaining tax and provision. It maintained a regulatory capital of BDT 34,854.08 million CAR was 12.09%. After adjusting tax, ROE and ROA were 12.19% and 1.06% respectively. The bank collected BDT 155,582.20 million as export payments. Bangladesh nationals remitted BDT 5,078.70 million through the bank. The bank assisted trade business by handling import business of BDT 179,040.30 million (EXIM, 2017).

5.2.13 Bangladesh Commerce Bank Limited

Incorporation of BCBL took place on 1 June 1998. It started banking operation on 16 September 1999. The shareholding of the bank is composed of shares of the Government of the People's Republic of Bangladesh (33.94%), shares of three state owned bank (11.32%), shares of state owned entities (5.15%) and general people

(49.59%). The bank is providing services through 56 branches situated in different locations of the country. It has four subsidiary companies. The BCBL started providing financial services through mobile on 3 March 2012. A group of eminent personnel are designing policies and maintaining the functions with a team of 952 employees. The bank is rated 'BBB-' for long term and 'ST-4' for the short term. The BCBL prioritizes innovation for financial inclusion, augmentation of consumer base, relationship banking, non-performing load reduction, and green banking. It offers versatile deposit and loan products to business entities, individuals and organizations. The bank primarily involves in wholesale and retail banking. It has taken initiatives for education sector development as a part of CSR (BCBL, 2017).

In 2017, the bank obtained BDT 30,009 million as deposit. The bank advanced BDT 19,284 million. It invested BDT 4,731 million. Total assets became BDT 36,395 million. The bank earned BDT 29 million profit after maintaining provision and tax. It maintained total regulatory capital at BDT 924 million. NPL become BDT 5,598 million. ROE and ROA were 0.83% and 0.08% respectively. The bank handled BDT 4,719 million as import business. Bangladeshi nationals remitted BDT 1,187 million through the bank. The bank collected BDT 2,284 million as export earnings (BCBL, 2017).

5.2.14 Mutual Trust Bank Limited

The MTBL was permitted to operate banking business on 5 October 1999. The bank began banking functions on 24 October 1999. The bank is registered in DSE and CSE. The shareholding of the bank is composed of shares of directors (36.62%), different institutions (22.27%) and general people (41.11%). The bank is providing services through 111 branches all over the country. At present, 2,004 employees are rendering services. The bank controls three subsidiaries and 246 ATMs belong to the bank. It has maintained relationship with 589 overseas correspondents. A group of 13 eminent directors are leading the organization. The bank introduced offshore banking activities in 2009. To facilitate transactions it offered card products in 2008. The MTBL started online banking operation in 2003. Like other commercial banks, MTBL is functioning to provide financial services to corporate clients, individuals and SMEs. The MTBL prioritizes cost reduction, compliance and governance, cyber security, innovation of

new products, managing shareholders' return and sustainable growth. It conducts wholesale banking, SME banking, retail banking, trade finance, offshore banking, NRB banking and syndications & structured finance. The bank has founded 'Mutual Trust Bank Foundation' to undertake various projects for education, health and environmental protection (MTBL, 2017).

In 2017, MTBL obtained BDT 151,776 million as deposits it advanced BDT 145,607 million. MTBL invested BDT25m106 million. The bank earned BDT 1,980 million after maintaining provisions and tax. MTBL maintained total regulatory capital at BDT 19,016 million. The EPS was BDT 3.89. ROAE and ROAA were 18.35% and 1.08% respectively. The bank handled BDT 59,075 million as export business. Bangladeshi nationals remitted USD 312.78 million through the MTBL. The NPL is 4.39% of total loan. It has total assets of BDT 201,277.52 million in 2015 (MTBL, 2017).

5.2.15 First Security Islami Bank Limited

Incorporation of FSIBL occurred on 29 August 1999. The bank began its voyage on 29 August 1999. It got license from BB on 22 September 1990. The bank is registered on DSE and CSE on 22 September 2008. The shareholding of the bank is composed of shares of directors (37.22%), foreigners (4.9%), financial entities (13.35%) and general people (44.56%). A team of 13 eminent directors is leading the organization. The bank is providing services through 168 branches located in different regions of the country. The bank has established relationship with 219 overseas correspondents. The bank controls two subsidiary companies. It has established relationship with 1500 overseas correspondents. To accelerate the pace of economic activities, FSIBL serves clients of different segments of society. The FSIBL has made an array of deposit and investment products. It renders innovative services to citizens. 'Sure Cash' offered by FSIBL is a mobile driven platform where unbanked people can get financial services. The FSIBL provides scholarship to financially troubled students as a responsibility to society. The bank is creating awareness in society about protectionism of environment (FSIBL, 2017).

In 2017 the bank played a contributory role to mobilize financial resources. It collected BDT 299,106.10 million as deposit. It channeled the resources to deficit

units of the economy (BDT 273,352.47 million). It made total assets of BDT 344,486.61 million. The bank maintained a total regulatory capital at BDT 20,081.61 million. The bank earned BDT 1389.92 million as profit after maintaining provisions and tax. The bank operated foreign exchange business of BDT 102,297.40 million (FSIBL, 2017).

5.2.16 Premier Bank Limited

The bank has been incorporated in the financial arena on June 10, 1999. Bangladesh Bank issued license for conducting business on June 17, 1999. The bank has been enlisted in DSE and CSE on May 23 and 16, 1999 respectively. The bank is the pioneer of VISA credit card among the local banks. It has 103 branches and 27 ATMs. A group of 1,562 employees are working within the bank. The bank has no subsidiary company. The bank maintains ties with 572 correspondents from abroad. The share of the bank are held by sponsors & directors (33.22%), general public (50.44%) and financial institutions (16.33%). The bank is rated 'AA+' for long term and 'ST-1' for short term. The bank has offered online and agent banking services. The bank put values on service, ownership, ambition and innovation. It offers a variety of loan and deposit items for corporate, retail, digital, SME and Islamic banking. It provides student file service, locker service, brokerage house, and SWIFT services (PRBL, 2017).

The bank has total assets of BDT 182,176.38 million. The deposited amount is BDT 140,690.47 million. It has disbursed BDT 135, 891.06 million to the deficit unit of the economy. Bangladesh's economy has earned BDT 5306.40 million as remittance through the bank. It has maintained a total capital of BDT 17,389.05 million. The ROE and ROA were 14.60% and 1.13% respectively. The NPL is 4.69% of total loan. The bank has conducted foreign business of BDT 157,025.20 million. It has invested BDT 22,334.49 million in 2017 (PRBL, 2017).

5.2.17 Bank Asia Limited

The bank began the journey on November 27, 1999 with an aim to provide the best quality technology oriented services. The bank has been formally inaugurated on November 27, 1999. The bank has received the incorporation on September 28, 1999.

A team of eminent professional (Board of Directors) has guided the operation. It has 116 branches. The bank has been awarded 'AA2' for long term and 'ST-2' for short term. The Bank Asia has 3 subsidiaries and 2 overseas branches. A group of 2,291 employees are contributing to the bank. For bank initiatives, 149 ATMs have been set up. The shares of the bank are held by sponsors & directors (52.25%), general public (15.19%), foreign investors (0.38%), investment companies (8.59%), institutions (22.99%) and non-resident Bangladeshi (0.6%). It is enlisted in DSE and CSE. The bank has special loan and deposit offers in corporate finance, school banking, green finance, export finance, CMSME finance, offshore banking and Islamic finance. It prefers to provide credit facility to food manufacturing, RMG & textile, paper & leather, chemical & electronics, ship building, pharmaceutical, utility and service sector. It has significant contribution for the welfare of senior citizen, autistic people and widow & divorced women as a part of CSR (BAL, 2017).

The bank has authorized capital worth of BDT 15,000 million. The bank has accumulated a deposit of BDT 207,041.47 million. The bank has a total asset of BDT 288,997 million. It has provided BDT 197,504 million to deficit unit of the economy as loan. The NPL is 4.38% of total loan. It has earned BDT 1,457 million as export payment (BAL, 2017).

5.2.18 Trust Bank Limited

Trust Bank Limited has been incorporated in the financial arena on June 2017, 1999. The license has been received on July 15, 1999, CSE and DSE enlisted the entity on September 24 and September 25, 2007 respectively. A team of eminent personnel has guided the activities. The shares of the bank are held by sponsors (0.31%), institutions (17.02%), foreign investors (1.83%), general citizens (20.84%) and non-resident Bangladeshi (0.31%). The bank has 104 branches including SME branches. It has relationship with 23 foreign correspondents. To meet the current banking services the TBL has initiated offshore banking functions on 4 December 2013. At present, it has 211 ATMs. A group of 165 employees are working within the bank. It offers lucrative deposit and loan products for short and long term. It prefers to provide credit facility to fisheries, RMG & textile, chemical and ceramic, ship building & breaking, energy & utility and service sectors (TBL, 2017).

A deposit of BDT 200,453 million has been gathered. BDT 184,911 million has been disbursed as loan and advances. The bank has total assets of BDT 239,771 million. BDT 28,545 million has been invested. The authorized capital is BDT 10,000 million. It has earned BDT 42,819 million as export payment. The NPL is 3.35% of total loan. The ROAE and ROAA are 14.85% and 0.77% respectively. It has earned a total operating income of BDT 9535.77 million. The bank has collected inward remittance of BDT 29,494.11 million (TBL, 2017).

5.3 PCBs OF 2000s

In this section, the PCBs of 200s have been overviewed. The overview includes brief description of profile, functions, and financial information of Shahjalal Islami Bank Limited (SJIBL), Jamuna Bank Limited (JBL) and BRAC Bank Limited.

5.3.1 Shahjalal Islami Bank Limited

Incorporation of SJIBL occurred on 01 April 2001 in Bangladesh. SJIBL initiated operations on 10 May 2001. DSE and CSE enlisted the bank in 2007. In the following year (2008), the bank started offshore banking services. The bank is providing services through 113 branches located in different regions of the country with 2402 employees. To simplify the demand of liquid currency, the bank has opened 74 ATMs. One subsidiary organization is working under full ownership and control of the bank. A team of 2,402 employees are contributing within the bank according to the supervision of the directors. It is rated ‘AA-2’ for long term and ‘ST-2’ for short term. The SJIBL’s i-banking assists clients to do the banking activities through online. To benefit the Bangladesh nationals for sending remittance SJIBL is associated with eight exchange houses incorporated in different countries (four in USA, one in UK, one in UAE, one in Qatar and one in Bahrain). It has relationship with 410 overseas correspondents. SJIBL always lends hand to victims of natural calamities, socially marginalized group and poor community of the country (SJIBL, 2017).

In 2017, the bank had the opportunity to collect deposit of BDT 145,382 million. The bank mobilized BDT 158,668 million to deficit group of the country to conduct economic activities. The bank invested BDT 10,526 million in shares of different institutions and securities. After adjustment of tax and provisions, the profit becomes

BDT 1,196 million. Following the regulations of BB, the bank maintained capital at BDT 19,376 million. NPL in 2017 was BDT 6,301 million (3.97%). ROA and ROE were 0.64% and 9.14% respectively. The bank obtained inward remittance of BDT 3,576 million. It has earned BDT 97,437 million as export earnings in 2017 (SJIBL, 2017).

5.3.2 Jamuna Bank Limited

The bank has been incorporated in the financial arena of the economy on April 2, 2001. The legal feature of the bank is Public Limited Company. A team of eminent personnel (Board of Directors) has guided the operations of the bank. The shares of the bank are held by sponsors (50.18%), general citizens (45.38%) and financial institutions (3.99%). The DSE and the CSE enlisted the entity on April 12, 2006 and April 17, 2006 respectively. A group of 2,592 employees are providing services within the bank. Links with 901 foreign correspondents are maintained. The bank has been rated 'AA-2' for long term and 'ST-2' for short term. It has two subsidiary companies, 122 branches including SME and 243 ATMs throughout the country. To meet the current demand of banking service, it has established 1 OBU. The bank has been noted for its important contribution to the deficit and surplus units of the economy. The bank conducts online banking, correspondent banking, trade finance and SMS banking. It provides locker services, corporate cash management and capital market services to citizens (JBL, 2017).

The authorized capital is BDT 10,000 million. The paid-up capital is BDT 6,141.2 million. The bank has collected BDT 167571.33 million as deposit. A loan of BDT 142,252.94 million has been provided to the deficit unit of the economy in 2017. The bank has invested BDT 26,061.92 million. The total operating income stood at BDT 8,786 million. It has a total asset of BDT 197,058.54 million. The NPL is 4.02% of total loan. The ROAA, ROAE and ROAI were 1.11%, 12.92% and 9.31% respectively. Bangladesh earned BDT 80459.30 million and BDT 16,840 million as export and remittance respectively through the bank (JBL, 2017).

5.3.3 BRAC Bank Limited

The bank has inaugurated operations on July 4, 2001. The entity has been incorporated in the economy on May 27, 1999. The bank has been enlisted at DSE and CSE on January 28 and January 24, 2007 respectively. The bank has been awarded by different rating agency for notable performance. The shares are held by general citizens (55.56%), BRAC (44.42%) and sponsors & directors (0.017%). It maintains relations with 396 foreign correspondents. It has 186 branches and 447 ATMs, 457 SME units. A group of 6,835 employees is working within the company. The bank has been rated 'ST-1' for short term and 'AA-1' for long term. The bank has a significant contribution to the SMEs of the country. It has embraced the rural poor and women entrepreneurs to make them eligible for value addition to the economy. The bank conducts corporate retail agent and SME banking (BRACBL, 2017).

In 2017, the bank has accumulated BDT 216, 930 million as deposit. It has disbursed BDT 203,431 million as credit to deficit unit of the economy. An investment of BDT 26,889 million has been made. The total capital stood at BDT 26,978 million. It earned total revenue of BDT 23,701 million. The amount of non-performing loan was BDT 7,221 million. The ROA, ROE and ROI were 1.95%, 22.14% and 9.41% respectively. Bangladesh earned BDT 57,522 million and BDT 53,161 million as remittance and export payment respectively through the bank (BRACBL, 2017).

5.4 PCBs OF 2010s

The profile, functions, and financial information of PCBs of 2010s have been discussed in this section which includes The Farmers Bank Limited, Meghna Bank Limited, Midland Bank Limited, NRB Global Bank Limited, Modhumoti Bank Limited, NRB Bank Limited, NRB Global Bank Limited, Modhumoti Bank Limited and NRB Bank Limited. The aforesaid banks began their journey towards providing banking services in 2013. The banks' profiles have been periodically upgraded since their inception. The functions are becoming versatile gradually.

5.4.1 The Farmers Bank Limited

Incorporation of FBL occurred on 11 April 2013. The bank got licensed by BB on 21 April 2013. The bank started banking on 3 June 2013. The shareholding of the bank is composed of the shares of directors (73.11%), financial entities (24.90%) and non-financial entities (1.99%) as of December 2016. A subsidiary organization is working under full ownership and control of the bank. The bank creates a healthy working environment for currently working 1389 employees. At present the bank is providing services through 52 branches located in different regions of the country. It follows conventional system of banking operations. The bank is promised to provide profit oriented banking services to economy. As a bank of 4th generation, the bank has conducted operations through online since incorporation. The bank delivers different services to corporate and retail customers and covers almost all classes of economic units of the country (FBL, 2016).

In 2016, the bank acquired a deposit of BDT 5063.78 crore. It invested BDT 925.89 crore in securities of GoB and shares of different entities. It has mobilized BDT 4413.38 million to deficit units of the economy to meet the need of capital and day to day transactions. The bank maintained total capital of BDT 474 crore. The statutory reserve of the bank is 16.73%. The NPL was BDT 177.09 crore. After maintaining tax and provisions, the bank made BDT 23.02 crore as profit in 2016. The bank handled export and import of BDT 322.98 crore and 678.05 crore respectively. Bangladeshi nationals remitted BDT 36.25 crore through in 2016 (FBL, 2016).

5.4.2 Meghna Bank Limited

The bank got incorporated on 20 March 2013. BB issued license on 28 March 2013. It becomes listed as a scheduled bank on 03 April 2013. It began banking voyage on 09 May 2013. A team of 17 eminent personnel are leading the functions of the entity. It has been rated ‘A+’ for long term and ‘ST-2’ for short term. At present, the bank is operating through 36 branches. To meet the demand of liquid currency, the bank has set up 13 ATMs. The bank is running operations following conventional banking system. ‘Meghna Bank Securities Limited’ established on 18 February 2015 is working as a subsidiary of the bank. The bank serves all types of principal banking operations to its clients, which encompasses collecting deposits, making loans,

facilitating export and import financing etc. The bank has tried zealously to include the unbanked population since commencement of activities. The bank covers a broad area of finance such as trade, structured, working capital and SME finance (MGBL, 2017).

The bank has gathered BDT 32,287.07 million as deposit. BDT 27,457 million has been disbursed as loan to different sectors of economy. It has invested BDT 4,727.58 million. The total asset is of BDT 43,849.55 million. Total operating income stood at BDT 2,095.10 million. The paid-up capital was 44.33 million. The NPL is 3% of total loan. The ROI and ROA were 14.52% and 1.18% respectively in 2017 (MGBL, 2017).

5.4.3 Midland Bank Limited

Midland Bank Limited entered the financial system of Bangladesh in 2013. It started journey as a fast mover in the list of fourth generation bank. The bank has got the incorporation certificate on 20th March, 2013, under the Companies Act 1994. A highly competent team (Board of Directors) steers the daily operation of the entity. MDB initiated commercial activities on June 20, 2013. The bank has 24 branches, 25 ATMs, 8 agent banking centers and 4 booths of collection. The bank has online banking facilities. The number of operation employees is 411. The bank has been rated 'ST-3' in the short run and 'A' in the long run. The bank maintains relations with 71 foreign correspondents. The bank promises to provide the economy with profit-oriented banking services. After its incorporation, the bank has conducted operations online as a 4th generation bank. The bank provides corporate and retail clients with various services and covers almost all groups of economic units in the country (MDBL, 2017).

The authorized capital of the bank is BDT 10,000 million. Paid-up and total capital are BDT 4,795.20 and 6142.70 million respectively. The bank has total asset of BDT 41,948.73 million. BDB has maintained BDT 559.84 million as the statutory reserves. The total operating income stood at BDT 2,031.35 million. It has collected BDT 34,240 million as deposit. BDT 27,296 million has been provided as loan to different sectors of the country. The bank has invested BDT 5,777 million in 2017. The volume of non-performing loan was BDT 458 million (1.68% of total loan). The ROA and

ROE were 1.65% and 12.30% respectively. Bangladesh has earned BDT 133 million and BDT 7,246 million as remittance and export payment respectively through the bank in 2017 (MDBL, 2017).

5.4.4 NRB Global Bank Limited

The bank has been incorporated in financial system as a depository institution on July 21, 2013. The legal status of the entity is public limited company. The bank got license for conducting business on July 25, 2013 from Bangladesh Bank. It has been listed as a scheduled bank on July 29, 2013. The bank has the funding of non-resident Bangladeshi people residing in different countries of the world. A team of 20 eminent personnel led the functions of the entity. It has been rated 'A+' for long term and 'ST-2' for short term. The bank covers a broad area of banking such as consumer, SME, NRB and international banking. It follows both conventional and Islamic banking principles. The bank is innovating a variety of loan and deposit products in a creative way. It is committed to contribute to national economy. The goal of the bank is to provide 'great experience' at home and abroad (NRBGBL, 2017).

The bank has BDT 12,000.00 million as authorized capital. The paid-up capital is BDT 4,250.00 million. It has collected BDT 96,716.3 million as deposit. It has provided BDT 82,365 million as loan and advances. The bank has made an investment of BDT 11,207.4 million in 2017 (NRBGBL, 2017).

5.4.5 Modhumoti Bank Limited

The bank came into the financial frontier of the economy in 2013. It was incorporated on June 4, 2013. The bank got license to conduct operation on June 9, 2013 from Bangladesh Bank. The bank started operations on September 19, 2013. A highly competent team (Board of Directors) steers the operations of the entity. The bank has been incorporated as a scheduled bank under the Bank Companies Act 1991. It has obtained the status of Public Limited Company under the Companies Act 1994. The bank has 32 branches, 265 points for agent banking and one off-shore banking unit. The bank has been rated 'ST-2' for the short run and 'A3' for the long run. The bank has 29 branches and 30 ATMs. A number of 422 regular employees are contributing on behalf of the bank. It maintains relations with 151 correspondents. The bank

promises to provide the economy with profit-oriented banking services. After its incorporation, the bank has conducted operations as a modern bank. The bank provides corporate and retail clients with diversified services and covers almost all segments of the country (MMBL, 2017).

The bank has authorized capital of BDT 20,000 million. The paid-up capital is BDT 4,520 million. The bank has collected a deposit of BDT 33,036 million. The loan and advances disbursed by the entity is of BDT 30,181 million. Total operating income stood at BDT 1,465.79 million. The ROA and ROE were 1.93% and 13.36% respectively. The volume of non-performing loan was BDT 88.28 million (0.29% of total loan). It has gained BDT 9,368 million as export earnings in 2017 (MMBL, 2017).

5.4.6 NRB Bank Limited

The bank got the license to conduct operations in financial arena of the economy on April 25, 2013 from Bangladesh Bank. It has obtained the Certificate of Incorporation on March 19, 2013. It is a scheduled bank under private ownership. The bank has the status of Public Limited Company. It has 36 branches and 35ATMs. A team of 765 employees is working on behalf the company. The bank has been rated 'ST-2' for short term and 'A3' for long term. The entity has offered online services. The bank provides its customers with all forms of principal banking activities, including attracting deposits, generating loans, facilitating export and import financing etc. Since the commencement of operations, the bank has tried zealously to include the unbanked community. The bank spans a wide variety of finance sectors, including trade, structured finance, working capital and SME (NRBBL, 2017).

The bank has BDT 10,000 million as authorized capital. The amount of paid-up capital is BDT 4,000 million. The bank has total assets of BDT 34,940 million. It has maintained a statutory reserve of BDT of 339 million. It has deposited BDT 23,933 million and disbursed BDT 22,921 million as loan and advances. The operating income stood at BDT 2,025 million. The volume of non-performing loan was BDT 563 million (2.4% of the total loan). The bank has made an investment of BDT 4,953 million in 2017. (NRBBL, 2017).

5.4.7 NRB Commercial Bank Limited

The bank has been incorporated on February 20, 2013. The bank has been inaugurated formally on April 2, 2013. It has the status of Public Limited Company. A highly competent team (Board of Directors) steers the operation of the bank. A group of 629 employees is working on behalf of the company. It has 61 branches and 46 ATMs. It got SWIFT membership on August 3, 2013. The shares of the bank are held by directors (55.32%) and sponsors (44.68%). A team of eminent personnel led the functions of the entity and design the policies. The bank covers a broad area such as retail, corporate, SME, NRB, agent and SMS banking. It offers diversified loan and deposit products to citizens of the country (NRBCBL, 2018).

The bank has authorized capital of BDT 10,000 million. The paid-up capital is BDT 4,900 million. The bank has deposited BDT 45,236.44 million. The bank has maintained a reserve of BDT 737.95 million. The bank has disbursed BDT 43,000.28 million as loan and advances. The entity has a total assets of BDT 57,529.35 million. The bank has invested BDT 6495.12 million. Total operating income stood at BDT 4,851 million. The ROA and ROE were 1.5% and 13.89% respectively. The bank earned BDT 22,459.69 as export earnings in 2017 (NRBCBL, 2018).

5.4.8 Union Bank Limited

The bank has been incorporated on March 7, 2013 as scheduled bank under the private ownership. The bank has the status as a Public Limited Company. A team of eminent personnel (Board of Directors) steers the operations of the bank. A group of 1,308 employees are working on behalf of the bank. It has 68 branches. The duties of the organization and the design of the policies were led by a team of eminent directors. A wide variety of areas are covered by the bank, such as retail, corporate, SME, NRB, agent and SMS banking. It provides people of the country with diversified loan and deposit items (UIBL, 2017).

The authorized capital is BDT 10,000 million. The total capital of the bank is BDT 8,053 million. The bank has maintained statutory reserve of BDT 876.88 million. The value of total assets is worth of BDT 131,677.57 million. Total deposition in bank is of BDT 114,049.89 million. The bank has disbursed BDT 100,753.55 million as investment and advances. Total operating income stood at BDT 4,011.08 million. The

ROA is 0.83%. The bank obtained BDT 41,317 million as export earnings. Bangladesh earned BDT 2,201 million as remittance through the bank in 2017 (UIBL, 2017).

5.4.9 South Bangla Agricultural and Commerce Bank Limited

The bank has been incorporated in the financial arena of the economy on February 20, 2013. The bank has the status of Public Limited Company under the Companies Act 1994. It has permitted to conduct business under private ownership. A team of competent members (Board of Directors) has guided the operations of the bank. A group of 716 employees are working within the entity. The bank has 64 branches and 22 ATMs. The bank has been rated 'A3' for long term and 'ST-2' for short term. The bank is committed to make the economy developed through the provision of heterogeneous services in line with market demand. The bank is expected to cover the unbanked citizens of the country under private banking services. It is trying relentlessly to support the real sectors of the economy (SBACBL, 2017).

The authorized capital is BDT 10,000 million. The paid-up capital is BDT 4985.2224 million. The bank has total assets of BDT 58,940.78. The bank has gathered a deposit of BDT 50121.49 million. It has disbursed BDT 43,284.97 million. Total income stood at BDT 6,278 million. The ROA and ROE were 1.88% and 16.16% respectively. It has obtained BDT 11,710.07 million. Bangladesh earn inward remittance of BDT 2,354 million in 2017 through the bank (SBACBL, 2017).

Chapter 6

PATTERN OF ECONOMIC GROWTH IN BANGLADESH

Economic growth depicts an economy's success. In the long run, economic growth is the single most powerful and primary measure of a nation's economic performance and progress. (Samuelson & Nordhaus, 1998). Three conventional measures of economic growth, namely nominal GDP, real GDP and per capita nominal GDP, have been investigated decade by decade. The chapter has aimed to conduct the graphical analysis of economic growth and estimate the linear trend models to reach the answer of the pattern of growth. GDP growth in Bangladesh is on an increasing path. Growth has benefited from impressive macroeconomic activity, sharp decreases in the rate of population growth, fair savings and investment rates and a low level of initial income. Growth is remarkably stable and Bangladesh is one of a handful of counties to be able to avoid negative per capita growth for even a single year. The previous studies show that productivity growth is the main driver of growth. It has been shown that the most potential factors for productivity and GDP growth pay-off for Bangladesh lie in policy and institutional improvements that seek to: improve the quality of economic governance; lower regulatory and administrative burdens on businesses; enhance global integration; accelerate human and infrastructure development; improve the quality of financial intermediation; and maintain macroeconomic stability. Even then it will be a challenge to finance the necessary increase in investment levels, and it will require fiscal prudence and substantial donor support. The present chapter has analyzed and presented the pattern of economic growth based on the following time frame:

- Economic Growth of 1960s;
- Economic Growth of 1970s;
- Economic Growth of 1980s;
- Economic Growth of 1990s;
- Economic Growth of 2000s; and
- Economic Growth of 2010s.

6.1 ECONOMIC GROWTH OF 1960s

Bangladesh observed significant economic impediments in the decade 1960s. With 75 million people including hard core poor, the economy relied mainly on primary sector

(agriculture). The contributions of industry and service sectors to GDP were quite low. The strategic plan for economic development was not prudent and sound. People were in quest of resources to fabricate the various sectors of the economy. The pace of economic advancement was remarkably slow. The economy got embraced with both trade and budget deficit. Among other reasons, political commotion resulted in slower economic growth. The following estimated linear trend equations have shown the growth scenario.

NGDP69 = – 840.6672 + 0.431 Time 69 ……..……. 6.1
(0.0000) (0.0000)

R^2 = 0.9519

Adjusted R^2 = 0.9459

Where,

NGDP denotes Nominal Gross Domestic Product

RGDP69 = (–1.49e+12) + (7.71e+08) Time 69 ……. 6.2
(0.0000) (0.0000)

R^2 = 0.95

Adjusted R^2 = 0.9449

Where,

RGDP denotes Real Gross Domestic Product

GDPCAP 69 = – 4317.004 + 2.397 Time 69 …….. 6.3
(0.118) (0.092)

R^2 = 0.3139

Adjusted R^2 = 0.2282

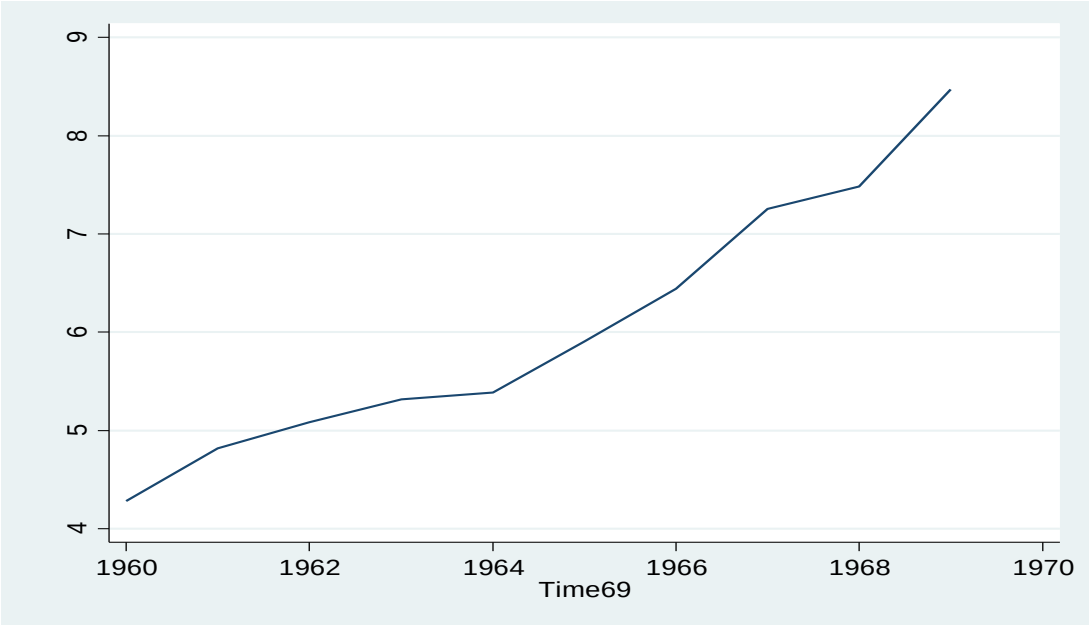
Where,

GDPCAP denotes Per Capita Nominal Gross Domestic Product

Over the decade NGDP69 (Eqn.- 6.1), RGDP69 (Eqn.- 6.2) and GDPCAP69 (Eqn.- 6.3) were growing as the time coefficients of equations were positive. Nominal GDP grew on average at 0.431 US$ over the decade. The RGDP69 grew at (7.7e+08) US$.

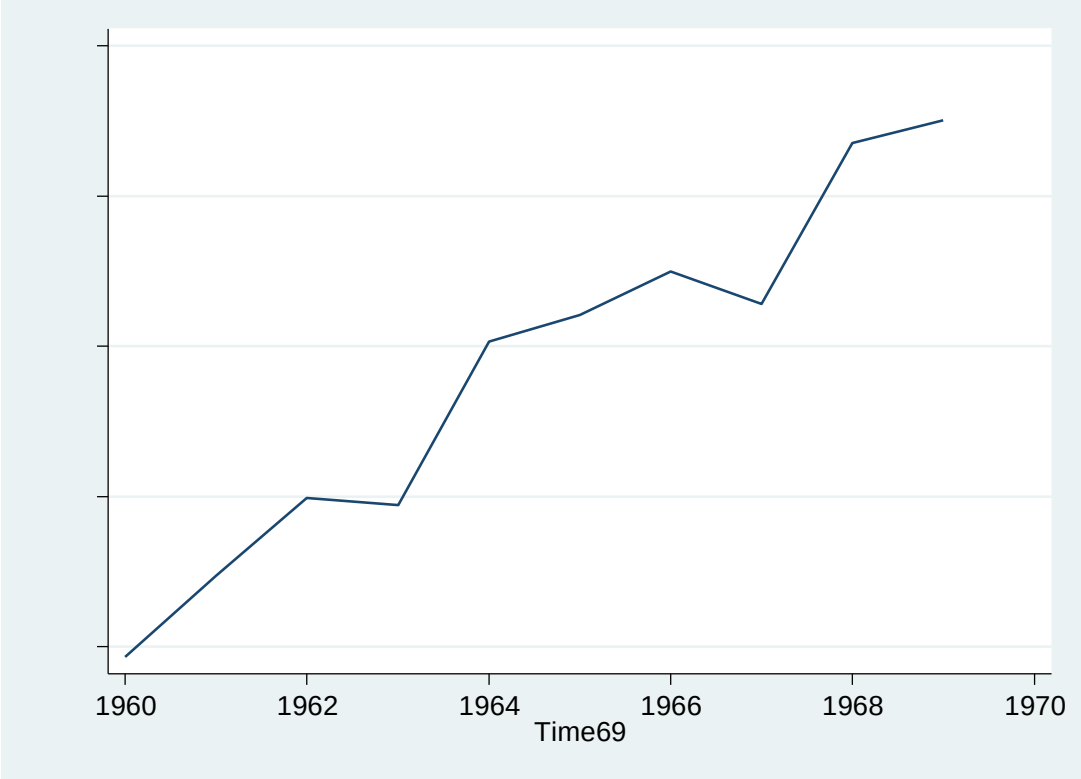
But the coefficient of GDPCAP69 (Eqn.-6.3) did not carry statistical meaning. These trend models have shown the average absolute change of NGDP, RGDP and GDPCAP over the passage of the decade 1960. NGDP had a tendency to grow (Fig.- 6.1). In 1964, there was a slight decline. From 1967 to 1st quarter of 1969, NGDP grew at slower rate. As, price level was increasing, NGDP has shown a smoother upward movement. RGDP had a path to go up with fluctuations (Fig.- 6.2). After 1966, there was a sharp decline of RGDP. After 1967 to 2nd quarter of 1969, RGDP progress was spiky. GDPCAP has travelled on an uneven path (Fig.- 6.3). Irregular movements became regular. Population growth rate of 2.52% helped per capita GDP to be small. Over the decade, low per capita GDP proved poverty of the decade.

Fig.- 6.1: Pattern of Nominal GDP, 1960s



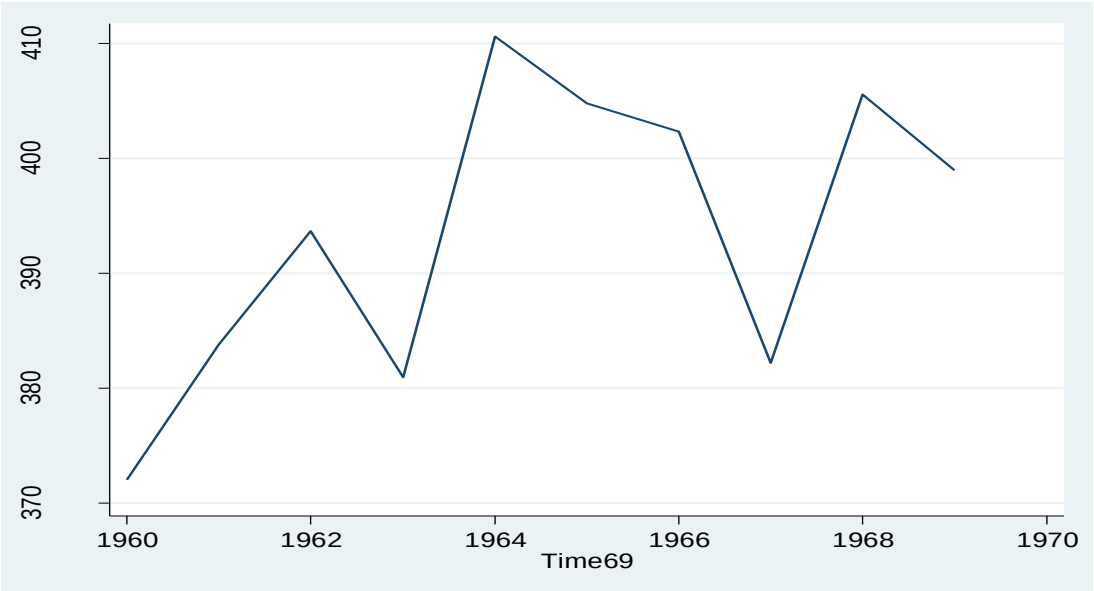
Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.2: Pattern of Real GDP, 1960s



Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.3: Pattern of Per Capita GDP, 1960s



Source: *STATA Output (Derived from Collected Data)*

6.2 ECONOMIC GROWTH OF 1970s

Bangladesh began the real journey towards economic growth and development from the decade 1970. The journey started with a harsh scarcity of resources. The cyclone of 1970 aggravated the crisis. War and cyclone made food deficit, broken physical infrastructure, galloping inflation and trade deficit. At the beginning of 1970s, the components of financial system were unreliable. The foreign currency reserves showed a bottom line situation. Poor domestic output, lack of skilled manpower, broken infrastructure, lost international market of Bangladeshi products & high level of imports, galloping inflation along with a very low purchasing power, political instability, population pressure, high rate of unemployment and terrific cyclone in November 1970 intensified the slowdown of socio-economic development. At that time, Bangladesh became pessimistic about how to grow and develop. The economy felt the need of a formal well developed financial system. To build the economy, Bangladesh got foreign aid both in kind and cash from bilateral and multilateral donors. Since 1970s, aid had a positive impact on economic growth (Hossain, 2014). While recovering the damages of war and cyclone, famine stroke the economy in 1974. Inefficiency in public sector paved the way for privatization. To accelerate industrialization, import substitution strategy was adopted. But agriculture had a larger share to GDP than that of other sectors. The economy was growing with the contribution of both formal and informal sector.

At the end of the decade, policy makers recognized new industrial policy, discovery of natural resources, efficiency enhancement and privatization. Bangladesh had to work hard to get rid of the worst situation. Gradually, financial assistance from abroad, foreign loans, new industries in domestic territory, slight mechanization in agriculture sector, creating position in overseas market and export earnings provided validity for optimism.

Over the decade, NGDP and RGDP was increasing despite several bottlenecks but GDPCAP was decreasing as shown in equations 6.4, 6.5 and 6.6 respectively.

NGDP 79 = – 1433.561+ 0.732 Time 79 ……. 6.4
(0.095) (0.093)

R^2 = 0.3124

Adjusted R^2 = 0.2265

Where,

NGDP denotes Nominal Gross Domestic Product

RGDP 79 = (– 6.72e+11) + (3.53e+08) Time 79 ……. 6.5
(0.155) (0.142)

R^2 = 0.2487

Adjusted R^2 = 0.1548

Where,

RGDP denotes Real Gross Domestic Product

GDPCAP 79 = 5383.104 – 2.547 Time 79 …….. 6.6
(0.390) (0.421)

R^2 = 0.0825

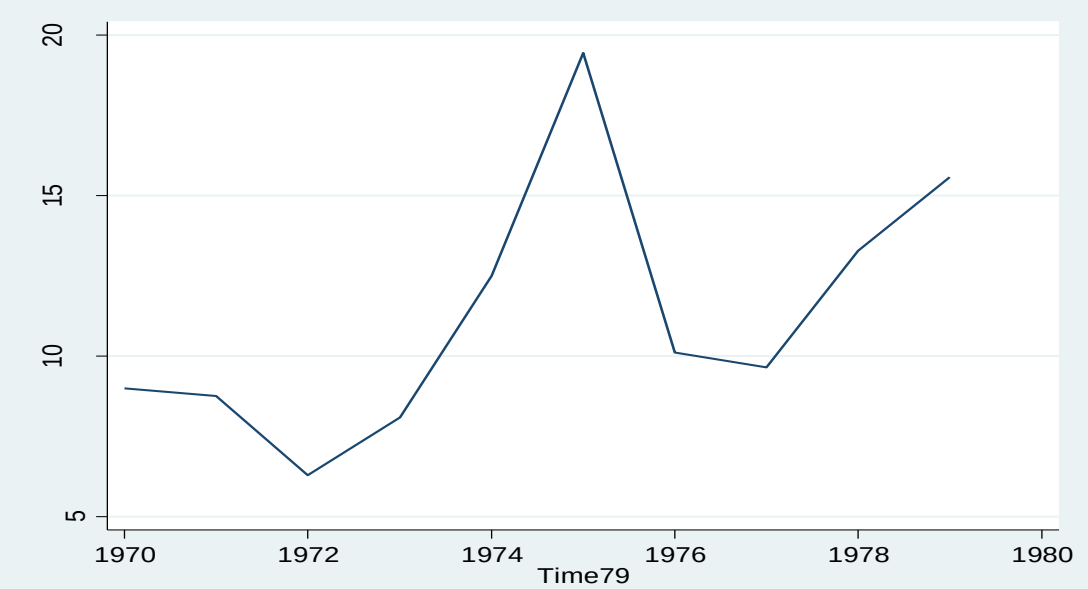
Adjusted R^2 = 0.0322

Where,

GDPCAP denotes Per Capita Nominal Gross Domestic Product

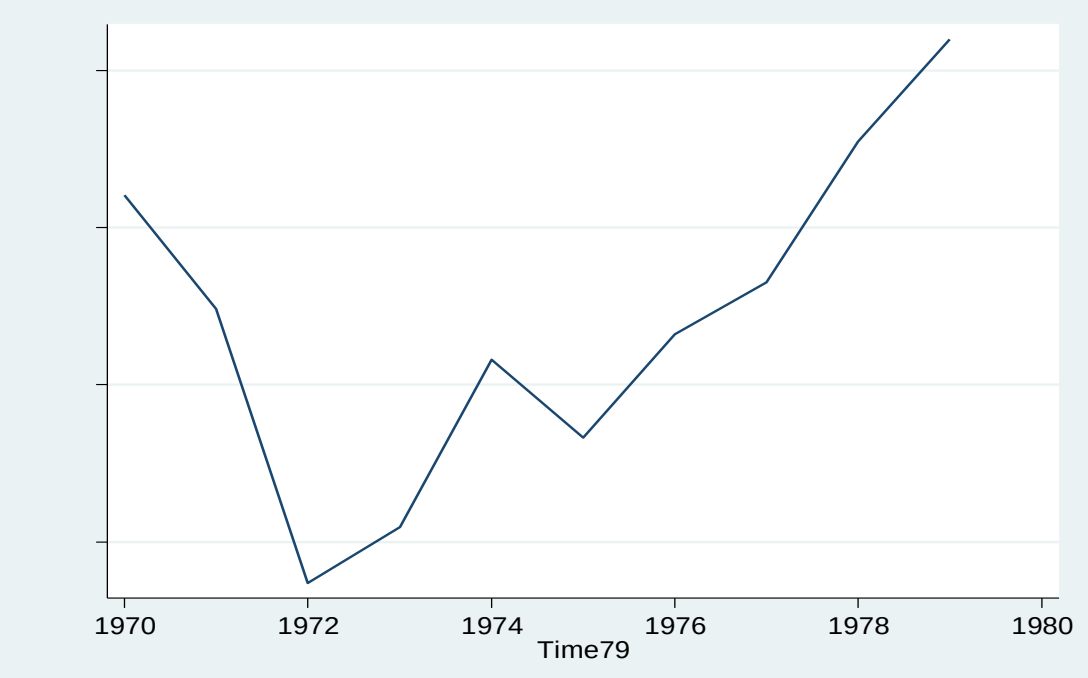
The time coefficients of the equations though positive, do not carry statistical evidence. Statistical meaninglessness coincided with the disruptions of 1970s. Economic growth was not mentionable due to war, cyclone, famine (1974), political commotion and drought (1979). NGDP declined in 1972 and reached at peak after 1974. This spike of NGDP indicated price level hike not the production hike as shown in Fig.- 6.4. After 1975, NGDP went down like inverted V. After 1978, NGDP began to grow. RGDP reached at a very low level in 1972 as shown in Fig.- 6.5. From 1973 to 1974 RGDP was increasing. But the increase was offset by a sharp decrease in 1975. Finally, RGDP showed the tendency to go up at the end of the decade. During 1970s, GDPCAP was pessimistic implying the financial crisis of the citizens (Fig.- 6.6).

Fig.- 6.4: Pattern of Nominal GDP, 1970s



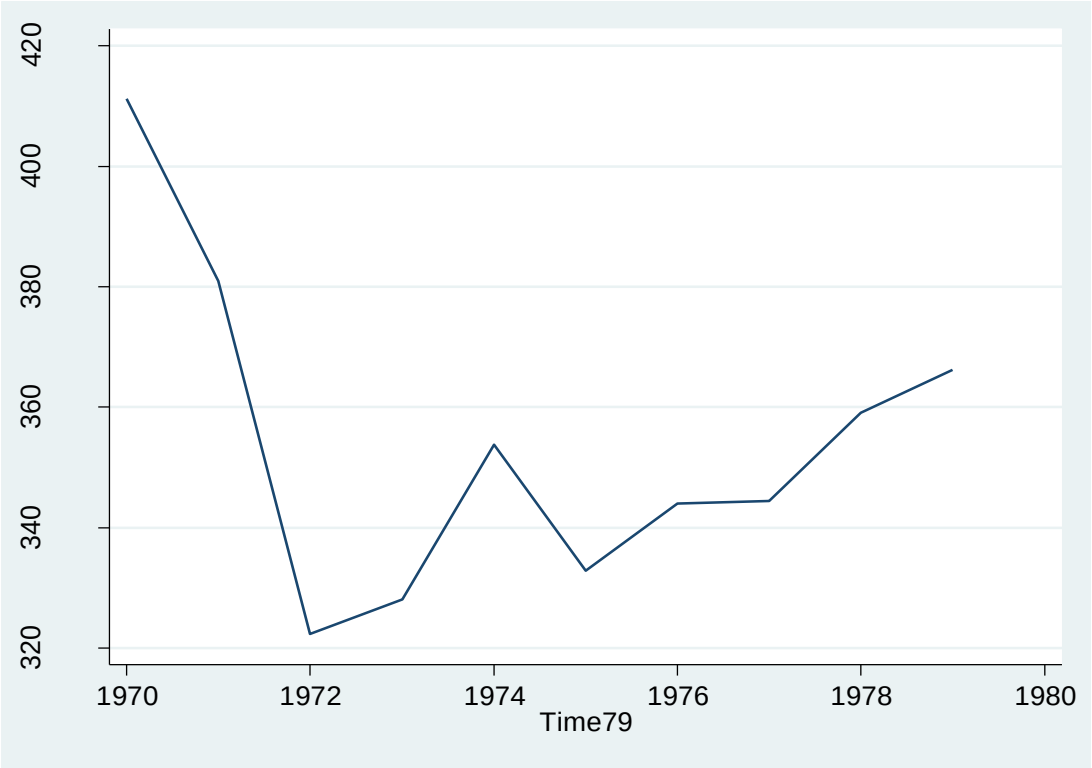
Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.5: Pattern of Real GDP, 1970s



Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.6: Pattern of Per Capita GDP, 1970s



Source: *STATA Output (Derived from Collected Data)*

6.3 ECONOMIC GROWTH OF 1980s

The decade is known for military administration in the political history of Bangladesh. International oil crisis, flood of 1988 and decade long scatter movement of mass people against the military authoritarianism were the major stuns of the decade. With an aim to improve resource allocation for economic growth SAP (Structural Adjustment Policies) were taken in 1980. Privatization and joint venture of public and private sector got encouraged in the industrial policy of 1982 and 1986 respectively. Some reform measures for liberal trade were undertaken. The financial system got viability for saving and investment. The NGOs were permitted to work with mainstream economic activities. With an aim at reducing fiscal deficit, Bangladesh was in implicit pressure to reduce public consumption and agricultural subsidy. In search of employment, people went abroad and sent remittance. After the mid-1980s GNP was greater than GDP. The share of industrial sector to GDP was increasing. The announcement of new base year 1983-84 included some new sectors

in GDP. Bangladesh watched economic progress from the median of the decade. The following equations have portrayed a scenario of economic growth.

NGDP 89 = – 2200.563 + 1.12 Time 89 ……..…… 6.7
(0.001) (0.001)

$R^2 = 0.793$

Adjusted $R^2 = 0.768$

Where,

NGDP denotes Nominal Gross Domestic Product

RGDP 89 = (–2.49e+12) + (1.27e+09) Time 89 ……..…. 6.8
(0.000) (0.000)

$R^2 = 0.9958$

Adjusted $R^2 = 0.9953$

Where,

RGDP denotes Real Gross Domestic Product

GDPCAP 89 = –7882.5 + 4.2 Time 89 …….……..….. 6.9
(0.000) (0.0000)

$R^2 = 0.9156$

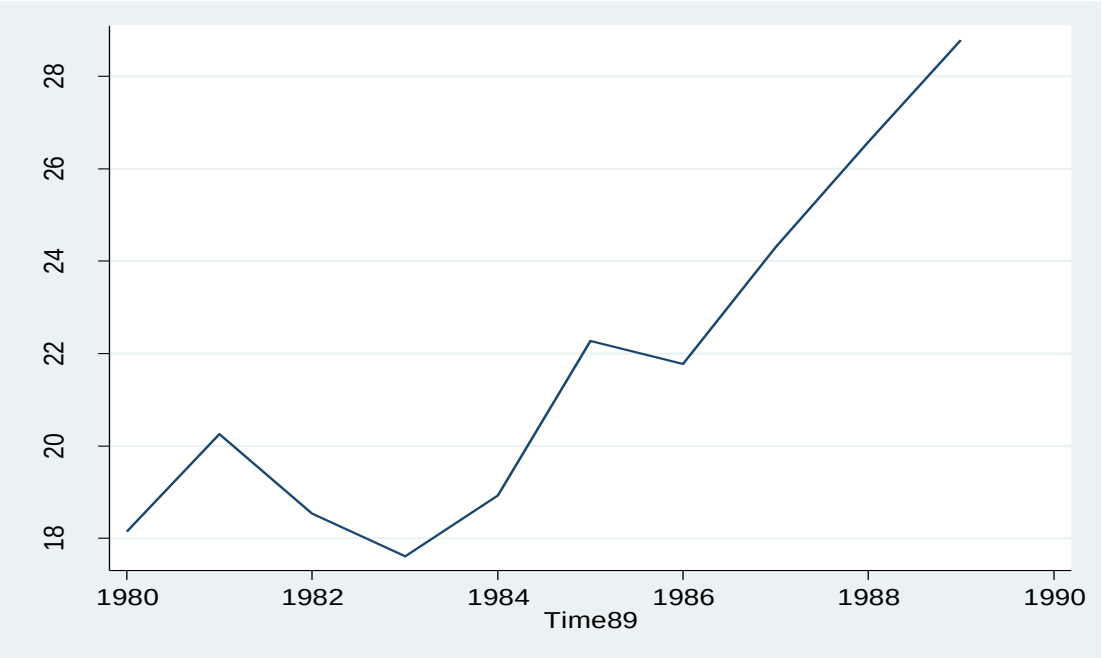
Adjusted $R^2 = 0.9051$

Where,

GDPCAP denotes Per Capita Nominal Gross Domestic Product

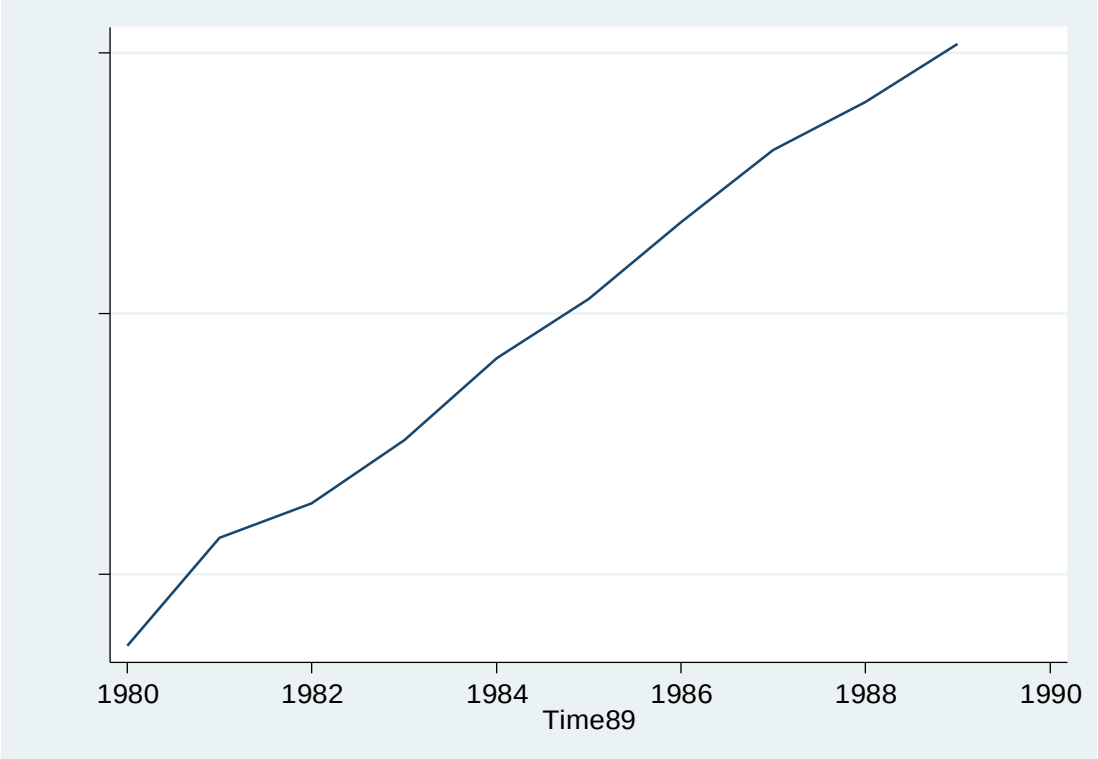
Over the period, NGDP increased on average by 1.12 billion US$ (Eqn.- 6.7). RGDP and GDPCAP increased on average by (1.27e+09) US$ and 4.2 US$ respectively (Eqn.- 6.8 and Eqn.- 6.9). As, the time coefficients of the NGDP and RGDP have statistical meaning (p-value less than 0.05), the economic progress was certified. NGDP went down in 1981 and started to go up from 1983. There was a decline again in 1985 as shown in Fig.- 6.7. NGDP hike after 1987 was accompanied by cost push inflation due to flood. RGDP showed an upward movement without fluctuations (Fig.- 6.8) indicating real production growth. With negligible fluctuations GDPCAP had a positive trend (Fig.- 6.9). Increasing GDPCAP was a reflection of national effort to reduce population growth rate.

Fig.- 6.7: Pattern of Nominal GDP, 1980s



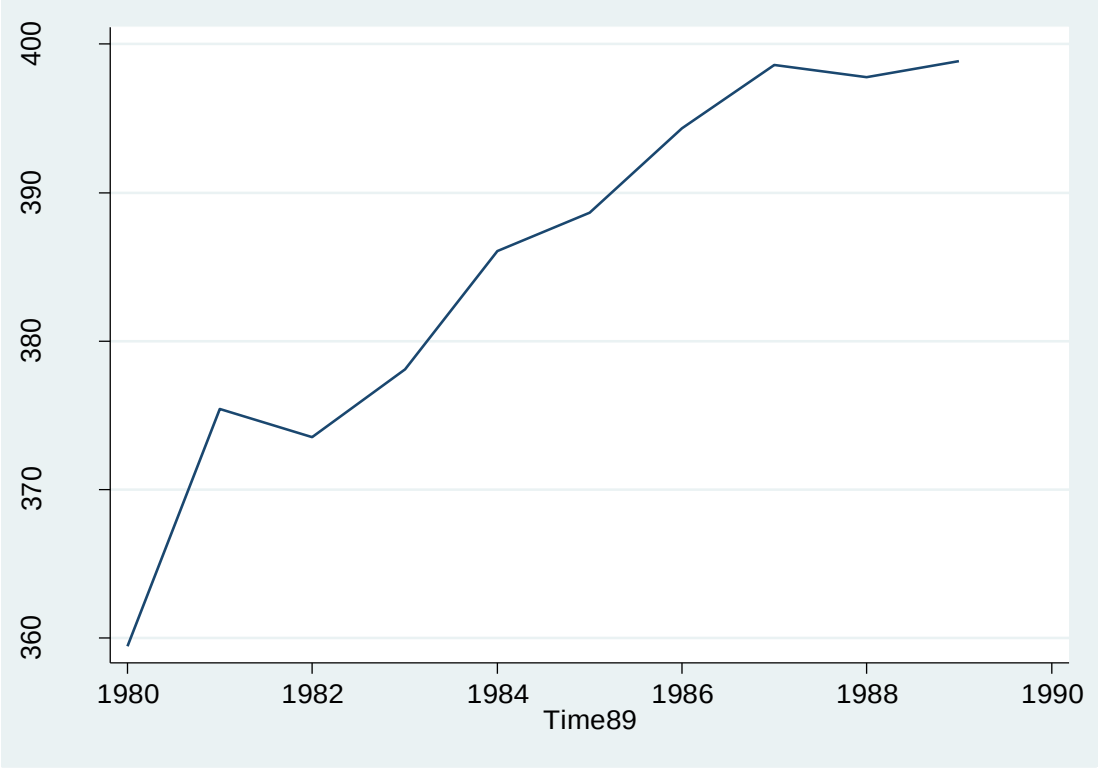
Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.8: Pattern of Real GDP, 1980s



Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.9: Pattern of Per Capita GDP, 1980s



Source: *STATA Output (Derived from Collected Data)*

6.4 ECONOMIC GROWTH OF 1990s

Economic growth continued to 1990s with various reforms adopted (Mahmud *et al.*, 2007). Investment was increasing at the outset of 1990s due to expansion of private sector. Liberal trade policy and openness to globalization made economic opportunities. Despite various bottlenecks (such as insufficient infrastructure, poverty, twin deficit, population pressure, primitive agriculture sector, obstacle-embraced industrial sector, and lack of good governance) continued growth proved the potential of the economy for future growth. The economy was moving towards free market operations. Cyclone of 1991 and flood of 1998 disrupted economic activities. The 4th five year plan (1990-1995) was adopted. Various initiatives were taken to promote export. Concentrated export base and growth of informal sector were contributing to economic growth in 1990s. New base year 1995-96 included some new sectors in GDP. The number of banks in private ownership was increasing. New private commercial banks began working to accelerate economic growth through various

functions mainly resource mobility. The following equations have depicted the scenario of economic growth during 1990s.

NGDP 99 = – 5241.831 + 2.648 Time 99 ……..……. 6.10
(0.000) (0.000)

$R^2 = 0.897$

Adjusted $R^2 = 0.8846$

Where,

NGDP denotes Nominal Gross Domestic Product

RGDP 99 = (–4.66e+12) + (2.36e+09) Time 99 ……. 6.11
(0.000) (0.000)

$R^2 = 0.9947$

Adjusted $R^2 = 0.9941$

Where,

RGDP denotes Real Gross Domestic Product

GDPCAP 99 = –21336.01 + 10.925Time 99 …….……..... 6.12
(0.000) (0.000)

$R^2 = 0.9938$

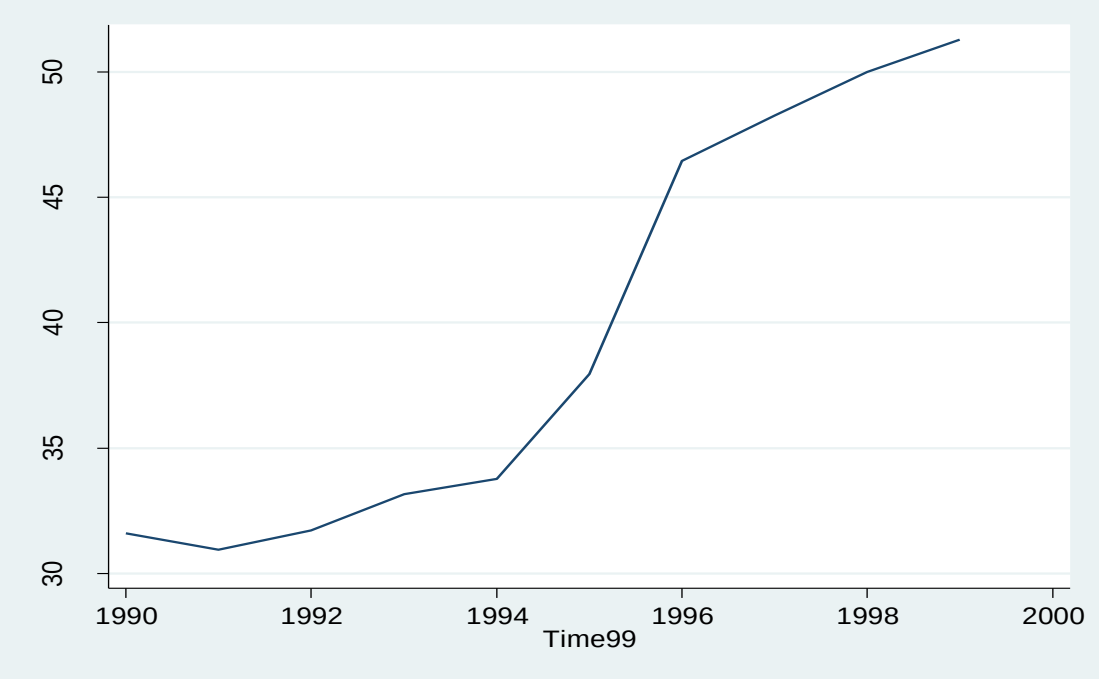
Adjusted $R^2 = 0.9930$

Where,

GDPCAP denotes Per Capita Nominal Gross Domestic Product

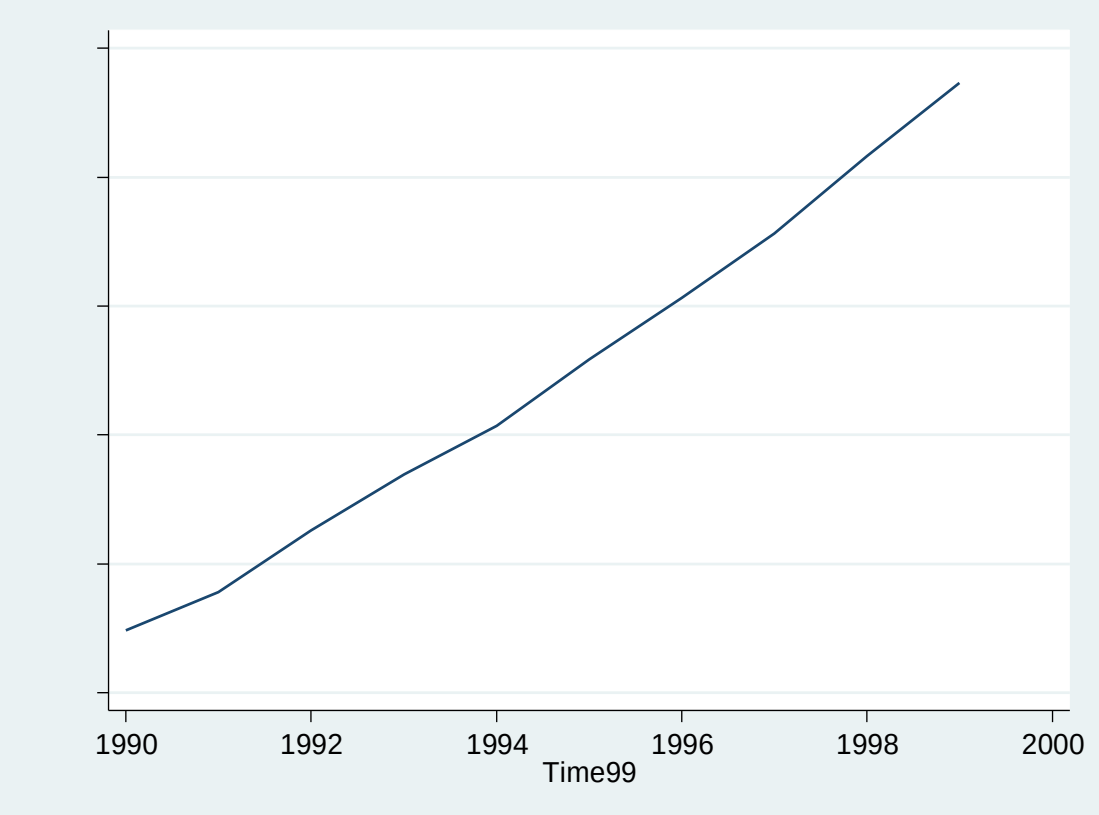
NGDP, RGDP and GDPCAP increased on average 2.648 billion US$, ($2.36\times10^9$) US$ and 10.925 US$ respectively. In absolute term, the growth NGDP, RGDP and GDPCAP were higher than that of previous decades as shown in equations 6.10, 6.11 and 6.12 respectively. The positive sign of the time coefficients were expected. Statistically meaningful results (p-value less than 0.05) reflected various national initiatives to growth. The growth of NGDP was slow at the initial stage of the decade (Fig.- 6.10). From 1994 to 1996 NGDP was increasing at an increasing rate. From 1996 to 1999, NGDP increased at a decreasing rate. RGDP increased at approximately constant rate (Fig.- 6.11). Real production has increased in the decade. There was a negligible decrease of output in 1991 due to cyclone. GDPCAP has increased at an increasing rate after 1991 (Fig.- 6.12). Continuous national efforts to reduce population growth rate had a positive impact on GDPCAP.

Fig.- 6.10: Pattern of Nominal GDP, 1990s



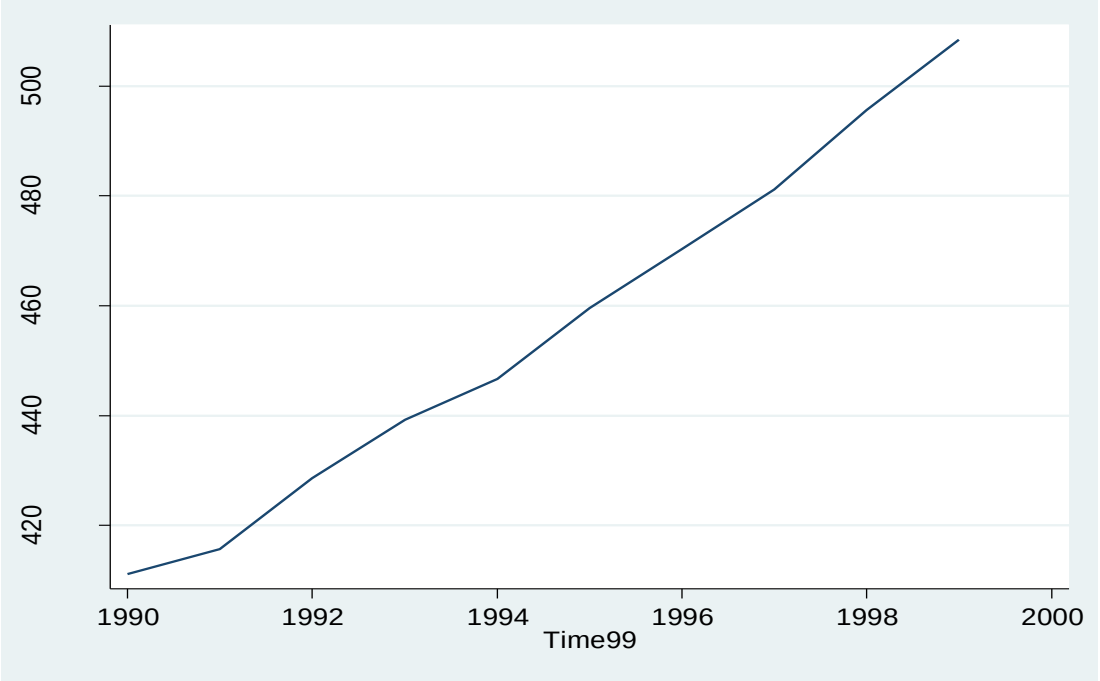
Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.11: Pattern of Real GDP, 1990s



Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.12: Pattern of Per Capita GDP, 1990s



Source: *STATA Output (Derived from Collected Data)*

6.5 ECONOMIC GROWTH OF 2000s

Socio-economic development took place in the decade. The economy tried to uplift the standard of living. To convert economic growth to economic development, economy focused on socio-economic issues such as literacy, poverty, health facilities, mother and neonatal mortality, women rights etc. To smooth the economic activities, urbanization and infrastructural development were proceeding. In 2000, Bangladesh agreed to reach MDGs. At the end of the decade, the economy has started to expose progress in touching MDGs (MoF, 2015). In the first half of the decade, Bangladesh made some macroeconomic policy changes. Floating (market based) exchange rate was introduced to promote international trade in 2003. As USA was the largest market for RMG export, Bangladesh passed a period of tension after twin tower explosion on 11.01.2001. The economy was also in panic for global competition in apparel manufacturing as after 2004 quota would be abolished according to MFA. But Bangladesh has persisted in apparel export in quota free international market owing to product quality. Bangladesh was suffering from flood of 2004 and disastrous cyclone of 2007 named '*Aila*'. Trend of transformation from agriculture to industry was observed. The contribution of industry was becoming greater than that of agriculture

sector. New base year 2005-06 has included some emerging sectors to GDP. Although the operations of PCBs were pro-growth, the economy has necessitated financial sector reform, better investment environment and hundred percent loan recoveries. The following equations have revealed the pattern of NGDP (Eqn.- 6.13), RGDP (Eqn.- 6.14) and GDPCAP (Eqn.- 6.15).

NGDP 09 = – 10489.63+ 5.268 Time 09 ……..……. 6.13
(0.000) (0.000)

$R^2 = 0.9139$

Adjusted $R^2 = 0.9031$

Where,

NGDP denotes Nominal Gross Domestic Product

RGDP 09 = (–9.50e+12) + (4.78e+09) Time 09 ……. 6.14
(0.000) (0.000)

$R^2 = 0.9820$

Adjusted $R^2 = 0.9797$

Where,

RGDP denotes Real Gross Domestic Product

GDPCAP 09 = –50589.66+ 25.547 Time 09 …….……..... 6.15
(0.000) (0.000)

$R^2 = 0.9697$

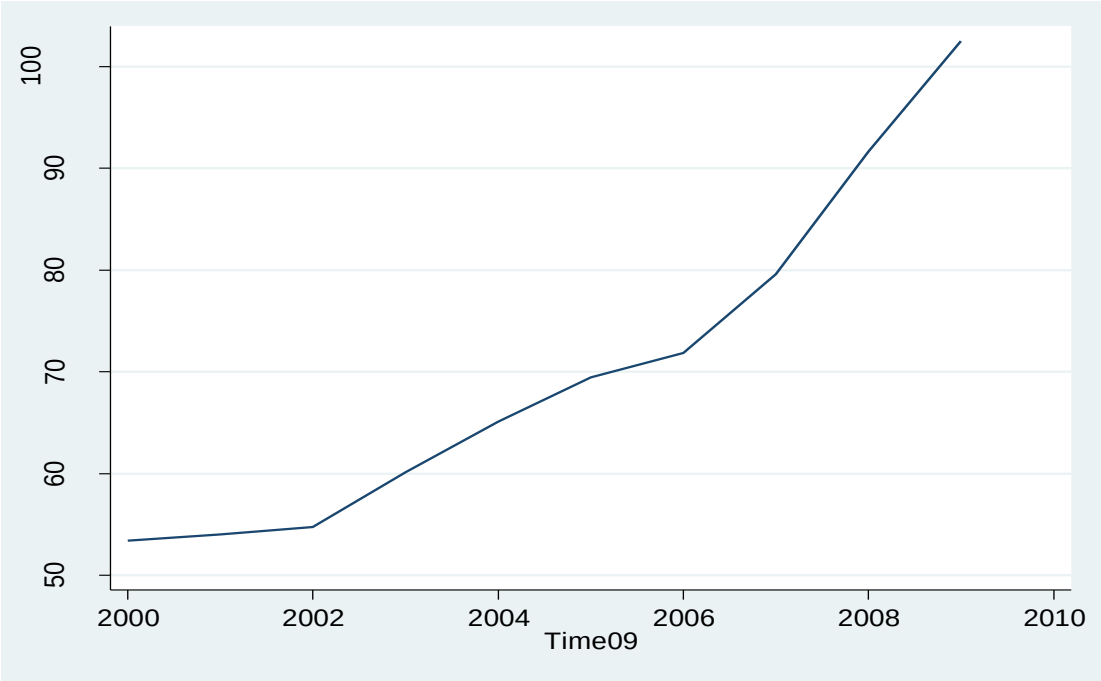
Adjusted $R^2 = 0.9659$

Where,

GDPCAP denotes Per Capita Nominal Gross Domestic Product

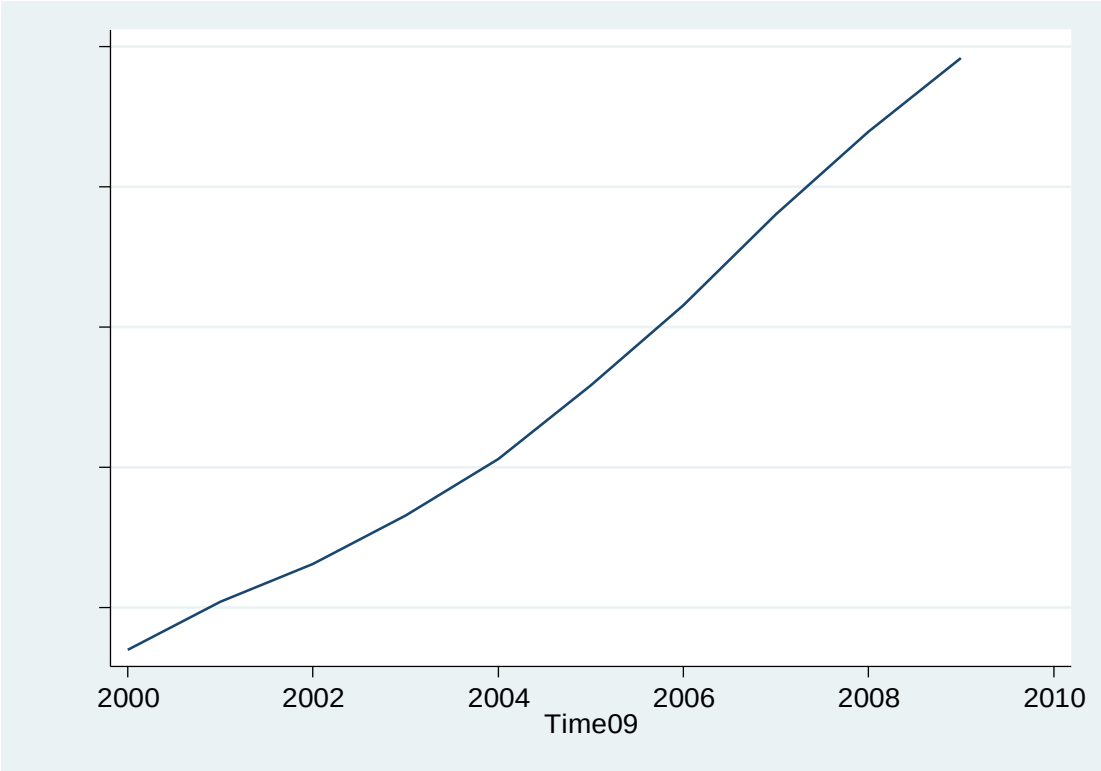
NGDP, RGDP and GDPCAP were increasing on average 5.268 billion US$, ($4.78\times10^9$) US$ and 25.547 US$ respectively in the entire decade. The positive signs of the time coefficients of the above three equations (Eqn.- 6.13, Eqn.- 6.14 and Eqn.- 6.15) were expected. The speed of trudge (coefficient value) was becoming higher. The statistical significance coincided with growth scenario. NGDP was growing at an increasing rate at the second half of the decade (Fig.- 6.13). RGDP and GDPCAP have shown an ever growing tendency in Fig.- 6.14 and Fig.- 6.15 respectively.

Fig.- 6.13: Pattern of Nominal GDP, 2000s



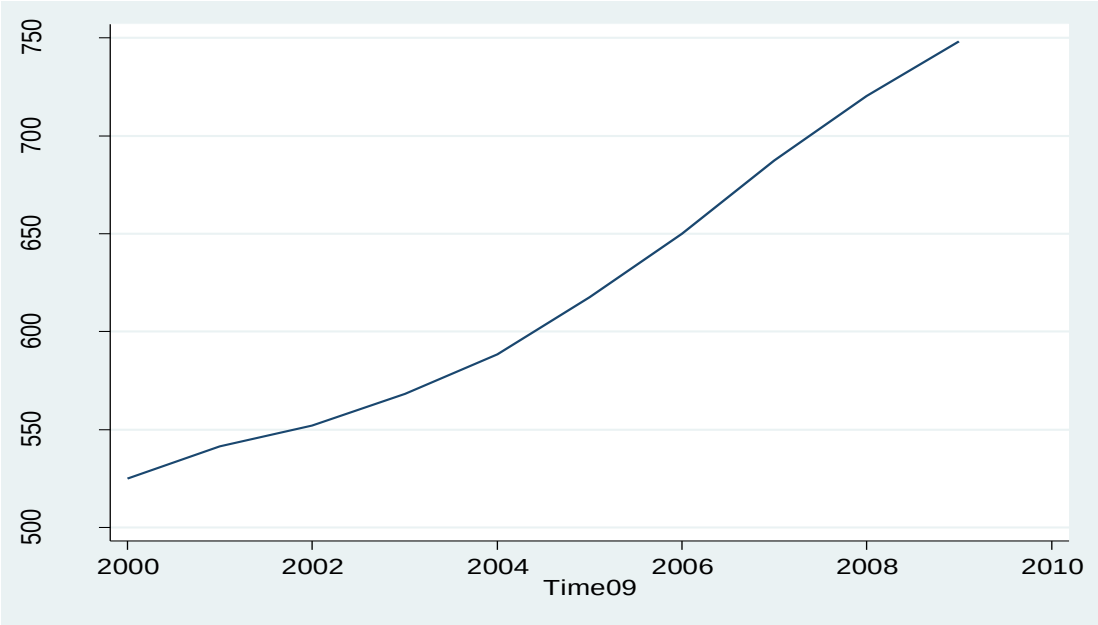
Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.14: Pattern of Real GDP, 2000s



Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.15: Pattern of Per Capita GDP, 2000s



Source: *STATA Output (Derived from Collected Data)*

6.6 ECONOMIC GROWTH OF 2010s

The decade began with anxiety of unemployment due to Libya crisis and slowdown of remittance. Share market crash has produced social unrest and erosion of confidence in capital market. New eight bank got permission to start business in private ownership in 2013. But the incident of non-performing loan in banking sector became a threat to capital accretion. Increasing volume of non-performing loan and irregularities has made the performance of banking industry questionable. Country-wide blockade in 2013 and 2014 due to political commotion has made stagnation of domestic investment. Again, another misfortune was waiting for Bangladesh. In 2013, '*Rana Plaza Tragedy*' left her in image crisis and anxiety of market loss. Nevertheless, Bangladesh has discovered 'Blue Economy' for further growth. Indeed, Blue Economy is a new platform for economic activities. Construction of the 'Padma Bridge' and 'Metro Rail' were undertaken. Despite several clogs, growth of manufacturing sector has pushed the economy to maintain growth. In the meanwhile, Bangladesh has committed to reach SDGs by 2030. All the national endeavors have resulted in the achievement of becoming a lower middle income country recognized by World Bank. The patterns of NGDP, RGDP and GDPCAP have been expressed in the following equations 6.16, 6.17 and 6.18 respectively.

NGDP 17 = – 38527.13+ 19.22 Time 17 ……..……. 6.16
(0.000) (0.000)

$R^2 = 0.9634$

Adjusted $R^2 = 0.9573$

Where,

NGDP denotes Nominal Gross Domestic Product

RGDP 17= (–1.82e+13) + (9.10e+09) Time 17 ……. 6.17
(0.000) (0.000)

$R^2 = 0.9918$

Adjusted $R^2 = 0.9904$

Where,

RGDP denotes Real Gross Domestic Product

GDPCAP 17 = –96764.22 + 48.524 Time 17 …….……..... 6.18
(0.000) (0.000)

$R^2 = 0.9921$

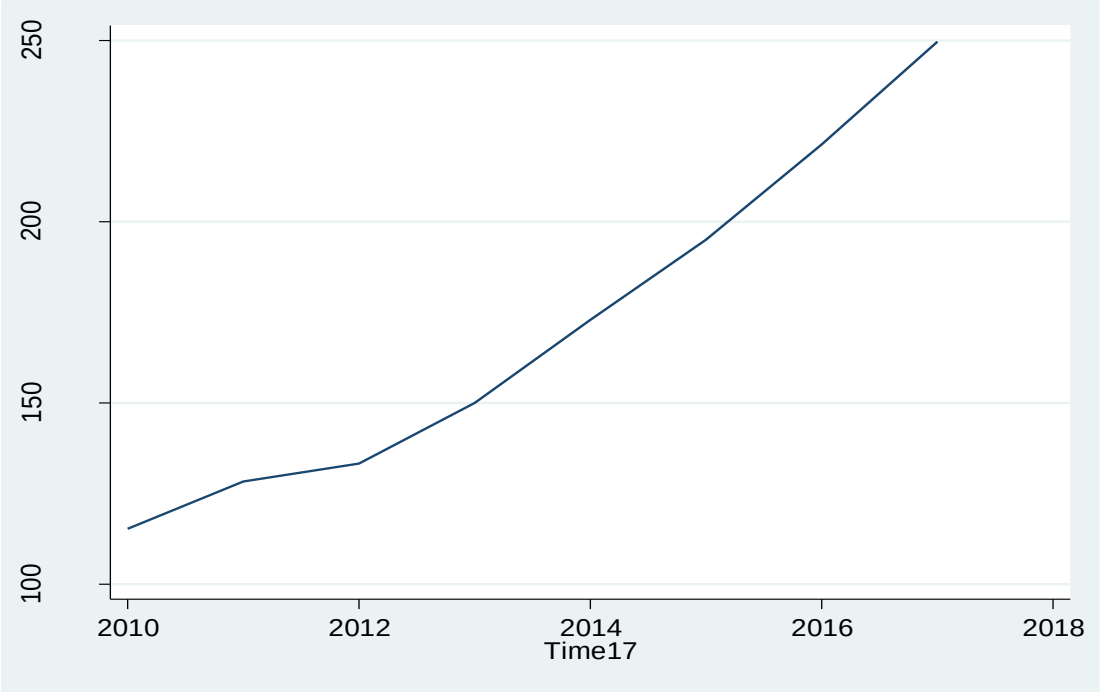
Adjusted $R^2 = 0.9908$

Where,

GDPCAP denotes Per Capita Nominal Gross Domestic Product

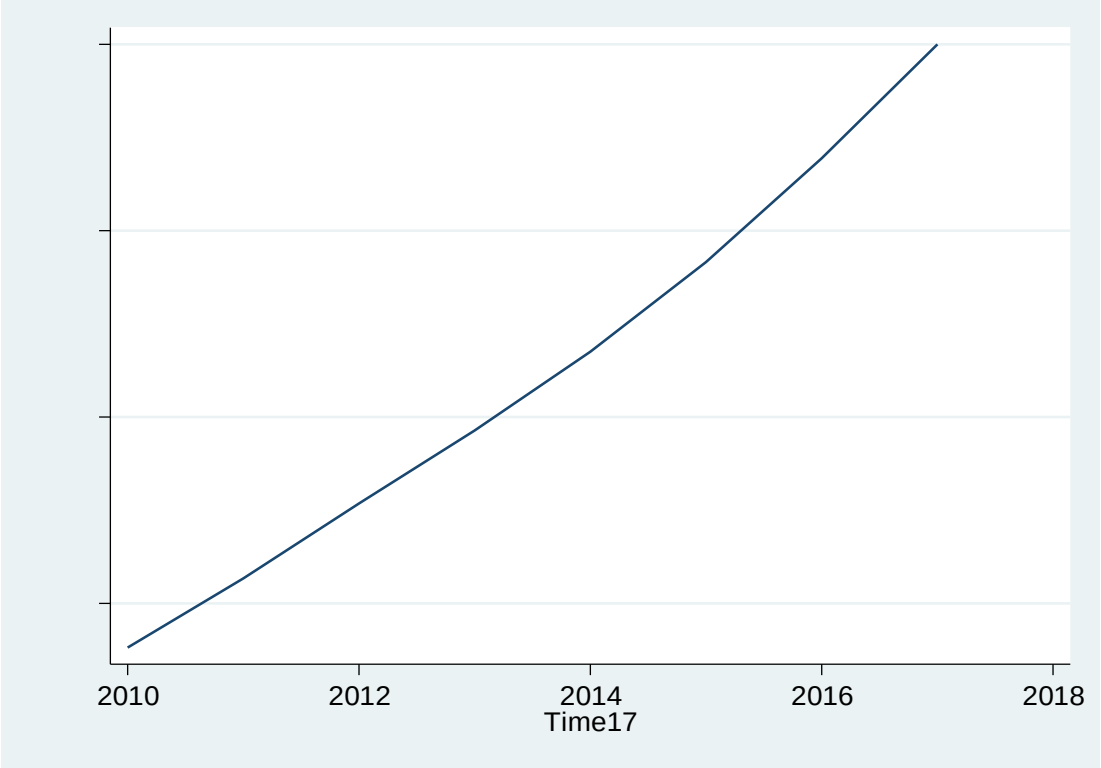
The above equations contain information of eight years (from 2010 to 2017). Over the eight years, NGDP has increased on average 19.22 billion US$. RGDP and GDPCAP increased on average by (9.10×10^9) US$ and 48.524US$ respectively. The positive sign of the time coefficients have been expected. The changes of NGDP, RGDP and GDPCAP have been statistically endorsed. NGDP has slightly decreased between 2011 and 2012 (Fig.- 6.16). After the period, NGDP has grown linearly. GDPCAP has followed almost linear pattern during the time (Fig.- 6.18). RGDP has increased almost at a fixed rate with a negligible slowdown in 2014 (Fig.- 6.17).

Fig.- 6.16: Pattern of Nominal GDP, 2010s



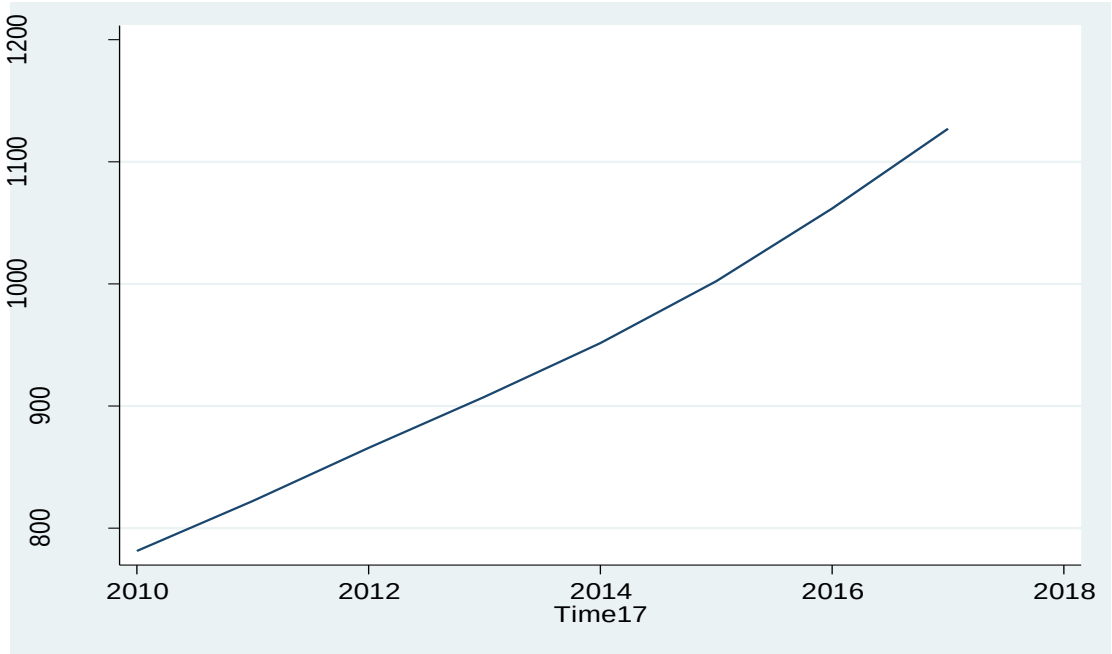
Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.17: Pattern of Real GDP, 2010s



Source: *STATA Output (Derived from Collected Data)*

Fig.- 6.18: Pattern of Per Capita GDP, 2010s



Source: *STATA Output (Derived from Collected Data)*

Chapter 7
ANALYSES AND RESULTS

Analyses and results have been included in this chapter. The chapter has discussed in detail what has been done on data to meet the research questions and objectives. It has shown how the data have been converted to information. The literal meaning of the result has been expressed.

The study has scrutinized the role of private commercial banks (PCBs) to accelerate the economic growth of Bangladesh. PCBs help economy to mobilize and assemble resources for production. The functions of PCBs represent the role. The variables, *i.e.*, net loan and advances (LAD), number of branches (NOB), export earnings by PCBs (EXP), non-performing loan of PCBs (NPL), total income of PCBs (GIT) and investment by PCBs (INV) are the functions to play the role of PCBs to economic growth. The study has estimated autoregressive distributed lag (ARDL) model to corroborate the role. The previously mentioned variables have worked as repressors in ARDL model. Three ARDL models have been estimated while nominal gross domestic product (NGDP), real gross domestic product (RGDP), and per capita nominal gross domestic product (GDPCAP) have symbolized economic growth. At the end, pair wise Granger Causality tests have been conducted to check the direction of relationship between development of PCBs and economic growth. Before estimating ARDL model and Granger Causality tests, the study has checked the stationarity of the variables as stationarity of series is an indispensible property to conduct ARDL.

7.1 SUMMARY STATISTICS

The study has worked on 34 observations of nine variables from 1984 to 2017. Among the variables NGDP, RGDP and GDPCAP are representatives of economic growth while the variables LAD, NOB, NPL, EXP, GIT and INV are portraying of PCBs' role. Table - 7.1 shows a picture of the variables in quantitative manner. The picture includes the average value, minimum and maximum value and standard deviation of the variables for 34 years. The three measures of economic growth namely NGDP, RGDP are expressed in billion US$ and GDPCAP in US$. The unit of measurement for the rest of the variables is in crore BDT.

Table -7.1: Summary Statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
NGDP	34	506439.2	527151.1	48153.95	1997792
RGDP	34	5.08e+12	4.03e+12	8.69e+11	1.42e+13
GDPCAP	34	607.0033	217.0597	386.0614	1127.272
NOB	34	1698.706	1212.556	14	4321
LAD	34	1083761	1633490	1570.7	5892981
EXP	34	607431.7	821950.3	878.1	2475407
INV	34	207740.8	315000.9	219.7	944565.7
GIT	34	187194.2	279812.2	19.37	1017382
NPL	34	53770.52	78257.56	0	303684.1

Source: *STATA Output (Derived from Collected Data)*

7.2 STATIONARITY TEST

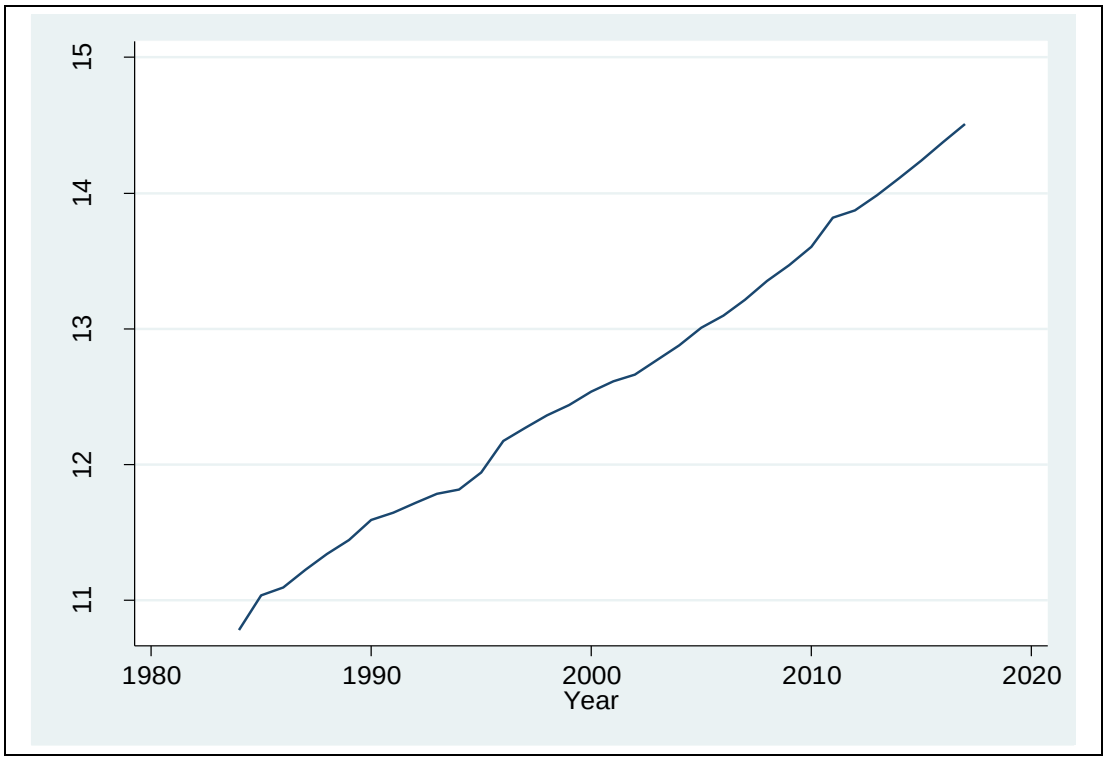
Stationarity indicates the stability of the series irrespective of time. Defiance of stability makes the series nonstationary. To ensure this property, graphical test, Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF) and Phillips-Perron (P-P) test have been accomplished.

7.2.1 Graphical Test

With the aid of a graph, the symptoms of nonstationary can be detected. But the graphs are indicative not confirmative.

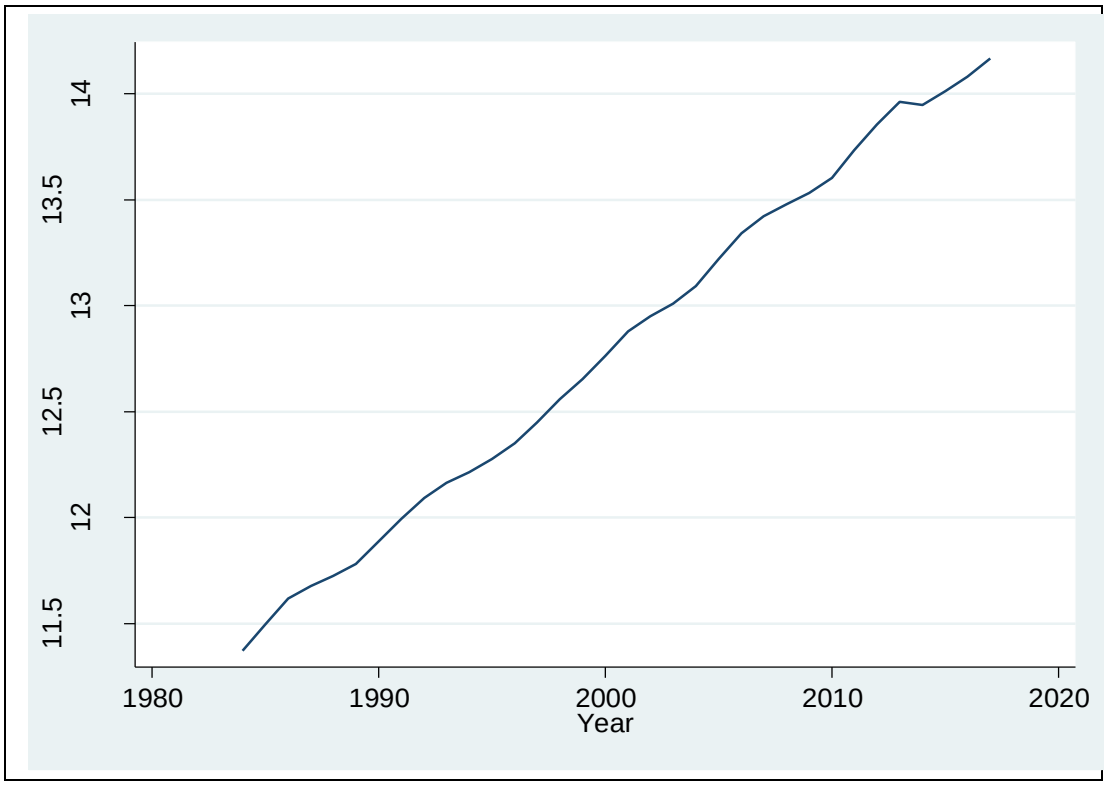
Dependent Variables: Nominal GDP (LnNGDP), real GDP (LnRDP) and per capita nominal GDP (LnGDPCAP) are the three dependent variables for three different ARDL models. LnNGDP, LnRGDP and LnGDPCAP have shown a tendency to go up in Fig.-7.1, Fig.-7.2 and Fig.-7.3 respectively. The values of the three measures of economic growth have increased over the study time.

Fig.-7.1: Pattern of the Series LnNGDP



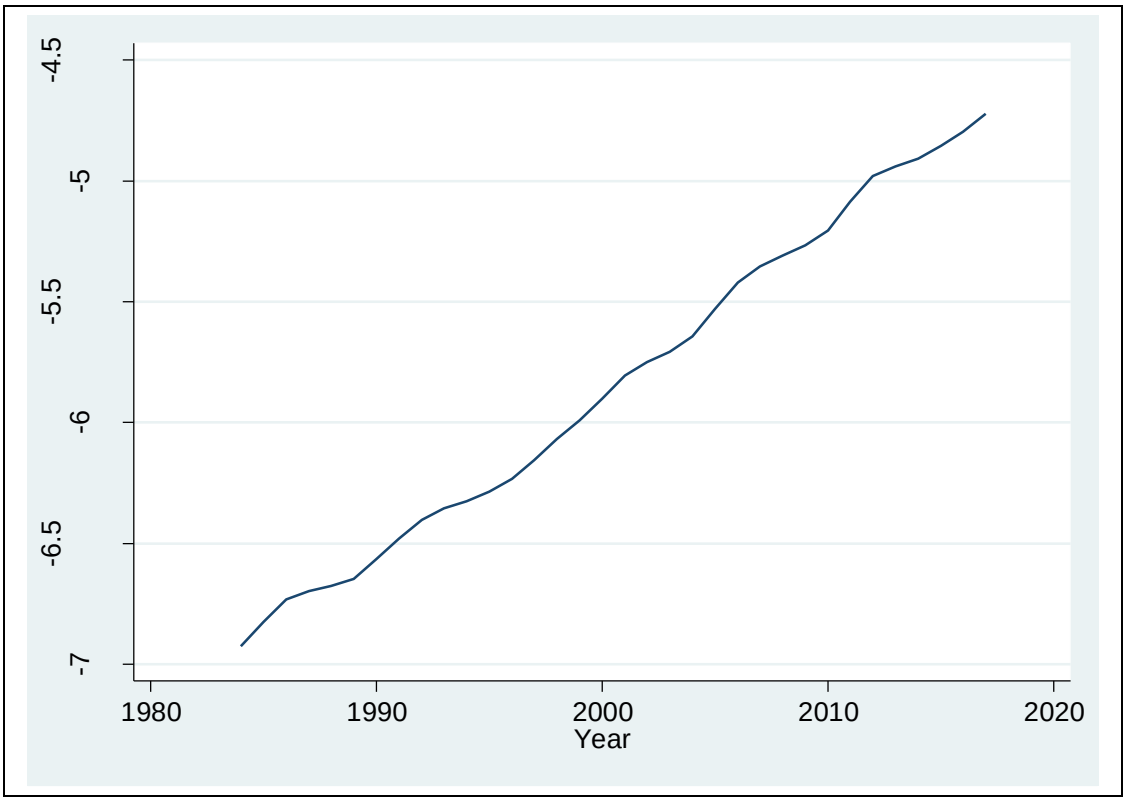
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.2: Pattern of the Series LnRGDP



Source: *STATA Output (Derived from Collected Data)*

Fig.-7.3: Pattern of the Series LnGDPCAP

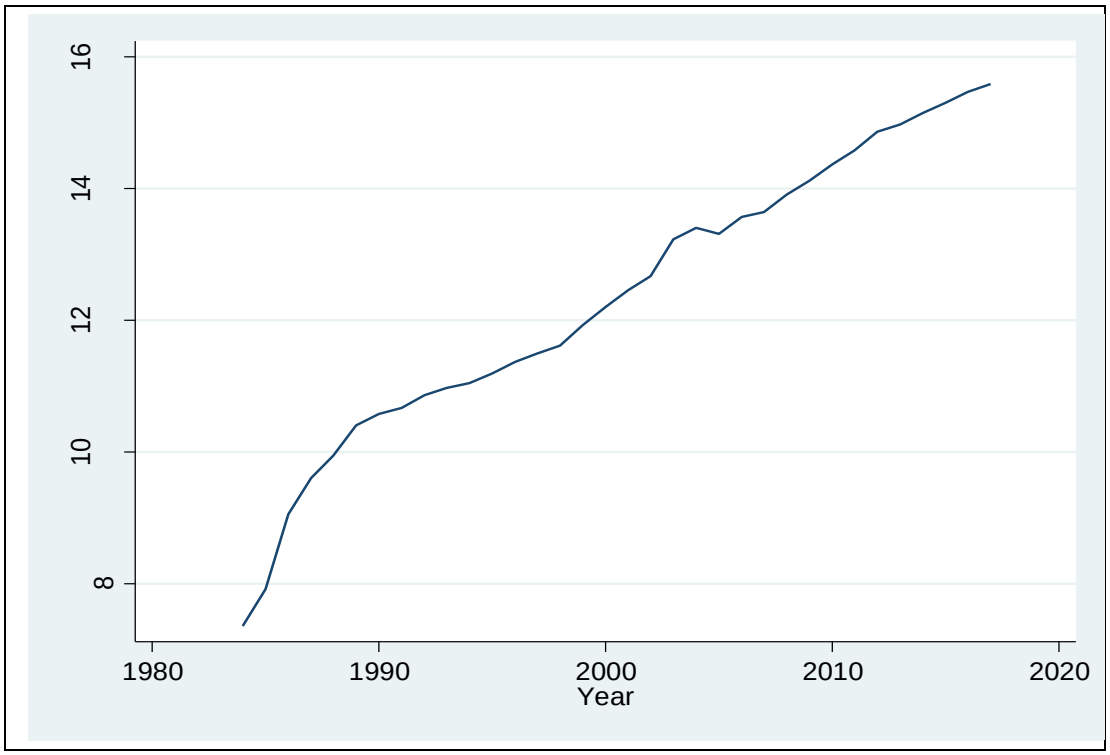


Source: *STATA Output (Derived from Collected Data)*

Independent Variables: The variables net loan and advances (LnLAD), export earnings by banks (LnEXP), investment by PCBs (LnINV), number of branches (LnNOB), gross earnings by PCBs (LnGIT), and non-performing loan (LnNPL) are the independent variables for all the three ARDL models.

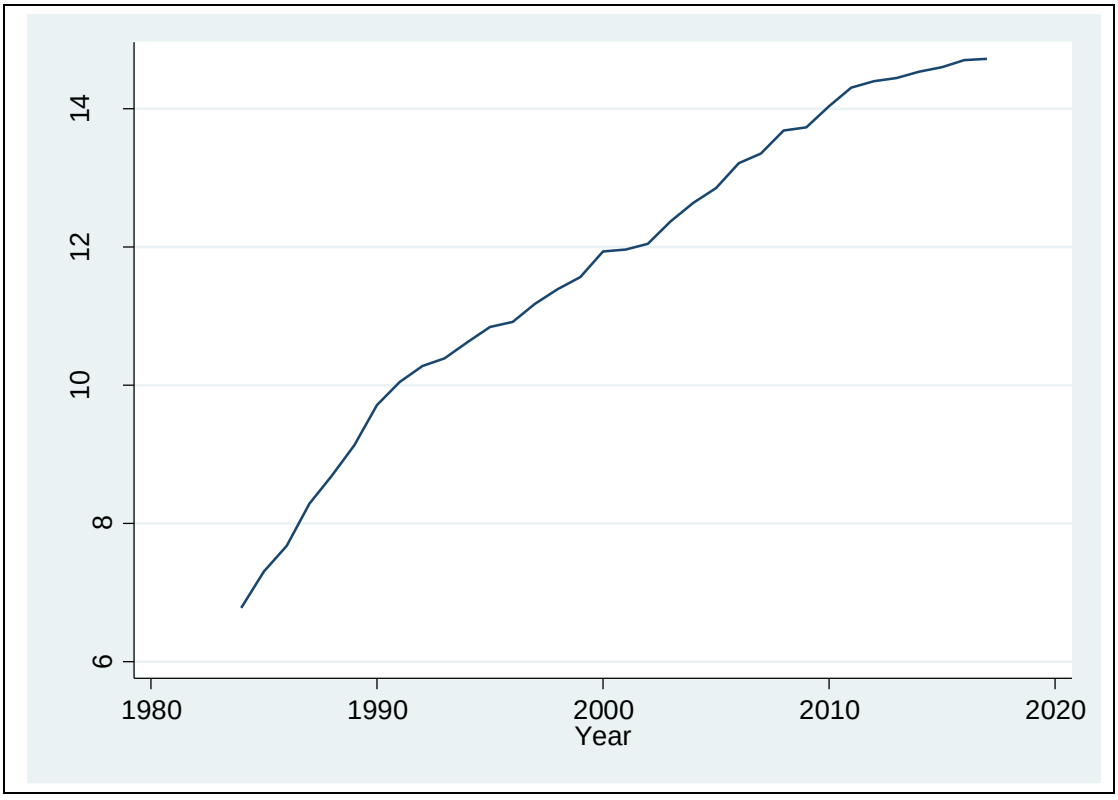
The variables LnLAD, LnEXP and LnINV have moved upward as portrayed in Fig.-7.4, Fig.-7.5 and Fig.-7.6 respectively. There is an upward trend with some fluctuations.

Fig.-7.4: Pattern of the Series LnLAD



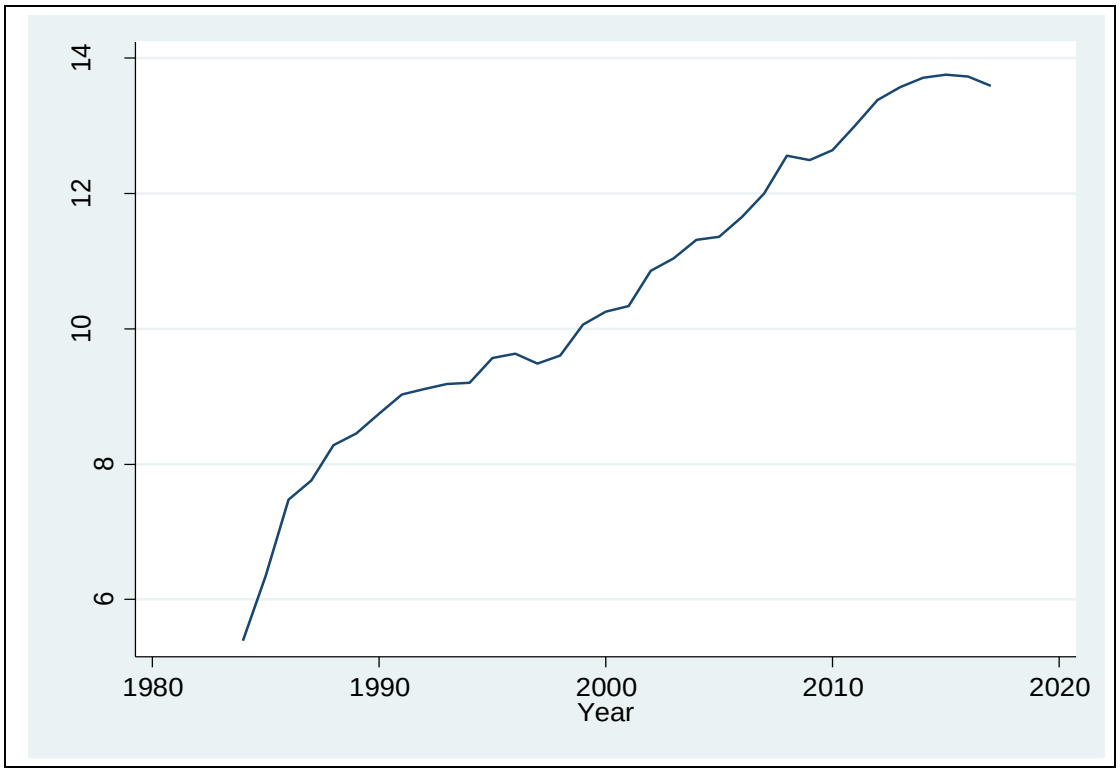
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.5: Pattern of the Series LnEXP



Source: *STATA Output (Derived from Collected Data)*

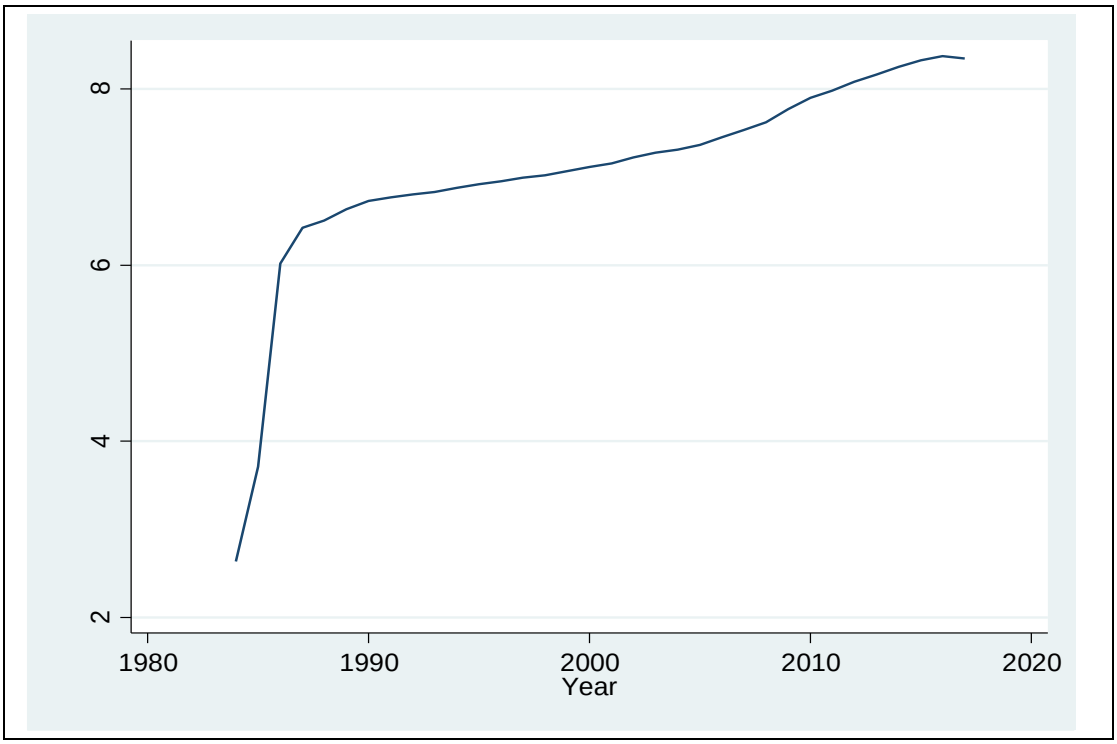
Fig.-7.6: Pattern of the Series LnINV



Source: *STATA Output (Derived from Collected Data)*

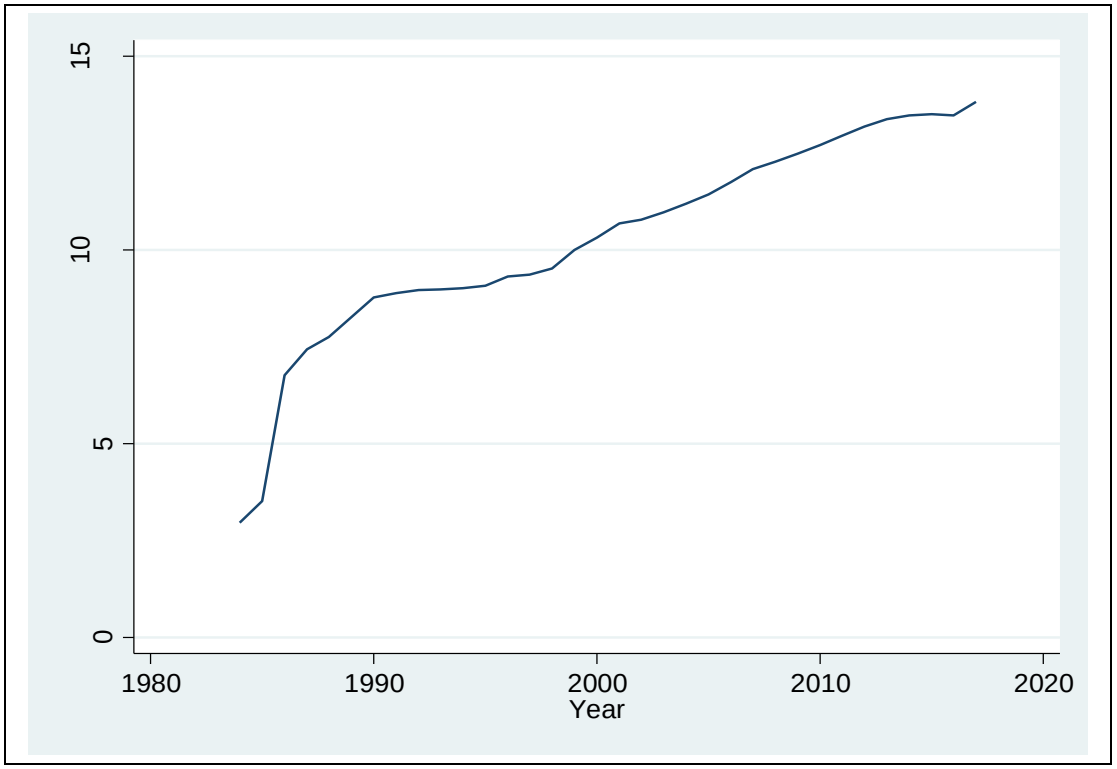
The variables namely the number of branches (LnNOB), total income of PCBs (LnGIT) and non-performing loan (LnNPL) have exhibited a different type of upward trend. After 1986, progress of LnNOB was approximately parallel to horizontal axis (Fig.-7.7). LnGIT has increased sharply from 1984 to 1986 (Fig.-7.8). From 1987 to 1999, LnGIT was just about same for each year. After 1999, there was a sluggish tendency of LnGIT to move upward. LnNPL has started to show the drive from 1990 (Fig.-7.9). From 1991 to 1999 and 1999 to 2005 the drive of LnNPL was in a seasonal mood. From 2005 to 2017, LnNPL has moved with stability.

Fig.-7.7: Pattern of the Series LnNOB



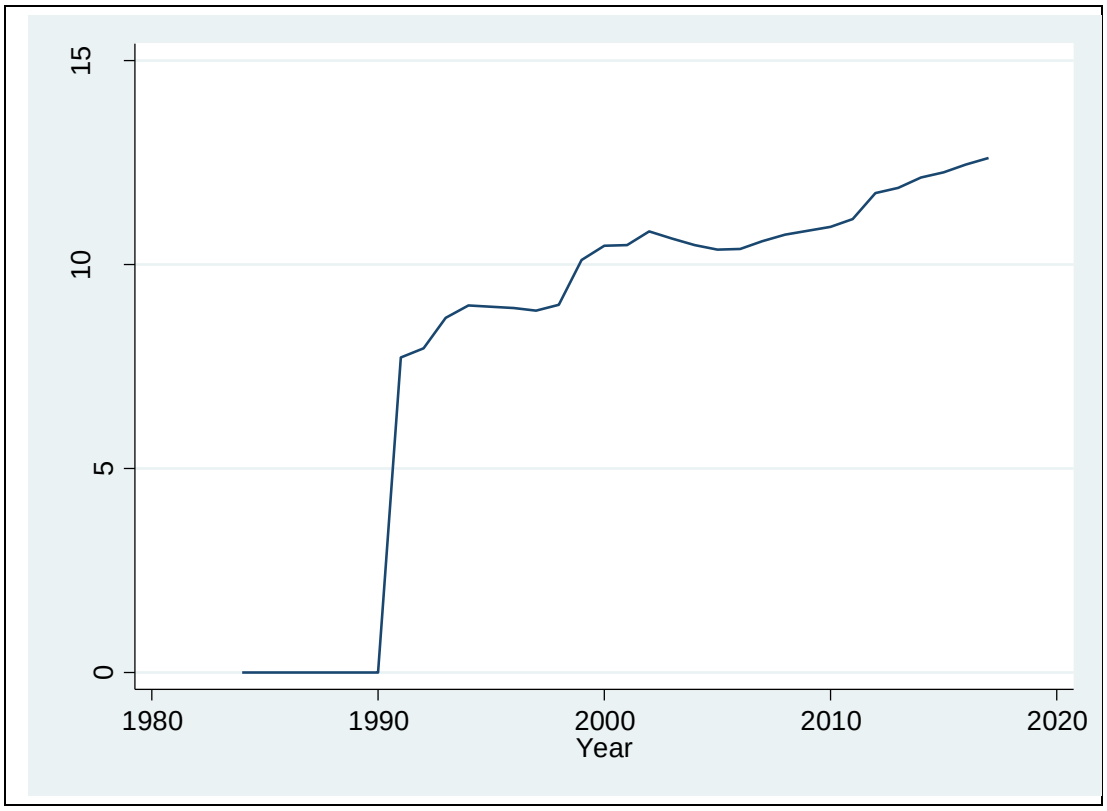
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.8: Pattern of the Series LnGIT



Source: *STATA Output (Derived from Collected Data)*

Fig.-7.9: Pattern of the Series LnNPL



Source: *STATA Output (Derived from Collected Data)*

7.2.2 Unit Root Test

Existence of unit root makes a series non stationary. When the value of a variable at current period depends on the values of previous periods, the variable contains a unit root. And the variable becomes a random walk time series variable. To check the presence of unit root, Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) tests have been applied. For both the tests, the null hypothesis states that the concerned variable is non stationary or has unit root.

Dickey-Fuller (DF) Test:

Null Hypothesis (H_0): The variable is nonstationary (presence of unit root).

Alternative Hypothesis (H_1): The variable is stationary (absence of unit root).

Decision Rule: The decision has been taken by observing the probability value at different confidence interval. If the probability value or p-value is less than 0.05 (95% confidence interval, the null hypothesis (nonstationary series) can be rejected and alternative hypothesis (stationary series) can be accepted. If the probability value or p-value is greater than 0.05 (95% confidence interval, the null hypothesis (nonstationary series) cannot be rejected and alternative hypothesis (stationary series) cannot be accepted.

Variables Stationary at 1st Difference: According to the results of DF test (Table -7.2), LnNGDP, LnRGDP, LnGDPCAP, LnLAD, LnEXP and LnINV are initially nonstationary. The p-value(s) of these variables at level are greater than 5% or 0.05. As for example, p-value of LnNGDP is 97.76% at level indicating acceptance of null hypothesis. At first difference form, LnGDP becomes stationary as p-value is 0.0000 indicating acceptance of alternative hypothesis. Like LnNGDP, the variables LnRGDP, LnGDPCAP, LnLAD, LnEXP and LnINV are stationary at 1st difference form at 95% confidence interval level. So, in econometric terminology it can be denoted as I(1).

Variables Stationary at Level: On the contrary, LnNOB, LnGIT and LnNPL are stationary initially according to the results of DF test (Table - 7.2). The p-value(s) are smaller than 0.05 at 95% confidence interval level indicating acceptance of alternative hypothesis (stationary series) at level. The p-value of the variable LnNOB is 0.0000 (less than 0.5). So, the null hypothesis (nonstationary) for LnNOB can be rejected. The variable LnNOB is stationary at level. In the same way, the variables, LnGIT and LnNPL are stationary at level. In econometric terminology it can be denoted as I(0).

Table -7.2: Results of Dickey-Fuller Test

Series	Level/ Difference	DF test statistic	p-value	Conclusion
LnNGDP	Level	0.306	0.9776	Nonstationary
	1st Difference	-6.647	0.0000*	Stationary
LnRGDP	Level	-0.793	0.8211	Nonstationary
	1st Difference	-4.075	0.0011*	Stationary
LnGDPCAP	Level	0.219	0.9733	Nonstationary
	1st Difference	-3.508	0.0078*	Stationary
LnNOB	Level	-6.675	0.0000*	Stationary
LnLAD	Level	-3.525	0.0741	Nonstationary
	1st Difference	-3.9951	0.0100*	Stationary
LnEXP	Level	-5.502	0.1121	Nonstationary
	1st Difference	-6.0121	0.0089*	Stationary
LnINV	Level	-3.101	0.1081	Nonstationary
	1st Difference	-3.604	0.0014*	Stationary
LnGIT	Level	-3.721	0.0083*	Stationary
LnNPL	Level	-5.667	0.0000*	Stationary

Source: *STATA Output (Derived from Collected Data)*

Augmented Dickey-Fuller (ADF) Test: To overcome the problem of error autocorrelation, an augmentation takes place in DF test. The new formation of DF test is known as ADF test. ADF verifies stationarity in three stages. It checks considering the trend, trend and intercept in test equation and finally without trend and intercept. The results of ADF test including trend (Table -7.3) has coincided with the ADF results with trend and intercept (Table - 7.4). The hypotheses of ADF test have been stated below.

Null Hypothesis (H_0): The variable is nonstationary (presence of unit root).

Alternative Hypothesis (H_1): The variable is stationary (absence of unit root).

Decision Rule: The decision has been taken by observing the absolute value of t-statistic and probability value at different confidence interval. The guideline is that if the absolute value of t-statistic is greater than the absolute critical value at 1%, 5% and 10% level of significance, the null hypothesis (nonstationary series) can be rejected and alternative hypothesis (stationary series) can be accepted.

Another guideline is that if the probability value or p-value is less than the level of significance, the null hypothesis (nonstationary series) can be rejected and alternative hypothesis (stationary series) can be accepted and vice versa. In the test, 5% level of significance has been considered for p-value comparison.

Variables Stationary at 1st Difference: The variables LnNGDP, LnRGDP, LnGDCAP, LnLAD, LnEXP, LnINV are initially facing unit root in observations. These variables are stationary at 1st difference form (Table -7.3 & 7.4). As for example, the absolute value of test-statistic (6.6465) is greater than critical values at 1%, 5% and 10% level of significance at 1st difference (Table -7.3) of LnNGDP. The corresponding p-value is 0.0000 which is less than 0.05 (Table -7.3) for LnNGDP. On the contrary, the absolute value of test-statistic (6.8925) is greater than critical values at 1%, 5% and 10% level of significance at 1st difference (Table -7.4) of LnNGDP. The corresponding p-value is 0.0000 which is less than 0.05 (Table -7.4) for LnNGDP. The null hypothesis (nonstationary series) can be rejected for the variable LnNGDP at 1st difference form. The alternative hypothesis (stationary series) can be accepted for the variable LnNGDP at 1st difference form. So, the LnNGDP are stationary at 1st difference. Following the decision rule, the same decisions have been taken for the variables LnRGDP, LnGDCAP, LnLAD, LnEXP, LnINV. In econometric terminology, the variables LnNGDP, LnRGDP, LnGDCAP, LnLAD, LnEXP and LnINV are I(1).

Variables Stationary at Level: The remaining variables LnNOB, LnGIT and LnNPL are stationary at level or I(0). For the variable LnNOB absolute value of test-statistic (4.6909) is greater than critical values at 1%, 5% and 10% level of significance at level (Table -7.3). The corresponding p-value is 0.0007 which is less than 0.05 (Table -7.3) for LnNOB. On the contrary, the absolute value of test-statistic (19.72001) is

greater than critical values at 1%, 5% and 10% level of significance at level (Table -7.4) of LnNOB. The corresponding p-value is 0.0000 which is less than 0.05 (Table -7.4) for LnNOB. The null hypothesis (nonstationary series) can be rejected for the variable LnNOB at level form. The alternative hypothesis (stationary series) can be accepted for the variable LnNOB at level form. So, the LnNOB has been stationary at level. Following the decision rule, the same decisions have been taken for the variables LnGIT and LnNPL. So, in econometric terminology, the variables LnNOB, LnGIT and LnNPL are I(0).

Table -7.3: Augmented Dickey-Fuller Test (Intercept)

Series	**Level**	**ADF Test**			**p-value**	**Conclusion**
		t-statistic	**critical value**			
Natural log of NGDP	Level	0.3058	1%	-3.6463	0.9751	Nonstationary
			5%	-2.9540		
			10%	-2.6158		
	1^{st} difference	-6.6465	1%	-3.6537	0.0000*	Stationary
			5%	-2.9571		
			10%	-2.6174		
Natural log of RGDP	Level	-0.60275	1%	-3.6463	0.8556	Nonstationary
			5%	-2.9539		
			10%	-2.6158		
	1^{st} difference	-5.9476	1%	-3.6702	0.0000*	Stationary
			5%	-2.9639		
			10%	-2.621007		
Natural log of GDPCAP	Level	-1.2209	1%	-3.6463	0.9976	Nonstationary
			5%	-2.9540		
			10%	-2.6158		
	1^{st} difference	-6.7277	1%	-3.6537	0.0000*	Stationary
			5%	-2.9571		
			10%	-2.6174		
Natural log of NOB	Level	-4.6909	1%	-3.6463	0.0007*	Stationary
			5%	-2.9540		
			10%	-2.6158		

Table -7.3: Augmented Dickey-Fuller Test (Intercept) [Continued]

Series	Level	ADF Test			p-value	Conclusion
		t-statistic	critical value			
Natural log of LAD	Level	-0.6207	1%	-3.6462	0.2630	Nonstationary
			5%	-2.9450		
			10%	-2.6158		
	1st difference	-3.6554	1%	-3.6463	0.0134*	Stationary
			5%	-2.9540		
			10%	-2.6158		
Natural Log of EXP	Level	-2.5937	1%	-3.6433	0.3356	Nonstationary
			5%	-2.9478		
			10%	-2.6224		
	1st difference	-5.5024	1%	-3.6463	0.0001*	Stationary
			5%	-2.9540		
			10%	-2.6158		
Natural log of INV	Level	2.2216	1%	-3.6462	0.4632	Nonstationary
			5%	-2.9632		
			10%	-2.638		
	1st difference	-3.6673	1%	-3.6463	0.0180*	Stationary
			5%	-2.9540		
			10%	-2.6158		
Natural log of GIT	Level	-3.683264	1%	-3.6463	0.0093*	Stationary
			5%	-2.9540		
			10%	-2.6158		
Natural log of NPL	Level	-3.7507	1%	-3.6537	0.0094*	Stationary
			5%	-2.9571		
			10%	-2.6174		

Source: *STATA Output (Derived from Collected Data)*

Table -7.4: Augmented Dickey-Fuller Test (Trend and Intercept)

Series	Level	ADF Test			p-value	Conclusion
		t-statistic	critical value			
Natural log of NGDP	level	-1.622	1%	-4.2627	0.7623	Nonstationary
			5%	-3.5529		
			10%	-3.2096		
	1st difference	-6.8925	1%	-4.2733	0.0000*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of RGDP	level	-0.5867	1%	-4.2733	0.2324	Nonstationary
			5%	-3.5578		
			10%	-3.2124		
	1st difference	-4.3088	1%	-4.2733	0.0173*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of GDPCAP	level	-2.6498	1%	-4.2733	0.2627	Nonstationary
			5%	-3.5578		
			10%	-3.2124		
	1st difference	-6.9435	1%	-4.2733	0.0000*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of NOB	level	-19.72001	1%	-4.2733	0.0000*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of LAD	level	-3.0967	1%	-4.2733	0.3042	Nonstationary
			5%	-3.5578		
			10%	-3.2124		
	1st difference	-5.2379	1%	-4.2733	0.0009*	Stationary
			5%	-3.5578		
			10%	-3.2124		

Table -7.4: Augmented Dickey-Fuller Test (Trend and Intercept) [Continued]

Series	Level	ADF Test			p-value	Conclusion
		t-statistic	critical value			
Natural Log of EXP	level	-2.4987	1%	-4.2733	0.3266	Nonstationary
			5%	-3.5578		
			10%	-3.2124		
	1st difference	-4.9059	1%	-4.2733	0.0021*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of INV	level	-2.3411	1%	-4.2733	0.6223	Nonstationary
			5%	-3.5578		
			10%	-3.2124		
	1st difference	-4.5888	1%	-4.2733	0.0045*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of GIT	level	-13.8198	1%	-4.2733	0.0000*	Stationary
			5%	-3.5578		
			10%	-3.2124		
Natural log of NPL	level	-5.0570	1%	-4.2733	0.0000*	Stationary
			5%	-3.5578		
			10%	-3.2124		

Source: *STATA Output (Derived from Collected Data)*

7.2.3 Philips-Perron Test

The study applies the Philips-Perron (P-P) test to verify the existence of unit root in the series. The test is a nonparametric test. It has no assumption on residuals. It works well for large sample. The studies on small sample can get misleading results for stationarity diagnostic. Some differences lie in the results of P-P test and ADF test. The null hypothesis and alternative hypothesis state the existence of unit root and the absence of unit root respectively. The decision rule and the hypotheses of the tests have been stated below.

Decision Rule: If the probability value or p-value is greater than the significance level, the null hypothesis cannot be rejected and vice versa. The test has been conducted at 95% confidence interval. If p-value is greater than 0.05, the null hypothesis can be accepted.

Null Hypothesis (H_0): The variable is nonstationary (presence of unit root).

Alternative Hypothesis (H_1): The variable is stationary (absence of unit root).

Variables Stationary at 1st Difference: The variables LnNGDP, LnRDP, LnGDPCAP, LnLAD, LnINV, LnNPL are stationary at 1st difference according to the Philips-Peron test (Table - 7.5).

Variables Stationary at Level: The variables LnNOB, LnEXP and LnGIT are stationary at level according to the Philips-Peron test (Table -7.5).

Table -7.5: Results of Philips-Peron Test

Series	Level/ Difference	Adjusted t-statistic	p-value	Conclusion
Natural log of NGDP	Level	0.32114	0.9759	Nonstationary
	1st difference	-6.5572	0.0000*	Stationary
Natural log of RGDP	Level	-1.891165	0.3322	Nonstationary
	1st difference	-4.5958	0.0009*	Stationary
Natural log of GDPCAP	Level	0.804758	0.9926	Nonstationary
	1st difference	-3.301648	0.0232*	Stationary
Natural log of NOB	Level	-5.744949	0.0000*	Stationary
Natural log of LAD	Level	-2.6848	0.0873	Nonstationary
	1st difference	-3.210456	0.0286*	Stationary
Natural Log of EXP	Level	-4.8039	0.0005*	Stationary
Natural log of INV	Level	-2.8167	0.0668	Nonstationary
	1st difference	-4.1252	0.0030*	Stationary
Natural log of GIT	Level	-3.5777	0.0118*	Stationary
Natural log of NPL	Level	-1.6477	0.4477	Nonstationary
	1st difference	-5.6670	0.0000*	Stationary

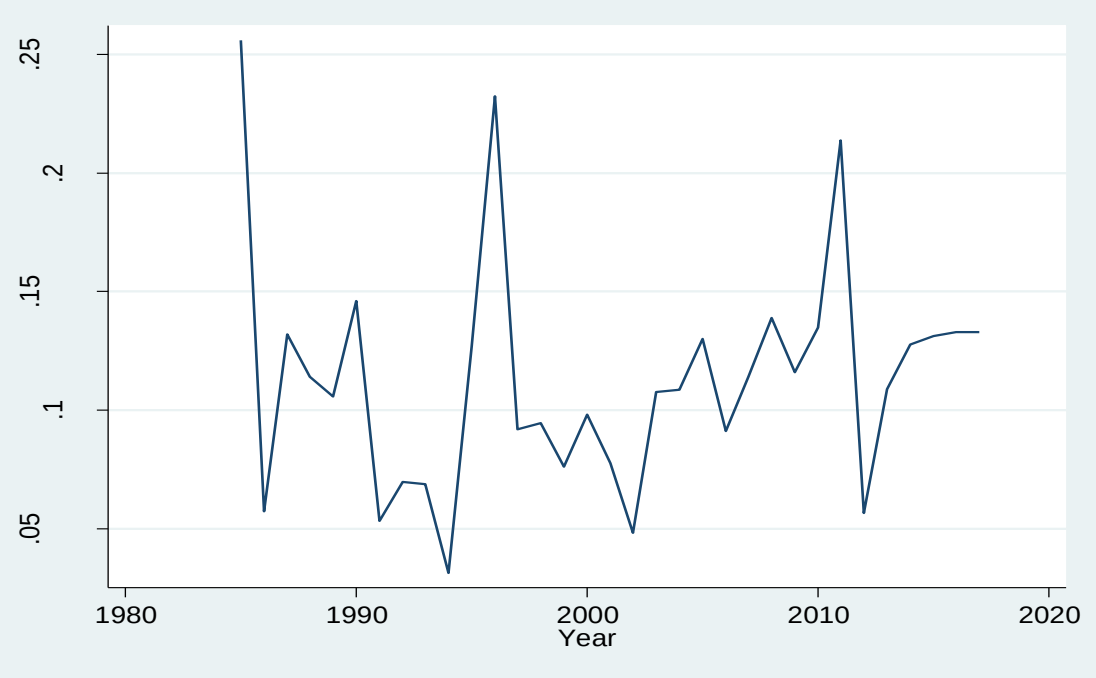
Source: *STATA Output (Derived from Collected Data)*

The study has proceeded based on the findings of ADF test as it is widely recognized test of unit root. Additionally ADF test operates better than P-P test. ADF test operates better than P-P test in finite sample (Davidson & Mackinnon, 2004).

7.3 CONVERSION TO STATIONARITY

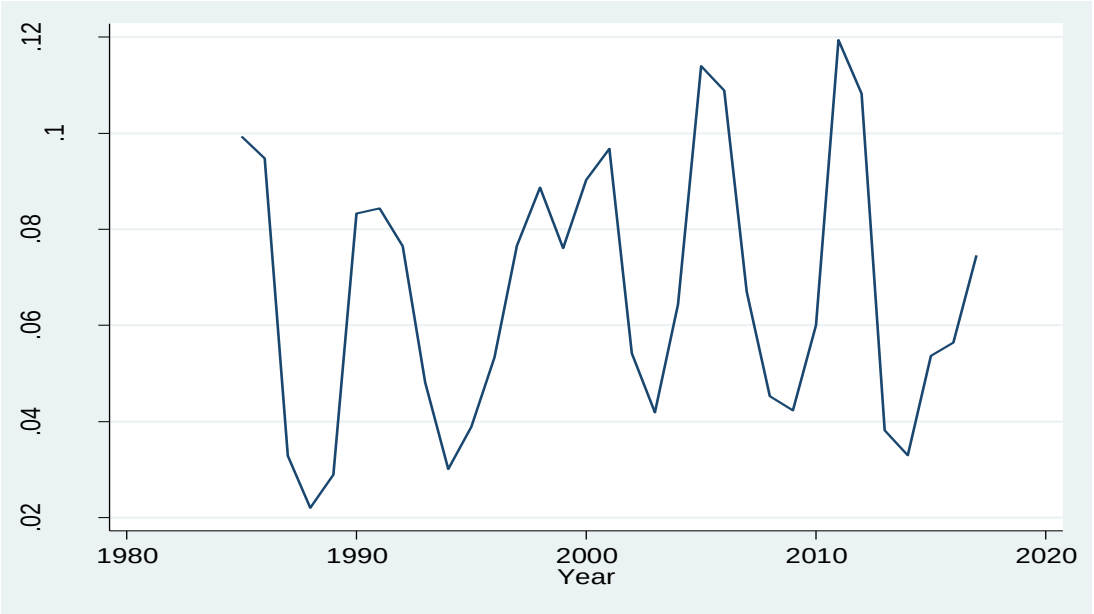
The variables namely LnNGDP, LnGDPCAP, LnRGDP, LnLAD, LnEXP and LnINV were not stationary initially or at level. These variables have been made stationary after taking first difference. The following figures (Fig.-7.10 to Fig.-7.15) show the shape of the series in first difference form where'd' stands for first difference. The average values of the variables are approximately stable over the period. The variables are moving with constant variation.

Fig.-7.10: Pattern of the Series LnNGDP at 1st Difference



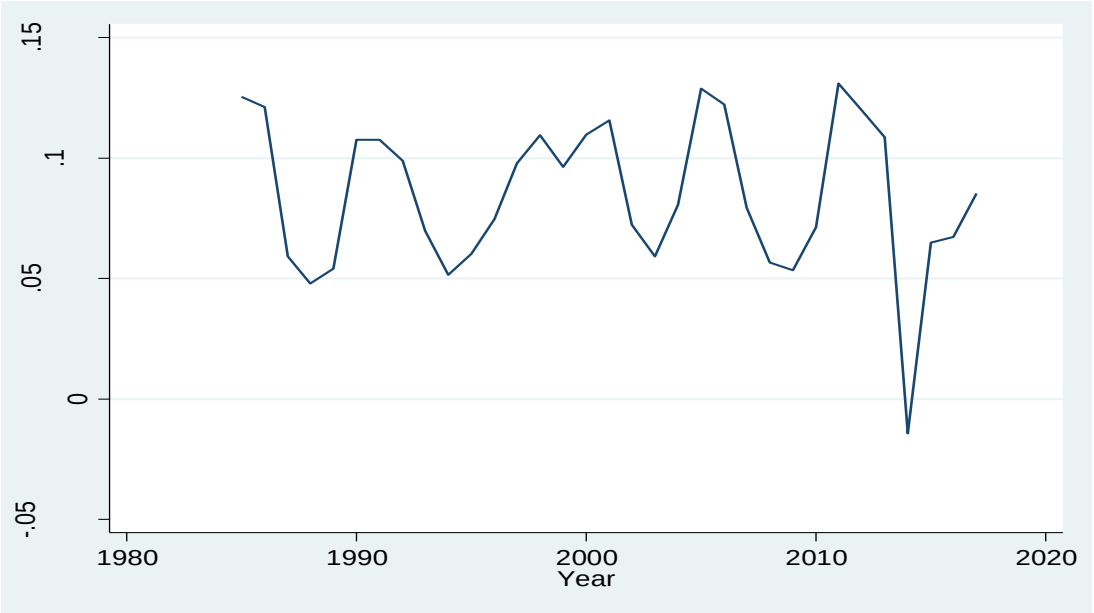
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.11: Pattern of the Series LnGDPCAP at 1st Difference



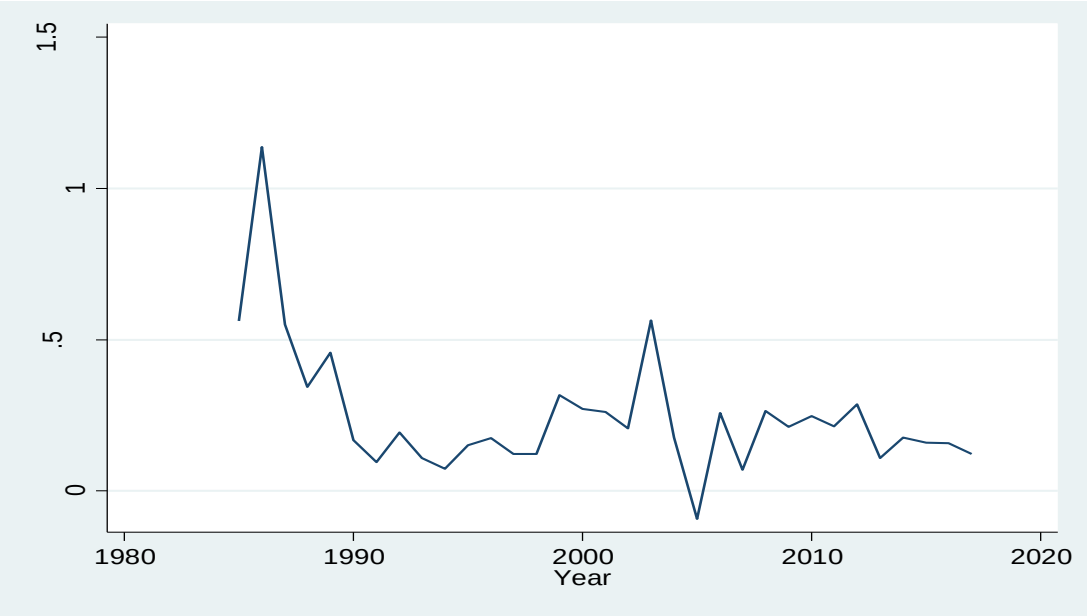
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.12: Pattern of the Series LnRGDP at 1st Difference



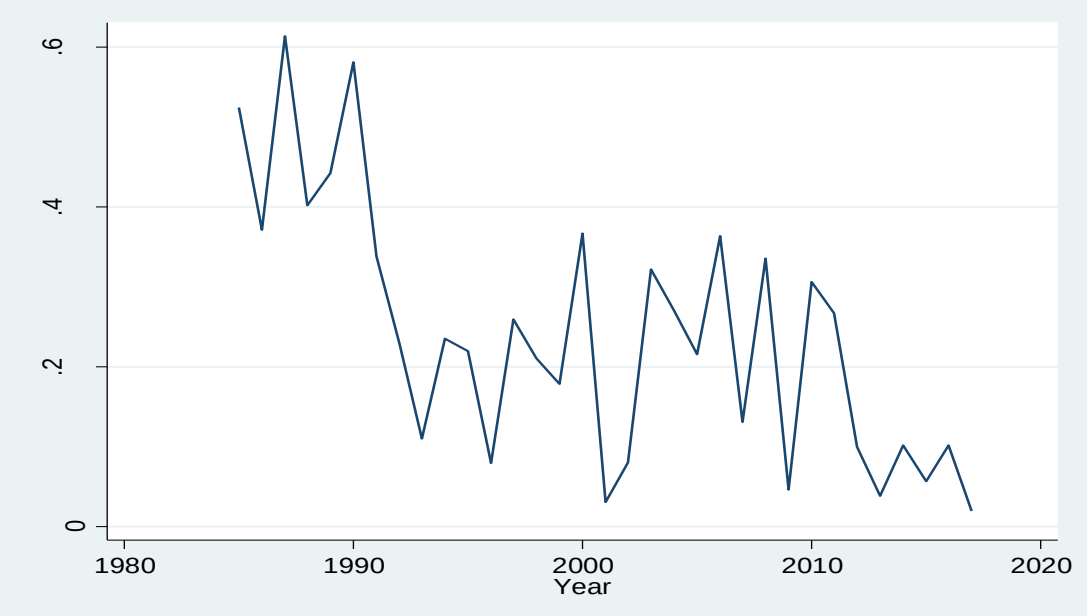
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.13: Pattern of the Series LnLAD at 1st Difference



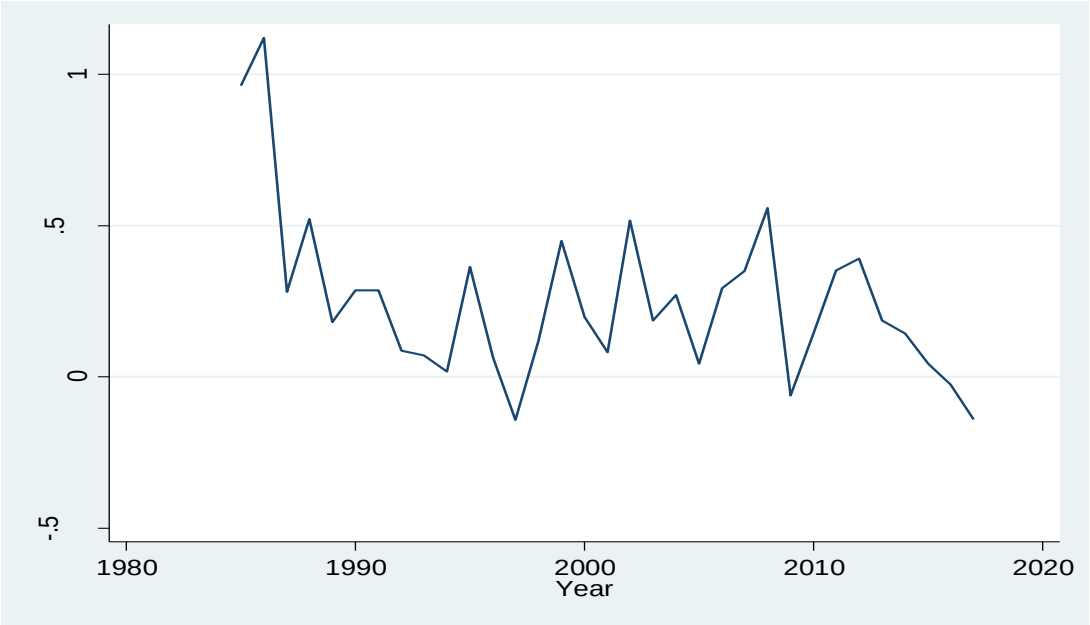
Source: *STATA Output (Derived from Collected Data)*

Fig.-7.14: Pattern of the Series LnEXP at 1st Difference



Source: *STATA Output (Derived from Collected Data)*

Fig.-7.15: Pattern of the Series LnINV at 1st Difference



Source: *STATA Output (Derived from Collected Data)*

7.4 ARDL DEPICTION

To confirm the role of PCBs to economic growth acceleration, the study has employed ARDL structure to observations. The ARDL structure deals with series variables. Any time series model requires the series to be stationary. The study has made the variables stationary before applying the ARDL structure. The variable's order of integration has justified the applicability of ARDL. The variables LnNGDP, LnRGDP, LnGDPCAP, LnLAD, LnEXP and LnINV are of I(1) and LnGIT, LnNOB and LnNPL are of I(0). As ARDL requires the variables either of I(0) or I(1) or amalgamation of I(0) and I(1). None of the variable is of I(2). So, the present study is a case of ARDL estimation. ARDL has estimated differently in consideration of substitute measures (LnNGDP, LnRGDP and LnGDPCAP) of growth as regressand.

The ARDL model estimation consists of model selection, cointegration check by bounds test, estimation of long run and short run coefficients, check of residuals for serial correlation, normality, hetroscadasticity and model stability. Before model estimation, optimal lag order must be selected.

7.4.1 LnNGDP and ARDL

The model has traced the long run and short run relation among LnNGDP and other bank specific variables namely net loan and advances(LnLAD), export earnings by PCBs (LnEXP), investment by PCBs (LnINV), gross earnings of PCBs (LnGIT), number of branches of PCBs (LnNOB) and non-performing loan of PCBs (LnNPL).

The ARDL model estimation consists of model selection, cointegration check by bounds test, estimation of long run and short run coefficients, check of residuals for serial correlation, normality of residuals, hetroscadasticity and model stability. Before model estimation, optimal lag order must be selected.

Before going to watch the results of ARDL bounds test by F-statistics (given by Pessaran *et al*, 2001) and long and short coefficients, the optimal lag order must be noticed.

Optimal Lag Selection: To choose the lag order, various criteria are adopted. Among these, the AIC and SIC are worth mentioning. The lag order is selected following the guidelines that at optimal lag order the values of AIC and SIC are lowest. The lag order 1 is appropriate as the AIC value (-3.3650) and SIC value (-2.9944) are the lowest (Table -7.6).

Table -7.6: Optimal Lag Selection (LnNGDP)

Lag	Likelihood Ratio Criterion	Akaike Information Criterion (AIC)	Schwarz Information Criterion (SIC)	Hannan-Quinn Information Criterion	Log Likelihood
0	NA	-2.0318	-1.7080	-1.9262	38.4934
1	32.1352*	-3.3650*	-2.9944*	-3.2438*	60.1498
2	0.2822	-3.3128	-2.8965	-3.1771	60.3487

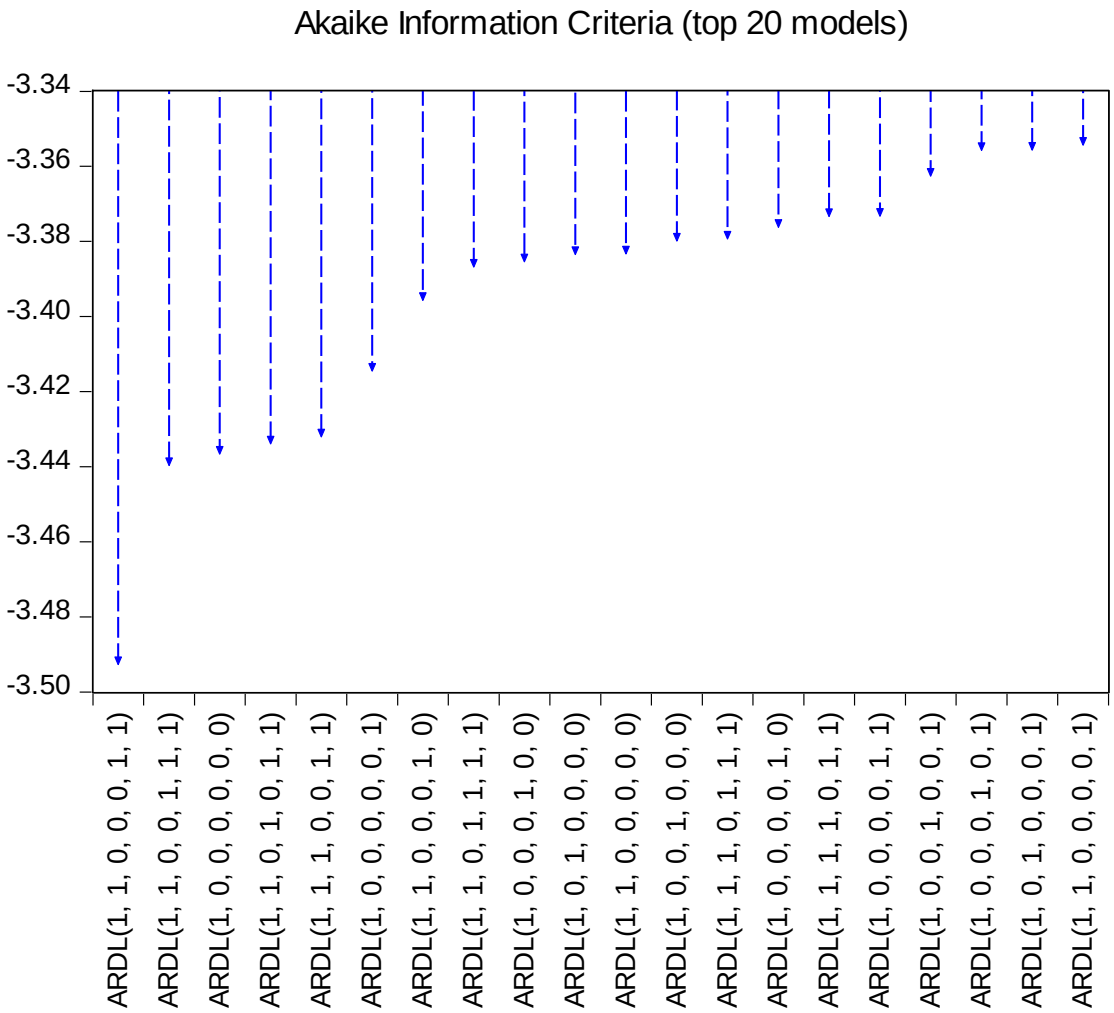
Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.1 Model Selection

To choose the order of ARDL, AIC criterion is used. Among the 20 models, the AIC value is lowest (-3.50) for the ARDL of order (1, 1, 0, 0, 0, 1, 1). The model selected

based on AIC value has lowest errors for prediction (Fig.-7.16) lower the value of AIC, better the model all the time.

Fig.-7.16: ARDL Model Selection (LnNGDP)



Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.2 Test of Residuals

The residuals of the model should be tested for serial correlation or autocorrelation and changing variance or heteroscedasticity. When the value of a series depends on the previous values of the same series, autocorrelation occurs. Autocorrelation and heteroscedasticity of errors may create misleading findings. Inconclusive results may be found. So, in the analysis involving series observation, errors must be checked for autocorrelation and heteroscedasticity.

(i) Test of Serial Correlation (Breusch-Godfrey Serial Correlation LM Test)

The Breusch-Godfrey Lagrange Multiplier test has been used to detect errors' serial correlation. The test is named after Trevor S. Breusch and Leslie G. Godfrey. The test proceeds using residuals in regression and deriving a test statistic (χ^2statistic). Serial correlation theoretically breaks one of the major postulations of linear regression. The implication is that the statistical significance of the regression coefficients will not be completely reliable. The Breusch–Godfrey test is used to assess the presence of serial correlation. The test uses the residuals in a regression and derives a test statistic. As it is based on the thought of Lagrange Multiplier testing, the test is frequently termed as an LM test. This test is more general and powerful than Durbin-Watson and Ljung-Box test (Gujarati, 1995).

The decision rule and hypotheses of the tests have been stated below. The null and alternative hypothesis state the absence of serial correlation and presence of correlation respectively.

Decision Rule: The decision of test is taken observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa.

Null Hypothesis (H_0): The model is free from serial correlation.

Alternative Hypothesis (H_1): The model is not free from serial correlation.

The p-value is 47.90% or 0.4790 at 95% confidence interval. The study is happy about the model as the null hypothesis can't be rejected at 5% significance level meaning that the model has no serial correlation (Table -7.7)

Table -7.7: Result of Breusch-Godfrey Lagrange Multiplier Test (LnNGDP)

Model	Dependent Variable	Forcing/ Independent Variable	Chi-square (χ^2) Statistic	p-value	Decision	Significance Level
F LnNGDP	LnNGDP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	0.501208	0.4790	Accepted	5%

Source: *EVIEWS Output (Derived from Collected Data)*

(ii) Test of Heteroscedasticity (Breusch-Pagan-Godfrey Heteroskedasticity Test)

Breusch-Pagan-Godfrey test has been applied to find out the errors' dispersion which is known as heteroscedasticity (Gujarati, 1995). The test proceeds using residuals in regression and deriving a test statistic (χ^2statistic). The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the absence of hetroscadasticity and presence of hetroscadasticity respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa.

In the present test the confidence interval has been 95%. The decision of test is taken observing the probability value or p-value. If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected.

Null Hypothesis (H_0): The model is homoscedastic in nature.

Alternative Hypothesis (H_1): The model is not homoscedastic in nature.

The study is satisfied with the model as it is homoscedastic in nature. The p-value (83.60%) at 5% significance level makes acceptance of null hypothesis (Table -7.8)

Table -7.8: Result of Breusch-Pagan-Godfrey Test (LnNGDP)

Model	**Dependent Variable**	**Forcing/ Independent Variable**	**Chi-square (χ^2) Statistic**	**p-value**	**Decision**	**Significance Level**
F_{LnNGDP}	LnNGDP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	5.7474	0.8360	Accepted	5%

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.3 Bounds Test

To identify the role of PCBs to LnNGDP in the long run, bounds test based on AIC in ARDL structure has been employed. The test estimate ARDL equation with OLS technique and compare the value of F statistics with both the value of upper and lower bounds. The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the absence of long run relationship among the variables and presence of long run relationship among the variables respectively.

Decision Rule: The value of F-statistic should be compared with Pessaran critical value at 1%, 5% and 10% significance level. The strict guideline is that the value of F-statistic should be greater than the upper bound critical value at different level of significance. The null hypothesis of no long run relationship is rejected when the F-statistic value exceeds the upper critical bounds value (Belloumi, 2014).

Null Hypothesis (H_0): Long run relationship does not exist among the variables.

Alternative Hypothesis (H_1): Long run relationship exists among the variables.

The F-statistic value (3.9359) is greater than the upper bound *I*(1) value (3.61) at 5% level of significance (Table -7.9). The null hypothesis can be rejected (nonexistence of long run relationship among the variables). The value of F-statistic (3.9359) is smaller than upper bound value (4.43) at 1% significance level. So, the null hypothesis cannot be rejected at 1% level. The functions of PCBs and economic growth have associated in long run. All the variables have moved together in the long run.

Table -7.9: Result of Bounds Test (LnNGDP)

Model	**Forcing Variable**	**F-statistic**	**Critical Value**						**Co-integration**
			1%		5%		10%		
			I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
F LnNGDP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	3.9359	3.15	4.43	2.45	3.61	2.12	3.23	Present at 5%

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.4 Long Run Coefficients of Selected ARDL

The long run coefficients have been estimated using AIC. Table -7.10 depicts the results in the long run. In the following segment, significant and insignificant coefficients are separated.

(i) Statistically Significant Coefficients

- Net loan and Advance: Role of LnLAD is statistically significant. The p-value (0.0036) is less than 0.05. Net loan and advances of PCBs have significant contribution to economic growth.
- Export Earnings by PCBs: The p-value (0.0031) is less than 0.05. Hence, LnEXP is a significant variable to explain economic growth.
- Investment by PCBs: The p-value (0.0258) is less than 0.05. Therefore, LnINV is a significant variable to explain economic growth.

(ii) Statistically Insignificant Coefficients

The role of the variables namely nominal GDP at one year lag, number of branches of PCBs (LnNOB), total income of PCBs (LnGIT) and non-performing loan (LnNPL) have not been statistically supported. The sign of the coefficients LnNOB, and LnNPL is expected but there is no statistical support. The p-values of the t-statistic of these variables are greater than 0.05, thereby acknowledging the null hypothesis of no effect on economic growth of the aforementioned variables.

Table -7.10: Long Run Coefficient of Selected ARDL Model using Akaike Information Criterion (AIC) [LnNGDP]

Regressor	**ARDL (1,1,0,0,0,1,1)**			
	Coefficient	**Standard Error**	**t-statistic**	**p-value**
LnNGDP (-1)	0.08973	0.068804	-130417	0.2057
LnNOB	0.00116	0.057955	-0.019973	0.9842
LnLAD	0.01121	0.058245	-2.78033	0.0036*
LnNPL	-0.01012	0.00509	-1.99000	0.0700
LnEXP	0.088241	0.04351	-2.02794	0.0031*
LnGIT	-0.17373	0.06138	-2.83034	0.6797
LnINV	0.15884	0.06643	-2.39114	0.0258*
R-square = 0.853123 Adjusted R-square = 0.843663				

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.5 Short Run Coefficients (Short Run Dynamic Adjustment using Error Correction Model [ECM] based on AIC)

The short run results are shown in Table -7.11. If the p-value of a variable is less than 0.05, this means that the variable is related to short run economic growth and vice versa. NOB affects NGDP in short run with statistical meaning. GIT has a positive impact on NGDP in short run but does not carry any statistical support. The INV is positive but insignificant in short run.

The ECM_{t-1} coefficient is negative and statistically evident. The coefficient of ECM_{t-1} shows the speed of adjustment towards long run equilibrium. The whole system can get back to equilibrium at the speed of 8.9% (Table -7.11). But the speed of adjustment is comparatively small (8.9%) implying the slow adjustment process of any previous shock to recent year's stability.

Table -7.11: Short Run Coefficients (LnNGDP)

Model	Dependent Variable	Regressors	Coefficient	Standard Error	p-value
ARDL (1,1,0,0,0,0,1,1)	ΔLnNGDP	Constant	0.43042	0.05338	0.0000*
		LnNOB	-0.21717	0.06562	0.0032*
		LnGIT	0.00122	0.03055	0.9684
		LnINV	0.05261	0.03203	0.1147
		ECM_{t-1}	-0.08973	0.01515	0.0000*

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.6 Model Diagnostic Test

The model is checked for autocorrelation, heteroscedasticity, functional form and normality. The validation for autocorrelation and heteroscedasticity has been shown in previous sections.

(i) Model Specification Test (Ramsey's RESET Test)

To check the functional form of the selected model for nominal GDP (LnNGDP), Ramsey's RESET (Regression Specification Error Test) test has been applied. Ramsey has introduced this general test named RESET to detect specification error

(Gujarati, 1995). The test calculates the value of the F-statistic. The test has been developed by James Bernard Ramsey. The Ramsey Regression Specification Error Test (RESET) is a general specification test for the regression model (Ramsey, 1969). In particular, it tests whether non-linear combinations of the fitted values help explain the dependent variables.

The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the absence of misspecification and presence of misspecification respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa.

In the present test the confidence interval has been 95%. If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected. But the test has also conducted for 1%, and 10% level of significance. The decision of test is taken observing the probability value or p-value.

Null Hypothesis (H_0): The model is free from misspecification.

Alternative Hypothesis (H_1): The model is not free from misspecification.

Table -7.12: Result of RESET Test (LnNGDP)

Test Statistic	Value	Degree of Freedom	p-value	Decision
F-statistic	0.172430	(1, 21)	0.6822	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

From the above table (Table -7.12) it has been observed that the p-value is 68.22% which is greater than 1%, 5% and 10% significance level. So, null hypothesis cannot be rejected. The model is defined correctly and in the model there is linearity.

(ii) Normality Test

Jarque-Bera test has been applied to check normality (Jarque and Bera, 1980). The test is named after Carlos Jarque and Anil K. Bera. The test is superior in power to other tests for symmetric distributions with medium up to long tails and for slightly skewed distributions with long tails (Gujarati, 1995).

The hypotheses of the tests are stated below .The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the presence of normally distributed residuals and absence of normally distributed residuals respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa.

In the present test the confidence interval has been 95%.If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected.

Null Hypothesis (H_0): Residuals of the selected model are normally distributed.

Alternative Hypothesis (H_1): Residuals of the selected model are not normally distributed.

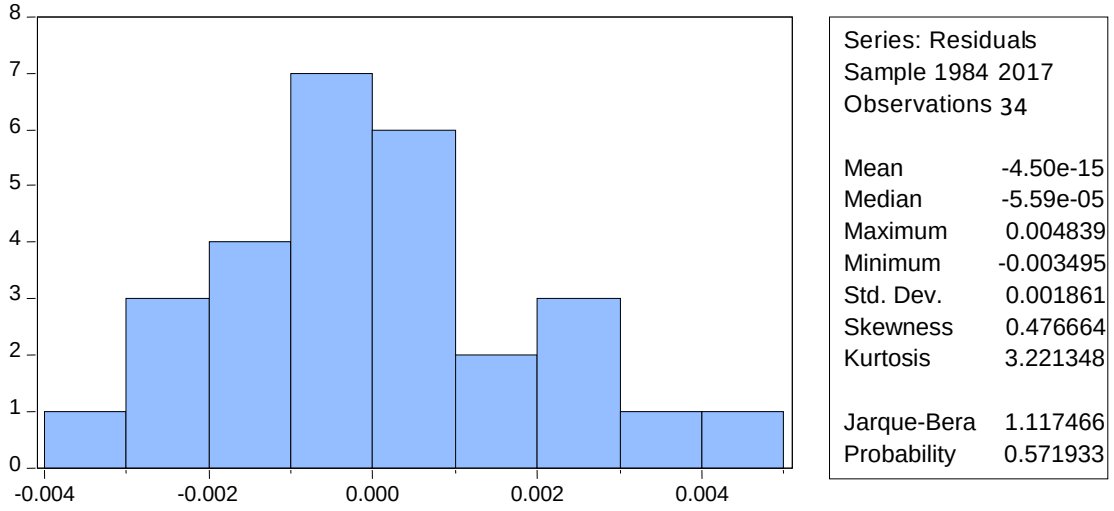
Table -7.13: Result of Jarque-Bera Test (LnNGDP)

Residual	p-value	Decision
et_i	0.571933	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

From the above table (Table -7.13), it has been observed that the p-value is 57.19% which is greater than at 5% significance level. Acceptance of null hypothesis results in normality of residuals (Fig.-7.17).

Fig.-7.17: Normality of Residuals (LnNGDP)

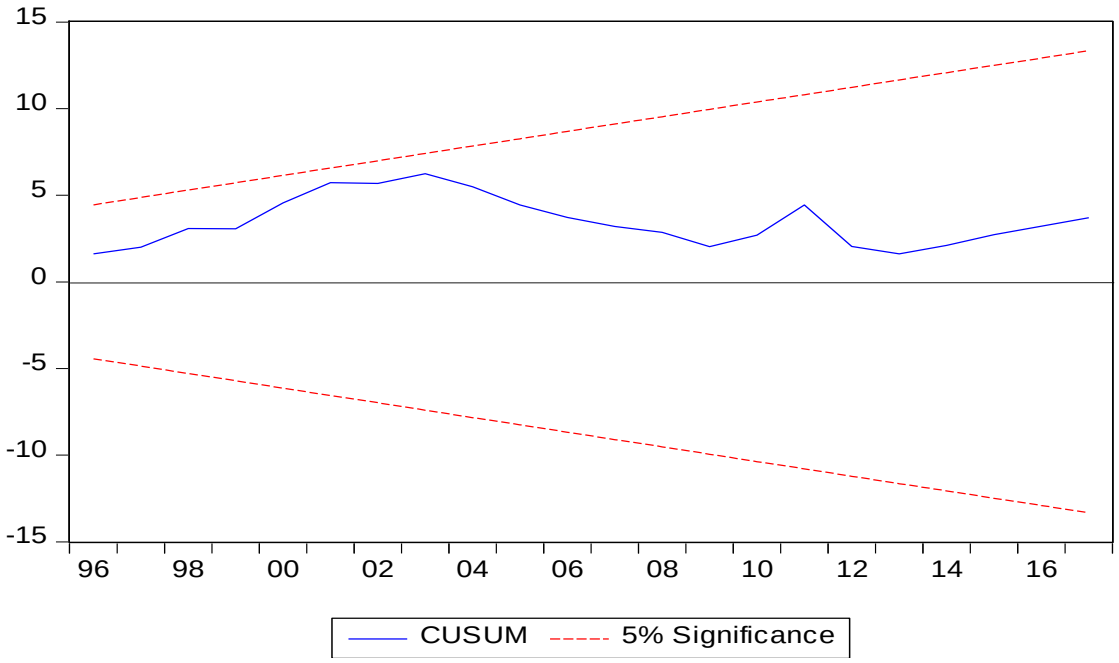


Source: *EVIEWS Output (Derived from Collected Data)*

7.4.1.7 Stability Test

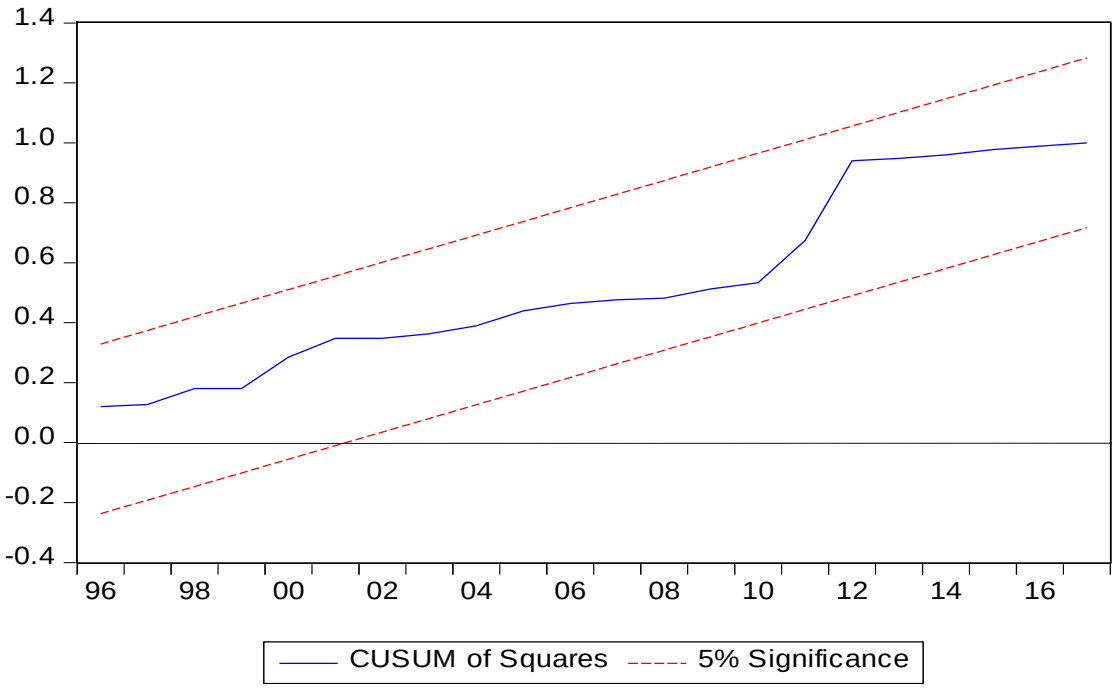
Stability test has been conducted to find out unanticipated change in the parameters of regression analysis of series variables. In general, the CUSUM (cumulative sum) and CUSUM square tests have been conducted to test the constancy of the coefficients of the model. CUSUM and CUSUM square tests were proposed by Brown *et al.* 1975. Model having structural break leads to prediction errors and makes results undependable. The structural break is an unanticipated change over time in the parameters which can cause enormous forecasting errors and untrustworthiness of the regression model in general. Structural stability is the time-invariance property of regression coefficients. To restrain the forecasting error, models are tested routinely to notice structural stability. David Forbes Hendry introducer of the test, postulated that coefficients usually cause forecasting failure due to lack of stability (Ahmed *et al.*, 2016). The study has employed CUSUM (Cumulative Sum) and CUSUMSQ (Cumulative Sum of Squares) technique to investigate stability. The decision of test is based on the position of the blue line (curve). If, the curve line has fallen within the two straight lines, the model is stable. There is no structural break in the model. Both, in Fig.-7.18 and Fig.-7.19 the blue lines (curve) are within the two red straight lines meaning that all the coefficients are stable at 5% level of significance.

Fig.-7.18: CUSUM Test for Stability (LnNGDP)



Source: *EVIEWS Output (Derived from Collected Data)*

Fig.-7.19: CUSUM Square Test for Stability (LnNGDP)



Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2 LnRGDP and ARDL

The model has traced the long run and short run relation among real GDP (LnRGDP) and other bank specific variables namely net loan and advances (LnLAD), export earnings by PCBs(LnEXP), investment by PCBs (LnINV), total income of PCBs (LnGIT), number of branches of PCBs (LnNOB) and non-performing loan (LnNPL).

The ARDL model estimation consists of model selection, cointegration check by bounds test, estimation of long run and short run coefficients, check of residuals for serial correlation, normality, hetroscadasticity and stability. Before model estimation, optimal lag order must be selected.

Optimal Lag Selection: The model traces the role of PCBs to real GDP in short and long run. Before the model estimation, the lag order must be chosen. The lag order 2 is appropriate for this model as AIC (-4.251836) and SBC (-3.83552) are the lowest at different lag order (Table - 7.14).

Table -7.14: Optimal Lag Selection (LnRGDP)

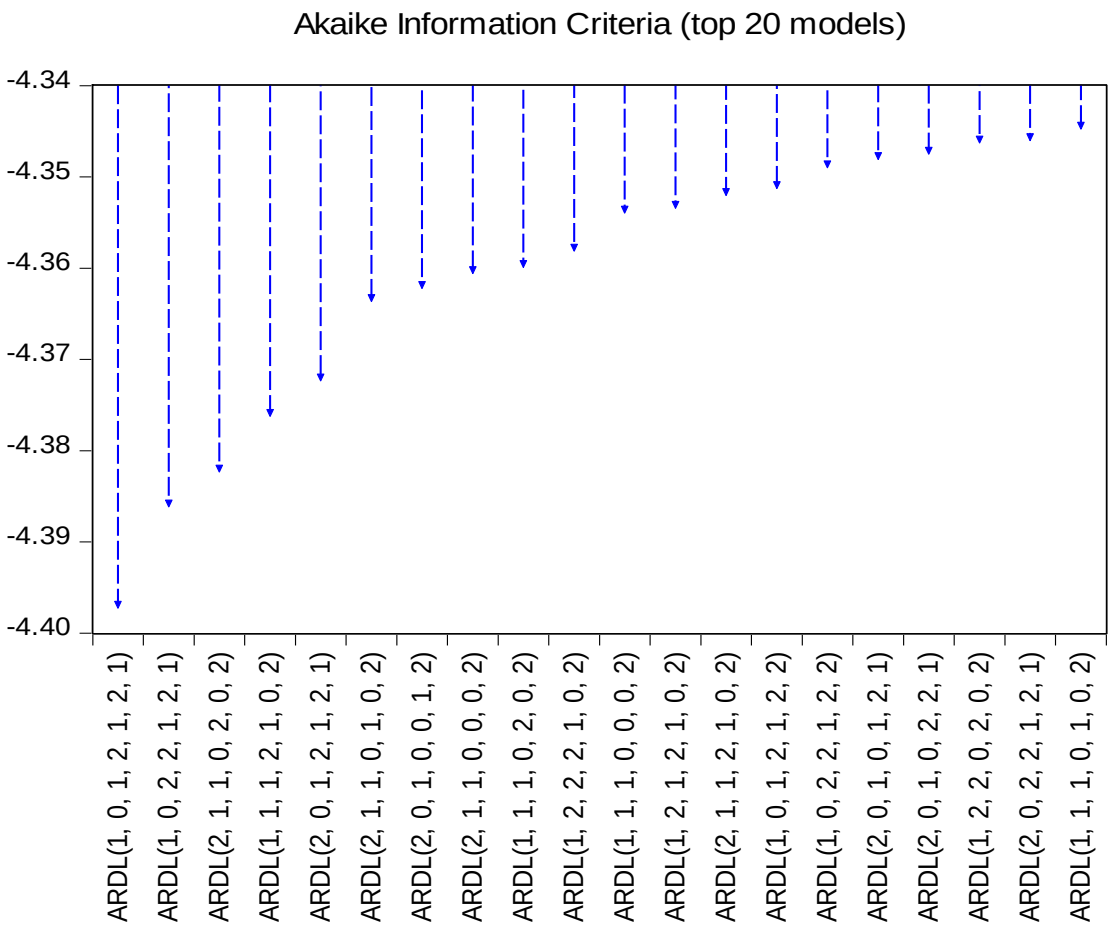
Lag	LogL	LR	AIC	SBC	HQ
0	45.5239	NA	-2.485410	-2.16161	-2.37986
1	72.4798	39.9992*	-4.15999	-3.78993	-4.03936
2	74.9035	3.439987	-4.251836*	-3.83552*	-4.116127*
3	75.2174	0.425301	-4.20757	-3.744996	-4.056784

Source*: EVIEWS Output (Derived from Collected Data)*

7.4.2.1 Model Selection

To finalize the order of the model ARDL, AIC value has been used. Among the top 20 models the lowest AIC value is -4.40. So, the selected model is ARDL (1, 0, 1, 2, 1, 2, 1) indicated in the following figure.

Fig.-7.20: ARDL Model Selection (LnRGDP)



Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2.2 Test of Residuals

The residuals of the model should be tested for serial correlation or autocorrelation and changing variance or heteroscedasticity. When the value of a series depends on the previous values of the same series, autocorrelation and heteroscedasticity of errors may create misleading findings. Inconclusive results may be found. So, in the analysis involving series observation, errors must be checked for autocorrelation and heteroscedasticity.

(i) Test of Serial Correlation (Breusch-Godfrey Serial Correlation LM Test)

The Breusch-Godfrey Lagrange Multiplier test is used to detect errors' serial correlation. The test is named after Trevor S. Breusch and Leslie G. Godfrey. The test proceeds using residuals in regression and deriving a test statistic (χ^2). The decision rule and hypotheses of the tests have been stated below. The null and alternative hypothesis state the absence of serial correlation and presence of correlation respectively.

Decision Rule: The decision of test is taken observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa. The present test has taken 95% confidence interval. If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected. The hypotheses of the test are stated below.

Null Hypothesis (H_0): The model is free from serial correlation.

Alternative Hypothesis (H_1)**:** The model is not free from serial correlation.

The p-value is 0.0721 or 7.21 % (Table -7.15). The study is pleased with the model as it is free from serial correlation.

Table -7.15: Result of Breusch-Godfrey Lagrange Multiplier Test (LnRGDP)

Model	Dependent Variable	Forcing/ Independent Variable	Chi-square (χ^2) Statistic	p-value	Decision	Significance Level
F_{LnNGDP}	LnRGDP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	3.2342	0.0721	Accepted	5%

Source: *EVIEWS Output (Derived from Collected Data)*

(ii) Test of Heteroscedasticity (Breusch-Pagan-Godfrey Heteroskedasticity Test)

Breusch-Pagan-Godfrey test is applied to find out the errors' dispersion which is known as heteroscedasticity. The test proceeds using residuals in regression and deriving a test statistic (χ^2). The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the absence of hetroscadasticity and presence of hetroscadasticity respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa. In the present test the confidence interval has been 95%. The decision of test has been taken by observing the probability value or p-value. If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected.

Null Hypothesis (H_0): The model is homoscedastic in nature.

Alternative Hypothesis (H_1): The model is not homoscedastic in nature.

The p-value (0.8762) is greater than 5% (Table -7.16). The null hypothesis can't be rejected. So, the model is free from heteroscedasticity.

Table -7.16: Result of Breusch - Pagan - Godfrey Test (LnRGDP)

Model	**Dependent Variable**	**Forcing/ Independent Variable**	**Chi-square (χ^2) Statistic**	**p-value**	**Decision**	**Significance Level**
F_{LnRGDP}	LnRGDP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	8.24515	0.8762	Accepted	5%

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2.3 Bounds Test

To identify the role of PCBs to real GDP (LnRGDP) in the long run, bounds test based on AIC in ARDL structure has been employed. The test has estimated ARDL equation with OLS technique and compared the value of F statistics with both the value of upper and lower bounds. The value of F-statistic should be compared with Pessaran critical value at 5% level. The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the absence of long run relationship among the variables and presence of long run relationship among the variables respectively.

Decision Rule: The value of F-statistic should be compared with Pessaran critical value at 1%, 5% and 10% significance level. The strict guideline is that the value of F-statistic should be greater than the upper bound critical value at different level of significance.

Null Hypothesis (H_0): Long run relationship does not exist among the variables.

Alternative Hypothesis (H_1): Long run relationship exists among the variables.

From the following table (Table -7.17), it has been evident that, the value of F-statistic (3.7168) is greater than the upper bound value 3.61 at 5% level of significance. The F-statistic value is greater than the value at I(1) at 10% level. So, the null hypothesis can be rejected (nonexistence of long run relationship among the variables). The functions of PCBs and real economic growth are associated in long run. The functions of PCBs exert influence on LnRGDP in the long run.

Table -7.17: Result of Bounds Test (LnRGDP)

Model	**Forcing Variable**	**F-statistic**	**Critical Value**						**Co-integration**
			1%		5%		10%		
			I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
F_{LnRGDP}	LnNOB LnLAD LnEXP LnINV LnGI LnNPL	3.7168	3.15	4.43	2.45	3.61	2.12	3.23	Present at 5%

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2.4 Long Run Coefficients of Selected ARDL

The long run coefficients have been obtained based on AIC. The subsequent table (Table -7.18) has shown the results. The confident interval is 95% thereby the value of level of significance is 0.05. The statistically significant and insignificant coefficients have been separated below.

(i) Statistically Significant Coefficients

- Net Loan and Advances: The sign of the coefficient is expected. The variable has significant contribution to economic growth. The p-value is 0.0153 which is less than 0.05.
- Export Earnings by PCBs (LnEXP): The sign of the coefficient is expected. The p-value is 0.0073 which is less than 0.05. The variable has statistically meaningful contribution to economic growth.
- Investment by PCBs (LnINV): The result is statistically evident as the p-value (0.0174) is less than 0.05. The variable renders support to economic growth which is statistically evident.
- Non-performing Loan (LnNPL): Non-performing Loan has an attack on real GDP (LnNPL). The p-value of test statistic is 0.0069. The incidence of non-performing loan is undermining economic growth which is statistically proved.
- Real GDP at one year lag (LnRGDP (-1)): The last year's value of RGDP exerts notable influence on current year's value of RGDP. The p-value (0.03868) of the t-statistic is less than 0.05.

(ii) Statistically Insignificant Coefficients

The number of branches (LnNOB) and total income of PCBs (LnGIT) have no impact on real GDP. The sign of LnNOB and LnGIT coefficient does not match with priori anticipation but there is no statistical meaning in favor of LnNOB and LnGIT. The p-values of the t-statistic of these variables are greater than 0.05, thereby recognizing the null hypothesis that the above variables have no effect on economic growth.

Table -7.18: Long Run Coefficient of Selected ARDL Model using Akaike Information Criterion (AIC) [LnRGDP]

Regressor	ARDL (1,0,1, 2, 1, 2, 1)			
	Coefficient	**Standard Error**	**t-statistic**	**p-value**
LnRGDP (-1)	0.25599	0.114155	-2.242468	0.03868*
LnNOB	-0.066359	0.068813	0.964337	0.3484
LnLAD	0.137278	0.050944	2.694664	0.0153*
LnNPL	-0.011014	0.007246	-2.62394	0.0069*
LnEXP	0.14529	0.047660	3.048500	0.0073*
LnGIT	-0.06589	0.053684	-1.227547	0.2363
LnINV	0.106967	0.040595	-2.63497	0.0174*
R-square = 0.854601 Adjusted R-square = 0.845851				

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2.5 Short Run Coefficients (Short run Dynamic Adjustment using Error Correction Model [ECM] based on AIC)

The subsequent Table -7.19 shows the role of PCBs to real GDP in short run. If the p-value is less than 0.05 of a variable, meaning that the variable is related to economic growth in the short run and vice versa. Non-performing loan (LnNPL) of previous year, net loan and advances (LnLAD) of current year, export earnings (LnEXP) of current year are related with real GDP (LnRGDP) at current year. Total Income of PCBs (LnGIT), investment by banks (LnINV) and Non-performing loan (LnNPL) of current year and Total Income of PCBs (LnGIT) of previous year have no impacts on real GDP in the short run.

The ECM_{t-1} coefficient is negative and statistically evident. The coefficientECM_{t-1} shows the speed of adjustment towards long run equilibrium. The whole system can get back to equilibrium at the speed of 25.59% (Table -7.19). But the speed of adjustment is comparatively smaller (25.59%) implying the slow adjustment process of any previous shock to recent year's stability.

Table -7.19: Short Run Coefficients (LnRGDP)

Model	Dependent Variable	Regressors	Coefficient	Standard Error	p-value
ARDL (1,0 1, 2, 1, 2, 1)	ΔLnRGDP	Constant	1.35821	0.214694	0.0000*
		$\Delta LnLAD_t$	0.046156	0.04294	0.00758*
		$\Delta LnNPL_t$	-0.002781	0.002868	0.3458
		$\Delta LnNPL_{t-1}$	0.008448	0.002806	0.0079*
		$\Delta LnEXP_t$	-0.001464	0.030366	0.0021*
		$\Delta LnGIT_t$	0.008553	0.014143	0.5533
		$\Delta LnGIT_{t-1}$	0.036476	0.010665	0.7733
		$\Delta LnINV_t$	-0.02886	0.022388	0.2146
		ECM_{t-1}	-0.255996	0.043147	0.0000*

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2.6 Model Diagnostic Test

The model is checked for autocorrelation, heteroscedasticity, functional form and normality. The validation for autocorrelation and heteroscedasticity has been shown in previous sections.

(i) Model Specification Test (Ramsey's RESET Test)

To check the functional form of the selected model for real GDP (LnRGDP), RESET has been applied. The test calculates the value of the F-statistic. The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the absence of misspecification and presence of misspecification respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa.

In the present test the confidence interval has been 95%. If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected. But the test has also conducted for 1%, and 10% level of significance. The decision of test is taken observing the probability value or p-value.

Null Hypothesis (H_0): The model is free from misspecification.

Alternative Hypothesis (H_1)**:** The model is not free from misspecification.

Table - 7.20: Result of RESET Test (LnRGDP)

Test Statistic	Value	Degree of Freedom	p-value	Decision
F-statistic	1.672287	(1, 21)	0.2143	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

From the above table (Table -7.20) it can be argued that the model is free from misspecification as p-value is 0.2143 (greater than 0.05). So, null hypothesis cannot be rejected. The model is correctly specified and linearity exists in the model.

(ii) Normality Test

To check normality of the residuals of the real GDP (LnRGDP) model, Jarque-Bera test has been applied. The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the presence of normally distributed residuals and absence of normally distributed residuals respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model) then the null hypothesis cannot be rejected and vice versa.

In the present test the confidence interval has been 95%.If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected.

Null Hypothesis (H_0): Residuals of the selected model are normally distributed.

Alternative Hypothesis (H_1)**:** Residuals of the selected model are not normally distributed.

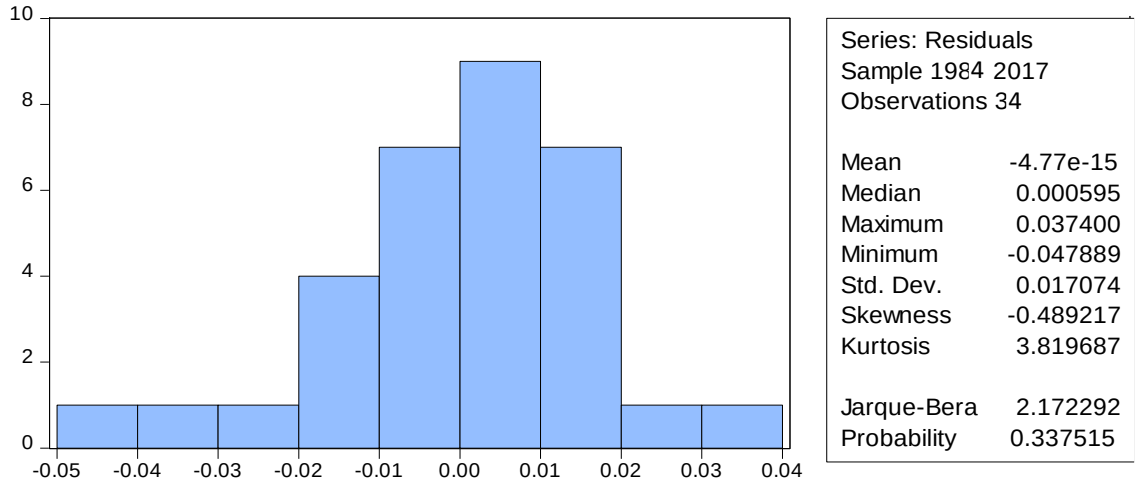
From the following Table -7.21 and Fig.-7.21 it has been postulated that the residuals are normally distributed. The p-value of Jarque-Bera test is 0.337515 (greater than 0.05). The null hypothesis cannot be rejected (normal distribution of residuals).

Table - 7.21: Result of Jarque-Bera Test (LnRGDP)

Residual	p-value	Decision
e_{ti}	0.337515	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

Fig.-7.21: Normality of Residuals (LnRGDP)

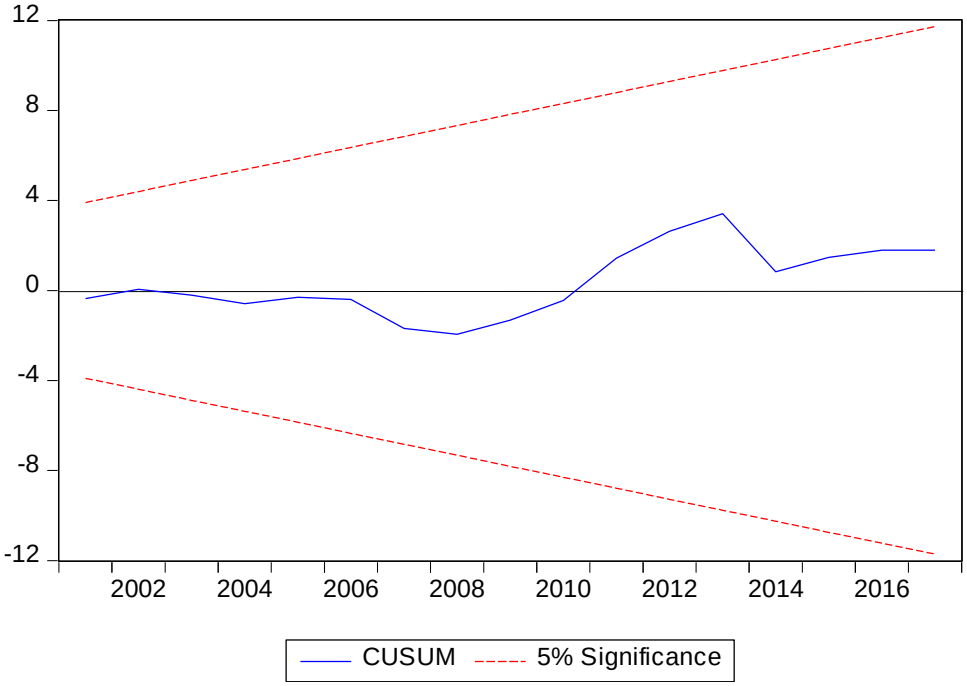


Source: *EVIEWS Output (Derived from Collected Data)*

7.4.2.7 Stability Test

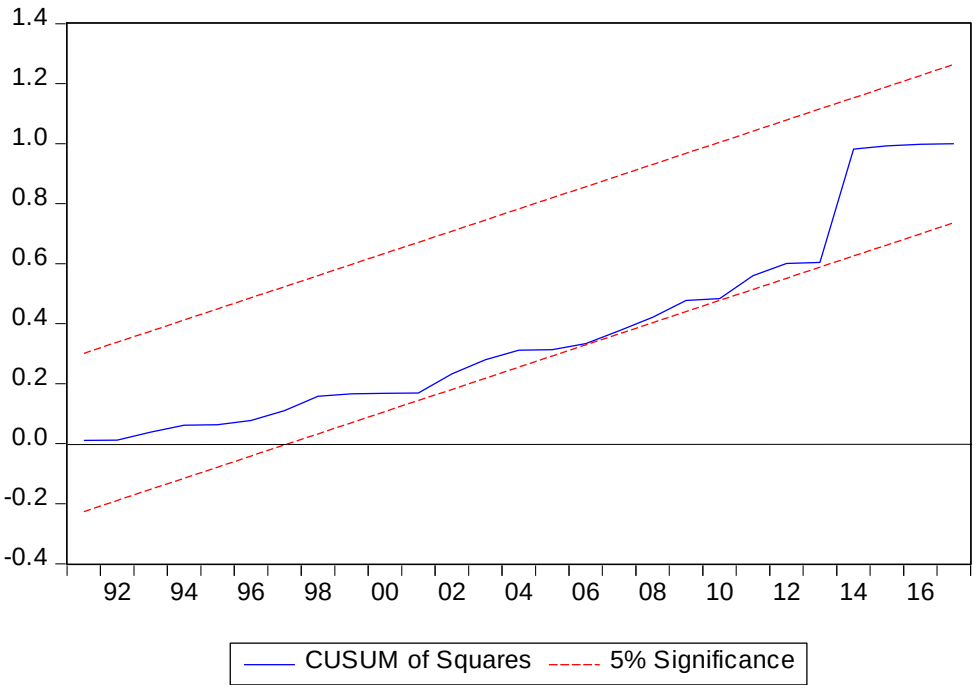
Stability test is conducted to find out unanticipated change in the parameters of regression analysis of series variables. It is known as structural break. Model having structural break leads to prediction errors and makes results undependable. David Forbes Hendry introduces of the test, postulates that coefficients usually cause forecasting failure due to lack of stability (Ahmed *et al.*, 2016). The study employs CUSUM (Cumulative Sum) and CUSUMSQ (Cumulative Sum of Squares) technique to investigate stability. The decision of test is based on the position of the blue line (curved). If, the curved line falls within the two straight lines, the model is stable. There is no structural break in the model both in Fig.-7.22 and Fig.-7.23, the blue lines (curved) are within the two red straight lines. So the model is stable at 5% level of significance.

Fig.-7.22: CUSUM Test for Stability (LnRGDP)



Source: *EVIEWS Output (Derived from Collected Data)*

Fig.-7.23: CUSUM Square Test for Stability (LnRGDP)



Source: *EVIEWS Output (Derived from Collected Data)*

7.4.3 LnGDPCAP and ARDL

The model has investigated the long run and short run relation among per capita GDP (LnGDPCAP) and other bank specific variables namely net loan and advances (LnLAD), export earnings by PCBs (LnEXP), investment by PCBs (LnINV), total income of PCBs (LnGIT), number of branches of PCBs (LnNOB) and non-performing loan (LnNPL).

The ARDL model estimation consists of model selection, cointegration check by bounds test, estimation of long run and short run coefficients, check of residuals for serial correlation, normality, hetroscadasticity and stability.

Optimal Lag Selection: Before model estimation, optimal lag order must be selected. The model has traced the long run and short run relation between per capita GDP and role of PCBs. The lag order of 2 is appropriate as it has lowest AIC (-4.37614) and SBC (-3.9639) value at different lag order (Table -7.22).

Table -7.22: Optimal Lag Selection (LnGDPCAP)

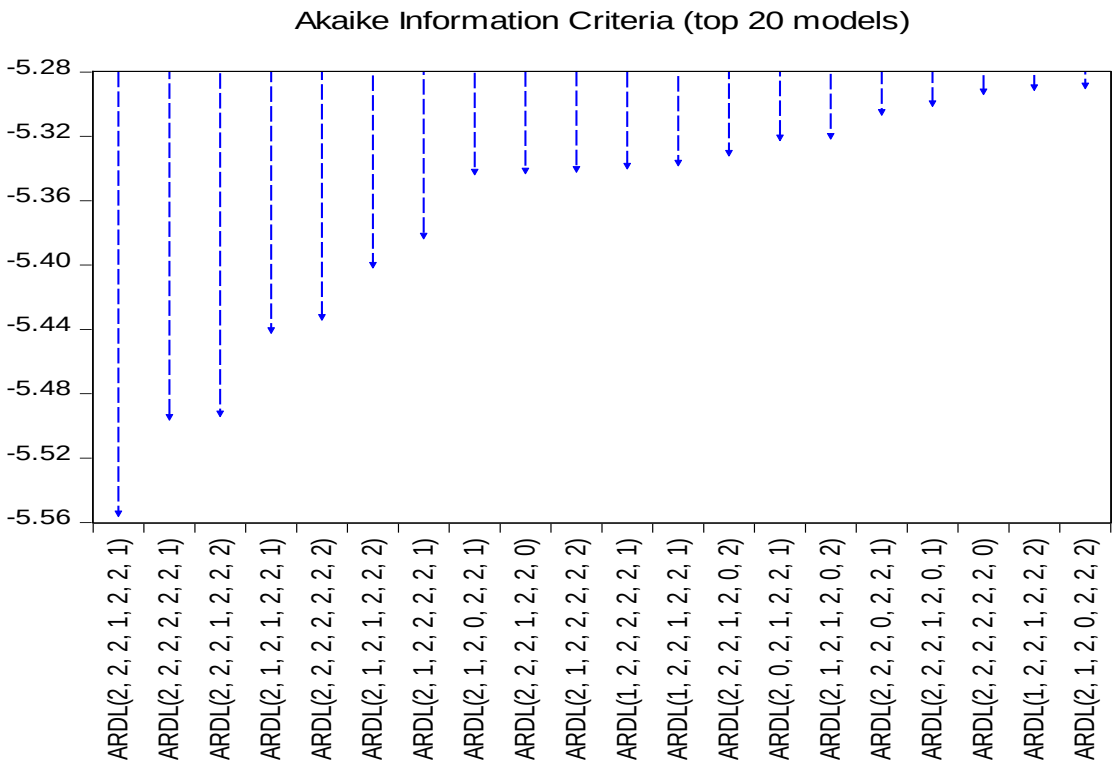
Lag	LogL	LR	AIC	SBC	HQ
0	42.8529	NA	-2.24081	-1.9208	-2.1345
1	75.3969	48.8161	-4.2123	-3.8459	-4.0909
2	79.0183	5.2057*	-4.37614*	-3.9639*	-4.2395
3	81.4921	5.3123	-4.1781	-3.9121	-4.3241*

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.3.1 Model Selection

To finalize the order of the model ARDL, AIC value is used. Among the top 20 models the lowest AIC value is -5.56 (Fig.-7.24). Based on AIC, the selected ARDL is of order (2, 2, 2, 1, 2, 2, 1). In this model, the value of AIC is -5.56 which is lowest among top 20 models (Fig.-7.24).The model selected based on AIC value has lowest errors for prediction (Fig.-7.24) lower the value of AIC, better the model all the time.

Fig.-7.24: ARDL Model Selection (LnGDPCAP)



Source: EVIEWS Output *(Derived from Collected Data)*

7.4.3.2 Test of Residuals

Specific tests should be conducted to detect serial correlation or autocorrelation and changing variance or heteroscedasticity. When the value of a series depends on the previous values of the same series, autocorrelation and heteroscedasticity of errors may create misleading findings. Inconclusive results may be found. So, in the analysis involving series observation, errors must be checked for autocorrelation and heteroscedasticity.

(i) Test of Serial Correlation (Breusch-Godfrey Serial Correlation LM Test)

To find out errors' serial correlation the Breusch-Godfrey Lagrange Multiplier test has been applied. The test is named after Trevor S. Breusch and Leslie G. Godfrey. The test proceeds using residuals in regression and deriving a test statistic (χ^2 statistic).

Decision Rule: The decision of test is taken observing the probability value or p-value. If the p-value is greater than 0.05 (95% confidence interval), the null

hypothesis (H_0) of the test can't be rejected. The hypotheses of the test are stated below.

Null Hypothesis (H_0): The model is free from serial correlation.

Alternative Hypothesis (H_1)**:** The model is not free from serial correlation.

Table -7.23: Result of Breusch-Godfrey Lagrange Multiplier Test (LnGDPCAP)

Model	**Dependent Variable**	**Forcing/ Independent Variable**	**Chi-square (χ^2) Statistic**	**p-value**	**Decision**	**Significance Level**
$F_{LnGDPCAP}$	LnGDPCAP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	3.50406	0.0612	Accepted	5%

Source: *EVIEWS Output (Derived from Collected Data)*

The p-value is 6.12% which is higher than 5%. So, null hypothesis cannot be rejected. So, the model is free from serial correlation at 5% level of significance (Table -7.23).

(ii) Test of Heteroscedasticity (Breusch-Pagan-Godfrey Heteroskedasticity Test)

The Breusch-Pagan-Godfrey test has been applied to notice the errors' dispersion which is known as heteroscedasticity. The test proceeds using residuals in regression and deriving a test statistic (χ^2statistic).

Decision Rule: The decision of test is taken observing the probability value or p-value. If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected. The hypotheses of the test are stated below.

Null Hypothesis (H_0): The model is homoscedastic in nature.

Alternative Hypothesis (H_1): The model is not homoscedastic in nature.

From the following Table -7.24, it has been observed that the p-value of the test is 0.4229 (greater than 0.05). So, the null hypothesis is accepted. The selected model is out of heteroscedasticity problem. The model is homoscadastic in nature.

Table -7.24: Result of Breusch-Pagan-Godfrey Test (LnGDPCAP)

Model	Dependent Variable	Forcing/ Independent Variable	Chi-square (χ^2) Statistic	p-value	Decision	Significance Level
$F_{LnGDPCAP}$	LnGDPCAP	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	18.50394	0.4229	Accepted	5%

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.3.3 Bounds Test

To recognize the role of PCBs to per capita nominal GDP (LnGDPCAP) in the long run, bounds test based on AIC in ARDL structure has been applied. The test estimate of ARDL equation with OLS technique compares the value of F- statistics with both the value of upper and lower bounds. The value of F-statistic should be compared with Pessaran critical value at 5% level. The strict guideline is that the value of F-statistic should be greater than the upper bound critical value at 5% level of significance. The F-statistic value (7.9159) is greater than the upper bound I(1) value (3.61) at 5% level of significance (Table -7.25). The null hypothesis can be rejected (nonexistence of long run relationship among the variables). The functions of PCBs and per capita nominal GDP are linked in long run. All the variables move together in the long run. The hypotheses of the test are stated below.

Null Hypothesis (H_0): Long run relationship does not exist among the variables.

Alternative Hypothesis (H_1): Long run relationship exists among the variables.

Table -7.25: Result of Bounds Test (LnGDPCAP)

Model	Forcing Variable	F-statistic	Critical Value						Co-integration
			1%		5%		10%		
			I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
$F_{LnGDPCAP}$	LnNOB LnLAD LnEXP LnINV LnGIT LnNPL	7.9159	3.15	4.43	2.45	3.61	2.12	3.23	Present at 5%

Source: *EVIEWS Output (Derived from Collected Data)*

The value of F-statistic is 7.9159. The value is higher than the upper bound at 1%, 5% and 10% level of significance. So, per capita nominal GDP (LnGDPCAP) and PCBs' functions are related in the long run (Table -7.25).

7.4.3.4 Long Run Coefficients of Selected ARDL

The long run coefficients have been obtained using AIC. Table -7.26 is showing the results. Previous year's values of the variables namely per capita nominal GDP, number of branches (LnNOB), net loan and advances (LnLAD), export earnings by PCBs (LnEXP) and investment by PCBs (LnINV) have significantly changed the value of current year's per capita nominal GDP (LnGDPCAP). The p-values of the t-statistic of the aforementioned variables are less than 0.05, thereby rejecting the null hypotheses of no relationship among the variables and economic growth. Non-performing loan (LnNPL) and total income of PCBs (LnGIT) have no meaningful impact on per capita nominal GDP (LnGDPCAP).

Table -7.26: Long Run Coefficients of Selected ARDL Model using Akaike Information Criterion (AIC) [LnGDPCAP]

Regressors	ARDL (2,2,2,1,2,2,1)			
	Coefficient	**Standard Error**	**t-statistic**	**p-value**
LnGDPCAP(-1)	0.2846	0.0836	-3.4049	0.0047*
LnNOB(-1)	0.20482	0.04922	4.1612	0.0011*
LnLAD(-1)	0.1280	0.1339	3.7754	0.0123*
LnNPL(-1)	-0.00446	0.00432	1.03271	0.3206
LnEXP(-1)	0.03146	0.02434	-0.6993	0.0288*
LnGIT(-1)	-0.0198	0.0315	-0.6293	0.5400
LnINV(-1)	0.0996	0.03222	-3.09092	0.0086*
R-square = 0.844563 Adjusted R-square = 0.834583				

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.3.5 Short Run Coefficients (Short Run Dynamic Adjustment using Error Correction Model [ECM] based on AIC)

Short run Dynamic Adjustment using Error Correction Model (ECM) based on AIC shows the role of private commercial banks (PCBs) to per capita nominal GDP (LnGDPCAP) in short run (Table -7.27). If the p-value of t-statistic of a variable is less than 0.05, this means that the variable is related to short run economic growth. The ECM_{t-1} is statistically significant and negative. So, it can be postulated that the speed of adjustment (28.46%) is highest among the three models. The value of per capita nominal GDP (LnGDPCAP)has been affected by the value of per capita nominal GDP (LnGDPCAP), number of branches (LnNOB), net loan and advances (LnLAD), export earnings by PCBs (LnEXP), and total income of PCBs (LnGIT) at one period lag. Current values of number of branches (LnNOB), export earnings by PCBs (LnEXP) have also an impact on per capita nominal GDP (LnGDPCAP) at present. The following Table -7.27 showing the outcome.

The ECM_{t-1} coefficient is negative and statistically evident. The coefficientECM_{t-1} shows the speed of adjustment towards long run equilibrium. The whole system can

get back to equilibrium at the speed of 28.46%. The speed of adjustment implies the adjustment process of any previous shock to recent year's stability.

Table -7.27: Short Run Coefficients (LnGDPCAP)

Model	Dependent Variable	Regressors	Coefficient	Standard Error	p-value
ARDL (2,2,2,1,2,2,1)	ΔLnGDPCAP	Constant	-3.894177	0.44729	0.0000*
		$\Delta LnGDPCAP_{t-1}$	0.291086	0.10586	0.0165*
		$\Delta LnNOB_t$	0.30211	0.04663	0.0000*
		$\Delta LnNOB_{t-1}$	0.07316	0.02849	0.0234*
		$\Delta LnLAD_t$	0.0485	0.02336	0.0501
		$\Delta LnLAD_{t-1}$	0.08805	0.02320	0.0022*
		$\Delta LnNPL_t$	-0.003599	0.00187	0.0770
		$\Delta LnEXP_t$	0.05211	0.0213	0.0293*
		$\Delta LnEXP_{t-1}$	0.13624	0.02336	0.0001*
		$\Delta LnGIT_t$	0.00171	0.01913	0.9301
		$\Delta LnGIT_{t-1}$	0.08549	0.02427	0.0037*
		$\Delta LnINV_t$	-0.04661	0.01326	10.0038
		ECM_{t-1}	-0.2846	0.03245	0.0000*

Source: *EVIEWS Output (Derived from Collected Data)*

7.4.3.6 Model Diagnostic Test

The model has been tested for autocorrelation, heteroscedasticity, functional form and normality. The validation for autocorrelation and heteroscedasticity has been shown in previous sections.

(i) Model Specification Test (Ramsey's RESET Test)

To check the functional form of the selected model (LnGDPCAP), RESET has been applied. The test calculates the value of the F-statistic. The null hypothesis states the absence of misspecification of the model.

Decision Rule: The decision of rejection or acceptance of the hypotheses is based on the comparison of p-value at 5% level (95% confidence interval). If p-value is greater than 0.05, the model is free from misspecification. The hypotheses of the tests are stated below.

Null Hypothesis (H_0): The model is free from misspecification.

Alternative Hypothesis (H_1)**:** The model is not free from misspecification.

Table -7.28: Result of RESET Test (LnGDPCAP)

Test Statistic	Value	Degree of Freedom	p-value	Decision
F-statistic	1.15065	(1, 21)	0.3045	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

From the above Table -7.28, it has been observed that the p-value of the test is 0.3045 at 5% level of significance. The null hypothesis (stating that the model is free from misspecification) can't be rejected. So, the model is correctly specified.

(ii) Normality Test

To investigate normality of the residuals of per capita nominal GDP (LnGDPCAP) model, Jarque-Bera test has been applied. The decision rule and hypotheses of the tests have been stated below. The null and alternative hypotheses state the presence of normally distributed residuals and absence of normally distributed residuals respectively.

Decision Rule: The decision of test is taken by observing the probability value or p-value. If the p-value is greater than the significance level (fixed for the model), then the null hypothesis cannot be rejected and vice versa.

In the present test the confidence interval has been 95%.If the p-value is greater than the 0.05, the null hypothesis (H_0) of the test can't be rejected.

Null Hypothesis (H_0): Residuals of the selected model are normally distributed.

Alternative Hypothesis (H_1)**:** Residuals of the selected model are not normally distributed.

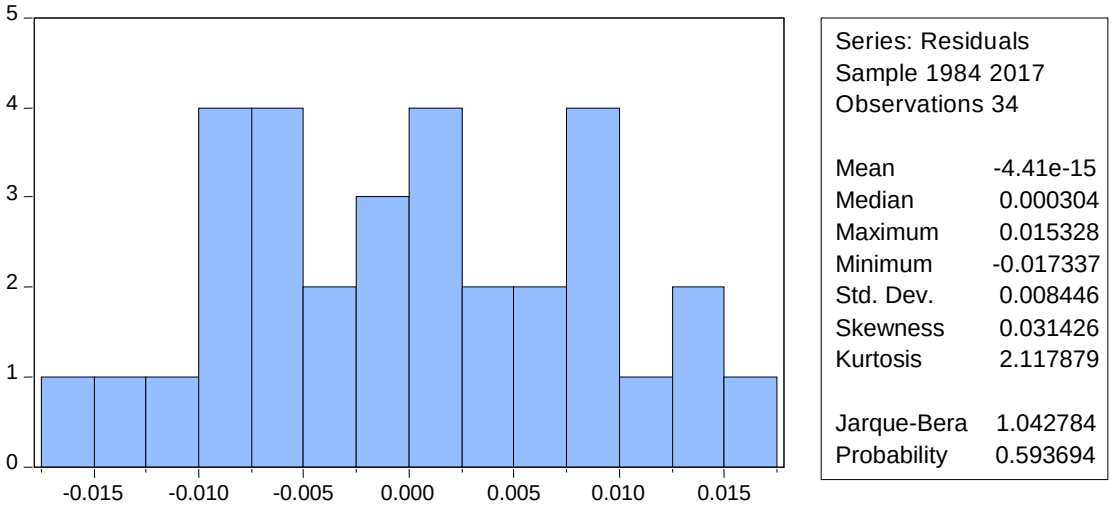
The Table -7.29 and Fig.-7.25 have shown the normality of residuals. The p-value of Jarque-Bera test is 0.593694 at 5% level of significance which is greater than 0.05. So, the null hypothesis (stating the normal distribution of residuals) can't be rejected. The Residuals of the selected model are normally distributed.

Table -7.29: Result of Jarque-Bera Test (LnGDPCAP)

Residual	p-value	Decision
et_i	0.593694	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

Fig.-7.25: Normality of Residuals (LnGDPCAP)

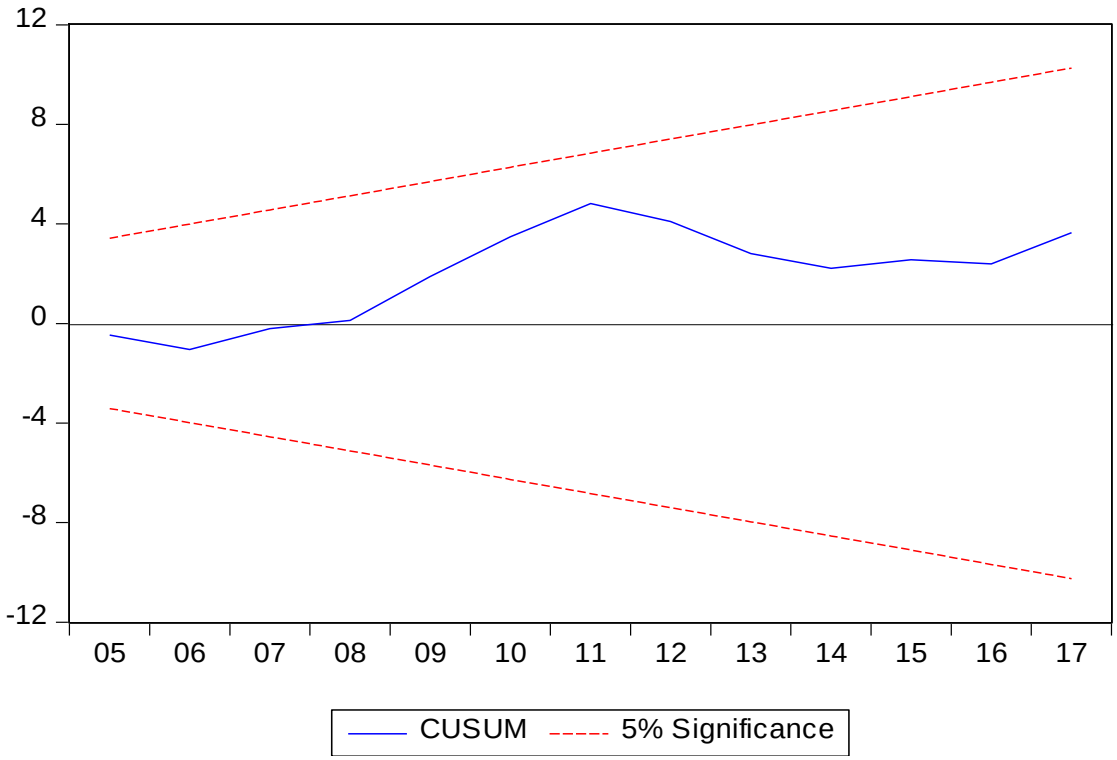


Source: *EVIEWS Output (Derived from Collected Data)*

7.4.3.7 Stability Test

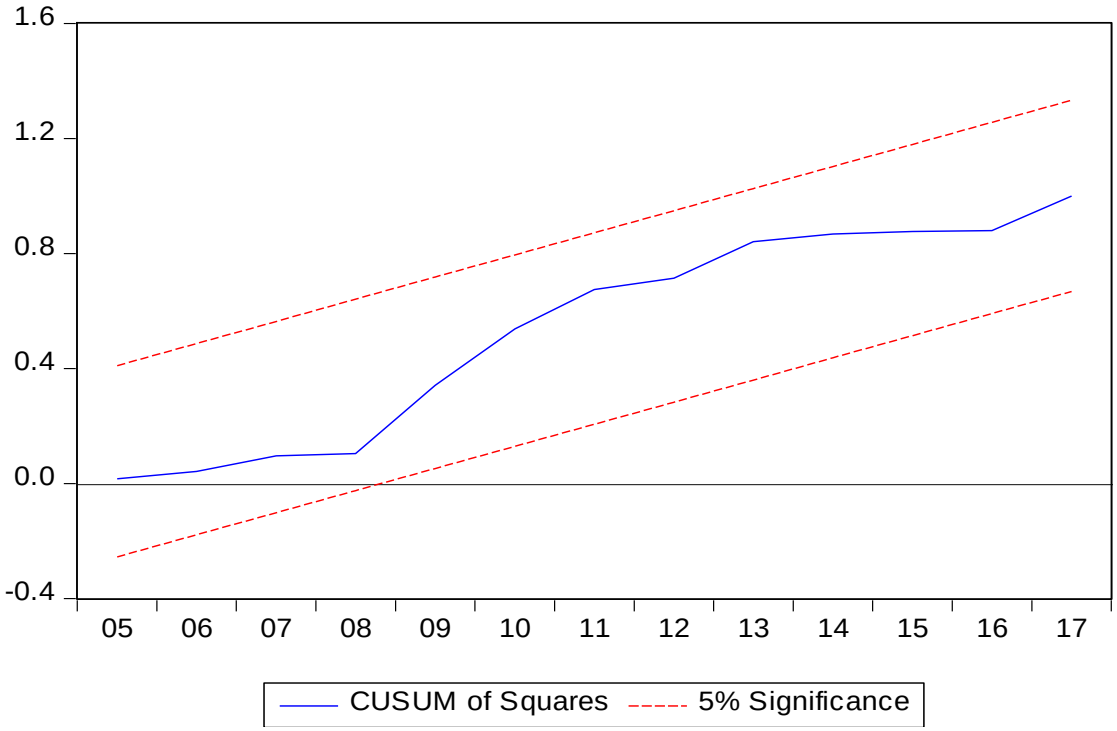
The model is free from unanticipated change and stable. In Fig.-7.26 and Fig.-7.27, the blue lines are within the straight red lines. Stability test is conducted to find out unanticipated change in the parameters of regression analysis of series variables. It is known as structural break. Model having structural break leads to prediction errors and makes results undependable. David Forbes Hendry introduces the test, postulates that coefficients usually cause forecasting failure due to lack of stability (Ahmed *et al.*, 2015). The study employs CUSUM (Cumulative Sum) and CUSUMSQ (Cumulative Sum of Squares) technique to investigate stability. The decision of test is based on the position of the blue line (curved). If, the curved line falls within the two straight lines, the model is stable.

Fig.-7.26: CUSUM Test for Stability (LnGDPCAP)



Source: *EVIEWS Output (Derived from Collected Data)*

Fig.-7.27: CUSUM Square Test for Stability (LnGDPCAP)



Source: *EVIEWS Output (Derived from Collected Data)*

7.5 GRANGER CAUSALITY TEST

In time series, when a series causes the variation of another series, then it is termed as cause-effect relation. But it is not true cause and effect. Actually it is Granger-cause or 'precedence' (Leamer, 1985). When the lagged values of any variable help forecast another variable, then it is assumed that cause-and-effect relation exists. The test is introduced by Clive Granger Causality test. The test derives the cause and effect in null hypothesis. The present study applies the test to detect whether private commercial banking activities promote economic growth or economic growth push the banking sector (private) to go up. The three representatives of economic growth namely nominal GDP (LnGDP), real GDP (LnRGDP) and per capita nominal GDP (LnGDPCAP) are tested with banking activities which are net loan and advances of PCBs (LnLAD), number of branches of PCBs (LnNOB), non-performing loan of PCBs (LnNPL), total income of PCBs (LnGIT), export earnings of PCBs (LnEXT), and investment by PCBs (lnINV).

7.5.1 NGDP

It has been argued from the subsequent Table -7.30 that there is no Granger relationship among the variables *viz.;* number of branches (LnNOB), total income (LnGIT), non-performing loan (LnNPL), and nominal GDP (LnNGDP). Net loan and advances (LnLAD), export earnings by private commercial banks (PCBs) and nominal GDP (LnNGDP) are bidirectionally related. The relation between nominal GDP (LnNGDP) and investment by PCBs (LnINV) is unidirectional, from LnINV to LnNGDP. The decision has been taken by observing the p-value of the F-statistic. With a significance level of 0.05, the confidence interval is 95 percent. The p-value is 0.0942 meaning that the null hypotheses of no Granger Cause running from LnNOB to LnNGDP cannot be rejected and so on for the other hypotheses.

Table -7.30: Results of Granger Causality Test (NGDP)

Null Hypothesis	F-statistic	p-value	Decision
LnNOB does not Granger Cause LnNGDP	2.99501	0.0942	Accepted
LnNGDP does not Granger Cause LnNOB	11.1846	0.0823	Accepted
LnLAD does not Granger Cause LnNGDP	2.55698	0.0106	Rejected
LnNGDP does not Granger Cause LnLAD	4.7675	0.0372	Rejected
LnNPL does not Granger Cause LnNGDP	1.51778	0.2279	Accepted
LnNGDP does not Granger Cause LnNPL	0.31899	0.5766	Accepted
LnEXP does not Granger Cause LnNGDP	3.0637	0.0165	Rejected
LnNGDP does not Granger Cause LnEXP	3.0137	0.0291	Rejected
LnGIT does not Granger Cause LnNGDP	2.43192	0.1292	Accepted
LnNGDP does not Granger Cause LnGIT	11.7902	0.0618	Accepted
LnINV does not Granger Cause LnNGDP	2.8847	0.0201	Rejected
LnNGDP does not Granger Cause LnINV	2.2748	0.1423	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

7.5.2 RGDP

From Table -7.31 it has been observed that, net loan and advances **(**LnLAD) Granger causes real GDP (LnRGDP) and LnRGDP also Granger causes LnLAD. So, the relation is bidirectional. Non-performing loan (LnNPL) Granger causes LnRGDP unidirectionally.

The Granger cause relation between export earnings by PCBs (LnEXP) and LnRGDP is bidirectional as both the null hypotheses are rejected. There exists no Granger cause relation between number of branches (LnNOB), total income by PCBs (LnGIT) and

LnRGDP as both the null hypotheses have been accepted. The rejection of null hypothesis proves unidirectional relation running from investment by PCBs (LnINV) to LnRGDP. The results are shown in the following table (Table -7.31). If the p-value of F-statistic is greater than 0.05 the null hypothesis cannot be rejected and vice versa. The p-value (0.0213) is less than 0.05 meaning that the null hypothesis of no Granger Cause running from LnLAD to LnRGDP cannot be accepted and so on for the other hypotheses.

Table -7.31: Results of Granger Causality Test (RGDP)

Null Hypothesis	F-statistic	p-value	Decision
LnNOB does not Granger Cause LnRGDP	0.51563	0.6031	Accepted
LnRGDP does not Granger Cause LnNOB	0.08216	0.9214	Accepted
LnLAD does not Granger Cause LnRGDP	5.123	0.0213	Rejected
LnRGDP does not Granger Cause LnLAD	6.132	0.0013	Rejected
LnNPL does not Granger Cause LnRGDP	0.39949	0.0047	Rejected
LnRGDP does not Granger Cause LnNPL	1.33832	0.2798	Accepted
LnEXP does not Granger Cause LnRGDP	1.21789	0.0122	Rejected
LnRGDP does not Granger Cause LnEXP	3.2147	0.0433	Rejected
LnGIT does not Granger Cause LnRGDP	2.1718	0.4551	Accepted
LnRGDP does not Granger Cause LnGIT	1.9123	0.2523	Accepted
LnINV does not Granger Cause LnRGDP	2.5931	0.0001	Rejected
LnRGDP does not Granger Cause LnINV	2.1942	0.3552	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

7.5.3 GDPCAP

LnGDPCAP Granger causes LnNOB in unidirectional way. LnLAD and LnGDPCAP Granger cause birectionally. There is no Granger causation between LnNPL and LnGDPCAP. LnEXP Granger causes LnGDPCAP but LnGDPCAP does not Granger cause LnEXP. The Granger relation is running from LnINV to LnGDPCAP unidirectionally. If the p-value of F-statistic is less than 0.05 the null hypothesis can be rejected and vice versa. The p-value of the null hypothesis of no Granger Cause running from LnNOB to LnGDPCAP is 0.6797 meaning that the null hypothesis is accepted. The results have been depicted in the following table (Table -7.32).

Table -7.32: Results of Granger Causality Test (GDPCAP)

Null Hypothesis	F-statistic	p-value	Decision
LnNOB does not Granger Cause LnGDPCAP	0.58133	0.6797	Accepted
LnGDPCAP does not Granger Cause LnNOB	4.06405	0.0143	Rejected
LnLAD does not Granger Cause LnGDPCAP	4.9123	0.0132	Rejected
LnGDPCAP does not Granger Cause LnLAD	5.1517	0.0059	Rejected
LnNPL does not Granger Cause LnGDPCAP	0.36933	0.6948	Accepted
LnGDPCAP does not Granger Cause LnNPL	2.18639	0.1325	Accepted
LnEXP does not Granger Cause LnGDPCAP	2.9166	0.0323	Rejected
LnGDPCAP does not Granger Cause LnEXP	0.13374	0.8754	Accepted
LnGIT does not Granger Cause LnGDPCAP	4.23696	0.2284	Accepted
LnGDPCAP does not Granger Cause LnGIT	1.19433	0.4039	Accepted
LnINV does not Granger Cause LnGDPCAP	4.9133	0.0021	Rejected
LnGDPCAP does not Granger Cause LnINV	4.61257	0.4002	Accepted

Source: *EVIEWS Output (Derived from Collected Data)*

7.5.4 Alternative Hypotheses of Granger Causality Test

The study has placed the alternative hypotheses of Granger Causality Test for NGDP, RGDP and GDPCAP in the Table -7.33, Table -7.34 and Table -7.35 respectively.

Table -7.33: Alternative Hypotheses of Granger Causality Test (NGDP)

Alternative Hypothesis
LnNOB does Granger Cause LnNGDP
LnNGDP does Granger Cause LnNOB
LnLAD does Granger Cause LnNGDP
LnNGDP does Granger Cause LnLAD
LnNPL does Granger Cause LnNGDP
LnNGDP does Granger Cause LnNPL
LnEXP does Granger Cause LnNGDP
LnNGDP does Granger Cause LnEXP
LnGIT does Granger Cause LnNGDP
LnNGDP does Granger Cause LnGIT
LnINV does Granger Cause LnNGDP
LnNGDP does Granger Cause LnINV

Table -7.34: Alternative Hypotheses of Granger Causality Test (RGDP)

Alternative Hypothesis
LnNOB does Granger Cause LnRGDP
LnRGDP does Granger Cause LnNOB
LnLAD does Granger Cause LnRGDP
LnRGDP does Granger Cause LnLAD
LnNPL does Granger Cause LnRGDP
LnRGDP does Granger Cause LnNPL
LnEXP does Granger Cause LnRGDP
LnRGDP does Granger Cause LnEXP
LnGIT does Granger Cause LnRGDP
LnRGDP does Granger Cause LnGIT
LnINV does Granger Cause LnRGDP
LnRGDP does Granger Cause LnINV

Table -7.35: Alternative Hypotheses of Granger Causality Test (GDPCAP)

Alternative Hypothesis
LnNOB does Granger Cause LnGDPCAP
LnGDPCAP does Granger Cause LnNOB
LnLAD does Granger Cause LnGDPCAP
LnGDPCAP does Granger Cause LnLAD
LnNPL does Granger Cause LnGDPCAP
LnGDPCAP does Granger Cause LnNPL
LnEXP does Granger Cause LnGDPCAP
LnGDPCAP does Granger Cause LnEXP
LnGIT does Granger Cause LnGDPCAP
LnGDPCAP does Granger Cause LnGIT
LnINV does Granger Cause LnGDPCAP
LnGDPCAP does Granger Cause LnINV

Chapter 8
FINDINGS, POLICY RECOMMENDATIONS AND CONCLUSION

The present chapter explores the findings and implications of the results. The chapter has carefully observed the messages of the results for Bangladesh's economy. The prime responsibility of this chapter is to portray the messages and find out the policy recommendations. The key points (findings) and implications are extracted from the analyses and results. The chapter proposed policies based on findings aimed at fostering economic growth, encouraging the role of private commercial banks in accelerating economic growth, and promoting the relationship between development of private commercial banks (PCBs) and economic growth.

8.1 FINDINGS OF THE STUDY

The study is ready to disclose the findings derived from the results and make a discussion on findings. The study has started the journey with the inspection of some questions. It is widely known that economic growth determines the fortune of a nation. Economic freedom makes a nation free from agony of hunger, lack of national self-esteem, foreign enslavement and economic inferiority complex. The study has started with the question regarding the pattern of economic growth. How the growth has occurred? Bangladesh is a country enfolded with diverse anticipated and unanticipated clogs. The study has tried to find the growth path despite the existence of clogs. A profound interest has been observed in the study regarding the question of the role of PCBs to economic growth. Hence, the study has investigated the role of PCBs to accelerate economic growth. Finally, the study has scrutinized whether the support of PCBs has pushed the economy to grow or economic growth has pressed on the development of PCBs.

8.1.1 Pattern of Economic Growth

To investigate the pattern, linear trend models have been estimated. The estimation techniques of economic growth pattern always engage debates and controversy. To complement the results of estimated models, graphical presentations have been used. The trend is a component of pattern of the series variable. For economic growth, an upward trend has been expected. It cannot be guaranteed to be present for the economy of Bangladesh at all times. The trend may be provisionally ineffective by disruptive events. The estimated trend models have captured the trend and graphs

have presented all the components of a series variable. As pattern has been checked in relation to time frame, stationarity of the variables representing economic growth may cause misleading results. The investigation on economic growth was decade-wise. It has covered an array of factors associated with growth in different decades. The investigation has resulted in the following key findings.

i) Bangladesh has demonstrated the competence to achieve significant economic growth. The positive trend of nominal GDP, real GDP and per capita GDP has proved the national endeavors to growth despite the challenges and impediments in different decades.

ii) The pattern of economic growth has justified that Bangladesh is a country blessed with various natural resources. The ingredients of economic growth belong to Bangladesh. Discovery of new natural resources is taking place. Hence, the economy has the full-fledged natural support to growth.

iii) The three broad sectors namely the primary (agriculture), secondary (industry) and tertiary (service) including the sub sectors have continuously contributed to domestic production regardless of various problems. The service sector contribution to domestic production is the highest.

iv) There is a trend of transformation between the industry and agriculture sector in terms of sectoral growth and GDP contribution. The manufacturing sector is growing at an increasing rate than that of agriculture sector. The growth of manufacturing sector has pushed GDP to grow up.

v) Economic growth of Bangladesh has been blessed with labour productivity. All types of people of the labour force (the skilled, semi-skilled and unskilled) have contribution to growth. The inflow of remittance has justified the labour productivity. Since 1980s, remittance has a noteworthy role to economic growth. In the late

1880s, Bangladesh observed the benefits of human capital (GNP>GDP). Bangladesh has possibility to achieve higher economic growth rate by utilizing human capital.

vi) Economic growth of Bangladesh recognizes the assistance of international donors to overcome the disruptions to growth in different decades. Bangladesh has received foreign aid, grants and loan along with expertise from bilateral and multilateral donors. Bangladesh memorizes the help with gratitude.

vii) The tendency of nominal GDP, real GDP and per capita GDP to move upward has reestablished the positive association between financial capital and economic growth. Continuous reforms have made gradual upgradation of domestic financial system. Increasing investment in private sector has implied an augmentation of marginal propensity to save.

viii) The positive trend of nominal GDP, real GDP and per capita GDP has confirmed the contribution of privatization. Bangladesh is moving towards market economy. Market economy (leading to capitalism) has encouraged individuals to take initiatives of economic activities. Again, market economy is intertwined with private sector growth. To survive, the privately owned enterprises do not shut down production amidst heterogeneous crisis. Economic growth can smell the sweat, hear the crisis and feel the contribution of private sector.

ix) Inclusion of diversified sectors to GDP in different decades has made the trend of economic growth positive. Emergence of new sectors ensures utilization of resources, employment opportunities, income generation thereby more economic growth. On the other hand, informal sector has unrecognized contribution to economic growth.

x) Liberalized trade policies and openness to globalization have assisted the economy to grow. Bangladesh's export has been augmented owing to liberalization. The positive trend of growth has indebted to export of the economy.

xi) In recent decades, the economic growth has gradually turned into socio-economic development. The economy can reap the benefits of economic growth. The socio-economic development has induced aggregate demand thereby domestic production to grow further. Despite development, there exist socio-economic problems.

xii) On the one hand, Bangladesh is indebted to international help, on the other hand she falls in trouble due to international crisis. The economy has to adjust with international prices of imported commodities (oil, machineries etc.). Hike in oil price in international market gives birth to cost-push inflation. Bangladesh has felt unemployment problem and remittance crisis due to political instability in other countries. So, it can be argued that more growth would be in absence of these crises.

xiii) Bangladesh has fallen in trouble and image crisis due to the irregularities occurring in various sectors which are harmful to export, import, foreign loan and remittance. However, the backward and forward linkage of economic growth has suffered recurrently. Hence, the irregularities have an adverse impact on economic growth.

xiv) The upward movement of nominal GDP, real GDP and per capita GDP conveys the message that political crisis is not the prime hindrance to economic growth. Albeit political turmoil, growth has taken place. It is undeniable that Bangladesh has passed through political commotion in different decades.

xv) Bangladesh has suffered due to natural disasters and calamities in every decade. Indeed, natural calamity is one of the prime impediments to economic growth as it destroys resources and output. Remedial measures have been taken to minimize the disastrous effects. But, the frequency of natural disaster and calamity is increasing implying adverse impact on positive trend of economic growth.

xvi) Infrastructural development and utility supports are of crucial importance for economic growth. Infrastructural development has occurred and benefitted economic growth in different decades. But Bangladesh still needs more infrastructural development and utility supports to accelerate economic growth. Sound infrastructure promotes regional growth leading to national economic growth.

xvii) Despite various reform measures, the components of financial system of BD are not symmetrical in terms of services, structure, operational efficiency and acceptance to mass people. Though, inclusion of the new PCBs implies satisfactory role of PCBs to economic growth, the contribution of other components is not adequate. In addition, the irregularities of capital market undermine the potential of domestic financial system.

8.1.2 Role of Private Commercial Banks to Economic Growth

The study has examined the role of PCBs to economic growth. To examine the role, the study has proposed a model. The study has also proposed some hypotheses to investigate the role of PCBs to accelerate economic growth. According to the proposed model, PCBs have lent hand to domestic production through performing economic functions. All the bank specific variables have associated in the long run with nominal GDP, real GDP and nominal per capita GDP. The results of stationarity diagnostic have made the selection of ARDL model to estimate the proposed model of the study. The role of PCBs in economic growth has been divided into two by the ARDL, namely the short run and the long run. The decision whether the variables have been stationary or nonstationary at level and difference form, the widely used Augmented Dickey-Fuller test along with Dickey-Fuller and graphical tests have been applied. The selection of ARDL model has followed the results of stationarity diagnostic. The ARDL model estimation has been applied to the three measures of economic growth, *i.e.*, nominal GDP, real GDP and per capita nominal GDP. The reason behind the estimation using three measures is to detect the true impact and role of PCBs to output. As detection is not error free, 5% level of significance has been accepted in measurement process. However, in the three ARDL models estimated, the optimal lag has been selected using mostly used criteria namely AIC and SBC. The values of AIC in the three ARDL models were the lowest among top 20 models. Cointegration has been checked by bounds test. The models were free from serial correlation at 5% level of significance. The study has satisfied with the models as those were homoscedastic in nature and the residuals were normally distributed. The models were free from misspecification. So, the models were correctly specified and stable at 5% level of significance. The three models, estimated to assess the role of PCBs to economic growth acceleration, are free from unexpected deviation or change of coefficients. The models are structurally stable meaning that PCBs will operate smoothly as operated before. Nonexistence of structural break has made the forecast of sound performance of PCBs to growth.

All the bank specific variables have associated in the long run with nominal GDP, real GDP and nominal per capita GDP. Though some variables have substantial statistical significant impacts, some others have impact not up to satisfactory level. As they are cointegrated, the variables have scope to work further in favor of economic growth.

The study has derived the following key points from the analyses and result for short run and long run.

8.1.2 (a) Role of Private Commercial Banks to Economic Growth in the Short Run

The estimated three ARDL models have shown the short run changes by deriving error correction model (ECM) with the help of a linear transformation. The key points for short run have been discussed below.

i) The estimated three models have supported the view of slow adjustment to long run equilibrium due to any shock in the short run. The recovery to long run stability has proceeded slowly. Economic growth has been hurt despite smooth support of PCBs. Any shock in current year has impeded the cointegration of PCBs and economic growth in succeeding years. The disruptions due to natural calamities, unanticipated policy change, faulty coordination among agencies, misappropriation of allocation of development budget, diplomatic suggestions of donors, time consuming government support, lack of accountability and bureaucratic complexities have been considered responsible to slow adjustment to long run equilibrium.

ii) The Bangladesh's economy has attained an uncertain economic stability. The stability was not for longer period. The optimism lies in the game between stability and instability. Growth and development have occurred despite the game. But the reality of recovery resulting from instability has full of pain, stress and efforts. Bangladesh's economy has been suffering since 1970s due to political crisis, economic downturns, natural disasters, recurring policy change and geo-political issues. Disruptions have taken a lot of national resources to get back to recovery.

iii) The PCBs have significant contribution to economy in the short run. The increasing number of branches has facilitated local trade and transactions in the short run. The NGDP and GDPCAP model have recognized benefit in the short run. But true output growth (the RGDP) has been out of any impact of branches. So, only the increase of branch may have temporary contribution.

iv) PCBs lending functions have promoted real GDP and per capita GDP in the short run. To keep pace with the swings of business cycle, firms can keep the lent money unutilized. Some production units have utilized previous year's loan for current year's operations.

v) Non-performing loan at one year lag has reduced real output of the economy. Some firms are suffering for non-performing loan of other firms. Some sound record-keeping firms in terms of loan recovery have been deprived of loan of some PCBs. This deprivation has been visible in real GDP model (the RGDP) in the short run.

vi) Export earnings of current year have positive influence to real output and per capita output in the short run. The export items of Bangladesh are mainly manufactured products. This type of production can be scaled up and down with short duration. Quick export delivery is possible in the short run. Export earnings at one year lag has impact on per capita output.

8.1.2 (b) Role of Private Commercial Banks to Economic Growth in the Long Run

The estimated ARDL models have shown the role of PCBs to economic growth in the long run. The key points of long run analysis have been presented below.

i) Net loan and advances have a positive impact on production. The long run coefficient of net loan and advances is statistically meaningful for all three models. Loan disbursed at current year is

used in firms both in current and next year. So, PCBs ensure capital accumulation for two consecutive years. In this way, PCBs have been minimizing the gap between financially surplus unit and deficit unit of the economy.

ii) PCBs have utilized the collected fund by providing loan and investing in domestic money and capital market. With the help of financial support, deficit units have created economic opportunities. Banks' investment has a positive impact on the economic growth as per the results of the three models estimated. In the long run, invested fund has been utilized to push the economy to grow. The economy has benefitted at the cost of high risk taken by PCBs. PCBs' investment has raised the potential of companies as raising capital from the stock market requires no collateral. Investment in current year and one period lag has inspired economy to force PCBs to continue investment. Capital market has collected the fund for long run to meet the requirements of industry and government. Investment both in money and capital market has returned with higher economic growth. The money market has worked for collection of fund to meet the working capital, recurring daily expenses of firms and requirements of government in the short run. Money market also has created a path for a bank to lend money for another bank.

iii) The study has hypothesized an association between expert earnings received by banks and GDP growth. The estimated models have revealed a positive drive of export earnings received by the private commercial banks to output augmentation. The economy has initiated massive program to export growth. Albeit undiversified products and limited overseas market, swelled expert earnings proves the acceptance of Bangladeshi products. In financial system, banks mainly are the only medium of international monetary transactions for export and imports. And export is a vital component

of total domestic production. So, as a receiver of export payment, PCBs' role is encouraging to domestic exporters and GDP growth.

iv) In the long run, real GDP (the RGDP model) and per capita GDP (the GDPCAP model) have been influenced by previous year's values. The domestic output has been composed of the production of agriculture, industry and services sectors. In agriculture sector, farmers usually produce the products which were profitable in previous year (the Cobweb Model). Farmers have a tendency to cultivate the same crops in consecutive years. The subsistence motive, risk avoidance behavior, uncertainty of getting fair price and poverty of farmers induce not to adopt product diversification. In industrial sector, it is costly to switch product type. The inconsistency of production within the consecutive years may restrain 'the economy of scale' in industrial sector. In service sector, frequent rotation of tasks may pin down the efficiency of human resources. So, employees have been assigned to perform the identical tasks to attain specialization and achieve experience. From the discussion, it can be argued that all the sectors try to maintain the current year's production type with that previous years' to a moderate extent.

v) In GDPCAP model, net loan and advances, export earnings of PCBs, investment by PCBs at one year lag, have been observed to influence the current year's per capita GDP. The production units have utilized a portion of capital got from the PCBs as loan in last year to continue production of current year.

vi) It has been hypothesized that, more branches of PCBs are associated with economic benefits. The estimated models (except GDPCAP) have revealed the worthlessness of branch number. In reality, it has been observed that, some branches are operating very poorly. The performance of these branches has been at below average. Some

branches have been closed or merged and managers have been transferred in the hope of optimal performance.

vii) All the intra and inter branches of PCBs have not been offering the same services. In the name of monopolistic competition, there exists a vague competition or dead weight loss producing monopoly due to mentionable asymmetry in private banking industry. So, these branches are additive in quantity not in quality.

viii) A new branch does not always guarantee to provide financial support to people of different strata in the locality. The influential surplus units in the vicinity have been entertained than required. The services have not reached proportionally to socially unimportant deficit units. The misallocation of services to economic units has called for branch failure. The severity of this phenomenon is high both in urban and rural areas of Bangladesh.

ix) Most of the branches have been set up generally in urban areas specifically in the capital city 'Dhaka'. The cluster of branches in one area has been a notable cause for insignificant contribution. The cluster is a probable cause of inequality of regional growth which is visible in Bangladesh. Centralized banking services may promote regional growth but undermine national economic growth in the long run.

x) The total income level (denoted as GIT) is not a significant factor to explain output growth. The GIT has been composed of interest income, investment income and noninterest income. The interest income has been the prime source of income for PCBs. To accumulate income, the PCBs have started journey with skilled and efficient management team and operating employees. Efficiency of bank personnel is a great matter to coordinate all the functions. Unfortunately, inefficiency lies with the labour force employed in PCBs. The study has revealed that efficiency loopholes reduce the

growth of domestic output at a lower extent. The employees have been going down in terms of efficiency level which is not expected. The workloads, monotonous job, unethical practices among board of directors of some PCBs have been accountable to efficiency deterioration despite training program, workshops and handsome salary packages. Gradually, the prudent decision making skill of managerial team is losing the fame. The team has to pay more attention to recover the loan and interest income. The level of interest income is reflected on the deposit interest rate. The citizens are not happy enough to invest in bank deposits. The trend of searching new mode of investment by citizens is upward. The profitability crisis not exposed literally, has paved the way to the question of existence and contribution of some of the PCBs to economic growth.

xi) Investment income of PCBs from capital market which is out of control of PCBs, is not as satisfactory as desired. The capital market needs reform. It has undergone frequent crisis in different decades. The measures taken for capital market reform are not performing at macroeconomic satisfactory level. Albeit dissatisfactory income, PCBs do not stop investing in capital market.

xii) Again, all PCBs are not identically prepared to generate noninterest income. Versatile technology oriented services are a major sources of noninterest income. The citizens are not fully prepared to enjoy the technology oriented services of PCBs. It will proceed with the level of digitalization of the country.

xiii) In real GDP model, non-performing loan (NPL) has a negative influence which is statistically supported. The impact of non-performing loan was insignificant for nominal GDP and per capita GDP model. Over the study period, NPL has not hampered nominal GDP and per capita GDP significantly. Real output growth has been undermined due to NPL. As Nominal GDP is the representative of

both output and inflation, the negative impact of NPL couldn't be detected in NGDP and GDPCAP model. NPL has been a recurring phenomenon of banking system. The present study has covered a period of 34 years, from 1984 to 2017. In 1980s and 1990s, NPL was too small. The volume of NPL was manageable and at a tolerable level for the economy up to 2010s. It is getting attraction to economy for the last four or five years of the study period. The economy has worried about the incidence of non-performing loan. The higher level of NPL squeezes the capital for investment. So, the true impact of NPL is visible in real GDP model.

8.1.3 The Direction of Relationship (Supply Leading or Demand Following) between the Development of Private Commercial Banks and Economic Growth

The study has discovered a mentionable space in the identification of the Demand Following or the Supply Leading hypothesis for Bangladesh's economy. In the existing literature of financial system and economic growth, empirical findings have exposed three general hypotheses, namely the Demand Following (where economic growth generates more financial services), Supply Leading (Financial System offers opportunities to promote economic growth) and Mixed Relationship (Financial development and economic growth promote each other). The third question of the study is an endeavor to understand the causal link between the development of PCBs and economic growth. This question is in quest of finding out the hypothesis which is applicable to Bangladesh's economy. Finally, the study has scrutinized in econometric nature whether the support of PCBs has pushed economic growth or economic growth has pressed on the development of PCBs. The study has applied the Granger Causality Test to detect existence of either the demand following or the supply leading hypothesis. The three representatives of economic growth, *i.e.,* nominal GDP, real GDP and per capita nominal GDP are tested with banking functions which are net loan and advances, number of branches, non-performing loan, total income of banks, export earnings and investment by banks. The study has derived the following key points from the analyses and results.

i) The causality test has revealed a mixture of Demand Following and Supply Leading hypothesis between the development of private commercial banks and economic growth. In Bangladesh's economy, privatization in banking industry began in the decade of 1980s. On the other hand, the economy started to grow in the 1980s. In this circumstance, it can be argued that the expansion of PCBs has promoted economic growth and economic growth has created the demand of more financial services from PCBs thereby indicating the development of PCBs.

ii) Net loan and advances and economic growth are bi directionally related. The prime functions of banks are collecting surplus fund and providing the fund to where deficit exists. On the one hand, economy has a continuous need of financial capital from PCBs. On the other hand PCBs has prioritized lending to deficit units of the economy. Though bidirectional, lending function of PCBs has reinforced the supply leading hypothesis.

iii) The export earnings by PCBs and economic growth are bi directionally related. Export is a component of total domestic production as well as aggregate demand. The export of Bangladesh has swelled gradually resulting from emerging overseas market, competitive price, liberal trade policy and product quality. To smooth the export of domestic product, PCBs have designed flexible pro-export services and contributed relentlessly to promote export.

iv) The Granger cause relation is running from investment by PCBs to economic growth unidirectionally. The investment by PCBs has pushed the economy to grow indicating the supply leading hypothesis. The PCBs have undertaken a variety of investment schemes to keep the financial health of the bank sound. The aforesaid investment has turned into capital to production activities thereby indicating swelled economic growth.

v) The Granger cause relation is running from non-performing loan to real GDP unidirectionally. Though there is no Granger cause relation of non-performing loan with nominal GDP and per capita nominal GDP, real output growth has been impeded due to NPL. PCBs have faced difficulty at the time of default. The deficit units have been deprived of loan from PCBs. The phenomenon of NPL has impeded the contribution of PCBs to real output growth. Hence, NPL undermines economic growth.

vi) There is no Granger cause relation between number of branches of PCBs and economic growth among the three measures of growth except per capita nominal GDP (GDPCAP). The per capita nominal GDP has a support to banks' branch implying a weak demand following hypothesis. The number of branches has minor contribution to economic growth. It is the service and coverage of PCBs which is important to economic growth regardless of number of branches.

vii) There is no Granger cause relation between the total incomes of PCBs and economic growth among the three measures of growth. The total income of PCBs are the outcomes of banks' service quality and coverage, and operational performance. Hence, there is an emerging issue regarding the coverage and operational performance of PCBs.

8.2 POLICY RECOMMENDATIONS

Policies have been recommended for economic growth, promoting the contribution of private commercial banks to economic growth in the short run and long run. The study has also recommended policies to promote the relationship between development of private commercial banks and economic growth.

8.2.1 Policies for Economic Growth

The study has recommended the following policies based on findings to promote and sustain economic growth in Bangladesh.

i) Bangladesh should try to retain the competence level to achieve economic growth in future. Harmony, brotherhood and collaboration among the citizens of the country are expected to augment cooperation in economic activities. Hence, harmony and cooperation is essential to maintain national endeavors for overcoming future challenges and impediments.

ii) Economic planning should address discovery of natural resources, proper utilization and allocation of natural resources to promote economic growth in the long run. Policies should be aimed at restraining misuse and misallocation of resources. Policies should be oriented to allocative and productive efficiency.

iii) To augment the contribution of broad sectors to GDP, sector specific problems should be alleviated. The policies should focus on mechanization of agriculture sector with product diversification for more contribution to growth. The combination of export promotion and import substitution strategies for industrialization should be adopted.

iv) Preferential policies should be adopted to promote manufacturing sector for its remarkable contribution to growth trajectory. Simultaneously, strategies should be focused to drag the potentials of agriculture and service sector in the long run.

v) Policies should encourage investment in human capital formation to enhance labour productivity. Human capital combines other factors of production by providing time, energy, efforts, skill, knowledge and experience. Bangladesh should invest more in technical education to form productive and efficient human capital.

vi) Bangladesh should maintain sound diplomatic relationship with donor countries and agencies to promote mutual cooperation in economic activities. It should provide financial and nonfinancial support to donors at time of disturbances. Friendly attitude is expected to reinforce the relationship at global level.

vii) Special incentives should be announced to augment domestic saving for capital growth in production. In this connection, prudent and time-relevant reform measures for financial system is necessary. Sound financial system will encourage saving thereby economic growth in future.

viii) The macroeconomic policies should focus on the development of private sector. Initiatives should be taken to remove the obstacles of private sector. Equity of opportunity, flexibility in lending interest rate, encouragement of entrepreneurial education and abolition of import tariff on capital machineries can uphold private sector thereby positive trend of economic growth.

ix) Policies should address creativity and innovation to form new sectors in relation to changed economic paradigm. In this regard, consideration of childhood innovation may result in new sector formation thereby swelled economic growth. Nonetheless, the

informal sectors of Bangladesh's economy should be recognized either by tax imposition or registration by regulatory authority. Acknowledgement and recognition will promote the sectors to prove innate potential.

x) Policies should focus on more liberal international trade. Reduction of trade duties, coordination of public entities and time saving customs procedure are oriented to liberal trade. To boost up export, Bangladesh should search international markets, focus on product quality and changing taste of global consumers.

xi) The economy should address the socio-economic problems to induce more economic growth. The socio-economic issues such as literacy, poverty, inequality of opportunities, living standard should be addressed. Enhancement of government expenditure, implementation of development budget and voluntary support of civil society can eliminate socio-economic problems.

xii) Bangladesh can reduce the impact of international crisis through mobilization of domestic unutilized human and non-human resources. Bangladesh should explore new area of economic activities and natural resources to lessen the dependency. The policies should be aimed at the expansion of labour market in overseas countries to make the remittance flow uninterrupted.

xiii) To remove the irregularities of different sectors, moral education and ethical judgment should be practiced. Application of good governance both in public and private sector is prescribed. Strict monitoring and control by regulatory entities can restrain the irregularities.

xiv) To minimize political commotion, change in attitude and behavior should be required. Political decision making reflects the economic dream of a nation. Economic dreams come true through the sound economic environment. Hence stability is indispensable for economic growth.

xv) An emergency response plan should be prepared in advance for quick recovery from the disastrous situation due to natural calamities and disasters. Government can take surplus resources from other regions to provide it to affected region. Reliefs in-kind from government and nongovernment sources may be more functional. Distribution and monitoring of reliefs by non-government agencies is suggested.

xvi) Various programs should be undertaken for further infrastructural development and continuous utility support to production activities. The regions with less developed infrastructure should be prioritized. Sound infrastructure promotes regional growth leading to national economic growth.

xvii) To erase the disturbances of financial system, prudent monetary and fiscal policies are required. Policies should be specific for each component of the financial system. The components of financial system should be regulated by the Central Bank**.** It will help to restrain the coordination failure among regulatory authorities.

8.2.2 Policies to Promote the Contribution of Private Commercial Banks to Economic Growth

The study has proposed the following findings-based policies to promote and sustain the role of PCBs to economic growth for short run and long run in Bangladesh.

8.2.2 (a) Policies to Promote the Contribution of Private Commercial Banks in the Short Run

The focal point of short run policies is macroeconomic management of any type of disruptions to economy. Disruptions have taken a lot of national resources to get back to recovery. The estimated three ARDL models have supported the view of slow adjustment to long run equilibrium due to any shock in the short run. The recovery to long run stability has proceeded slowly. Economic growth has been hurt despite smooth support of PCBs. The policies recommended by the study for long run can also be applicable for short run. The study has obtained some banking functions insignificant in short run but significant in the long run. The contributions of PCBs and economic growth are long term phenomena. The policies recommended for short run may be subject to change. The frequent policy change has been another cause to economic instability. Again it is difficult to assess the contribution of some activities of PCBs in the short run. The economy usually waits to justify the feasibility of the short activities along with results in the long run. Nonetheless, long run activities envelop short run results. So, the policies recommended for short run have to be considered for the development of private commercial banks and economic growth.

i) To cope with shock in the short run and make speedy adjustment to long run equilibrium, the Government of Bangladesh should be prompt enough to combat any type of disruptions to economy. Implementation of annual development program (ADP) at 100% level should be required. To strengthen the physical, social and economic infrastructure, ADP implementation is necessary. Stronger logistic supports get the economy prepared to cope with shock at high speed of adjustment to long run equilibrium with minimum loss.

ii) To retain the economic stability, policies should be targeted to enhance productive capacity of the economy. In this connection, monetary and fiscal policy should be complementary. Fiscal policy should be in line with monetary policy. In Bangladesh, monetary policy is announced twice a year. The state of the economy from the monetarists' view, pattern of consumption and saving, liquidity position of financial entity, state of money demand and supply, problems and prospects of monetary derivatives become transparent in monetary policies. Monetary policy should be designed according to the goal of the economy and fiscal policy.

iii) PCBs should prioritize the quality of services and the performance of a specific branch. Performance of branch should be a policy issue rather than the number. Division of banking functions among branches may be helpful for long run agility of a specific branch. Actually, inclusion of a new bank in financial system is more beneficial than that of a branch.

iv) The continuous support of loan from PCBs should be ensured. Loan by PCBs should not be restricted for future economic growth and PCBs' development. The Central Bank should announce stimulus packages on the amount of loan disbursed. Reducing the interest rate on lending from the Central Bank may facilitate lending function of PCBs as well as interbank transactions.

v) Non-performing loan of current and lag periods should be recovered. The phenomenon must be restrained at any cost. PCBs should comply with the provisions of the Central Bank. Increasing the reserve ratio may help the PCBs to combat against the undesirable impacts of non-performing loan in the short run. Nonetheless, application of good governance is preventive to the aforesaid incidence.

vi) The unbanked sectors of the economy with export potentials should be covered with PCBs export supportive activities. The entities which have successful export history may be prioritized for banking services. The emerging small scale manufacturing units in Bangladesh have export potential thereby economic growth.

8.2.2 (b) Policies to Promote the Contribution of Private Commercial Banks in the Long Run

The study has revealed the long run association among the functions of private commercial banks and economic growth. Net loan and advances, investment by PCBs, export earnings are significantly contributing to economic growth. Non-performing loan is an obstacle to real production or output. The number of branches, total income of PCBs have been proved to be worthless for making contribution to output. However, the study has recommended policies both for the contributory and noncontributory functions of PCBs. The policies for contributory functions have been expected to augment the contribution. And the policies for noncontributory functions have been expected to remove the obstacles to contribution.

i) The government should announce stimulus packages for deposition in PCBs to promote lending capability of PCBs. Deposition is the principal source of lending and net loan and advances has significant contribution to economic growth. Micro level saving creates the macro level savings or total domestic savings. Household saving in government securities may be injurious to PCBs' health and existence in future. Household deposition can go to PCBs. Lucrative deposit products with satisfactory interest rate can stimulate the deposition.

ii) PCBs should invest both in money and capital market to meet the requirements of business entities in private sector. It is cumbersome for private sector to collect fund for business to grow. But the government can raise fund from heterogeneous sources. To protect the health of PCBs, sector specification (private and public) for loan

both in money and capital market is required. If the PCBs are concentrated to provide capital for private sector, it will be noteworthy for the economy also. The limitation of the policy lies in the probable contraction of government demand which is a part of GDP and aggregate demand. But the contraction can be offset by lending from commercial banks operating under government ownership. The sector for lending of state owned specialized and commercial banks should be the public sector only.

iii) PCBs may involve themselves to pro-export activities. The entities which have successful export history may be prioritized for banking services. New industries with export potential should be prioritized for banking services. Local, national, regional and global supports are essential to broaden the narrow export base of Bangladesh's economy. To augment export, the policy makers should implement preferential policies for thrust sectors. In addition, export in black market should be strictly prohibited. In this regard, exporters should search new markets for Bangladeshi products and prevent unethical practices.

iv) Policies should be promoted to diversify goods across three broad sectors of the economy, *i.e.*, agriculture, manufacturing and services. Year by year, financial incentives for productive practices would increase the value of the domestic product. The status of the agriculture sector is expected to be uplifted by product diversification. Large scale expansion of manufacturing is expected to bring sustainable economic growth.

v) PCBs should continue relentless loan support to deficit units, export oriented services and investment activities as net loan and advances, export earnings of PCBs, investment by PCBs at one year lag, have been observed to be contributory to economic growth. Timely loan recovery is suggested to continue functions relentlessly.

vi) The regulatory authority mainly the Central Bank may permit more new banks instead of new branches of an existing bank. More branches of a private commercial banks is a probable reason for mismanagement and wastage of bank resources. Number of branches has no impact on economic growth except the per capita GDP model. To increase the number of branch can't be wise activity for pro-growth.

vii) The regulatory authority should monitor and control the inter branch and intra branch services of PCBs to avoid vague competition and asymmetrical services to citizens. To make private banking services competitive, all PCBs may offer slightly differentiated or identical services irrespective of consumers' status.

viii) To support different strata in the locality, progressive interest rate system should be implemented to avoid inequality in terms of getting loan. Interest rates should be dissimilar for different loan amount, scale of operation of industry and product types. Progressive interest rate system on deposit should also be implemented to increase the marginal propensity to save. But this policy may truncate the marginal propensity to consume implying contraction of aggregate demand and total domestic output in the long run. The limitation can be removed by imposing ceiling deposit or deposit floor for different strata in economy.

ix) New banks and new branch of an existing PCB should be permitted to operate outside the divisional city to promote regional growth. Decentralization of banking functions is expected to break down the cluster in one area.

x) PCBs should focus on income generation and profitability issue. Human efficiency and profitability go side by side. To retain the efficiency of bank employees, the PCBs may adopt the concept of division of labour. If division of labour will make the tasks

monotonous, then the tasks can be rotated. Frequent Employee Rotation within branches may result in deadweight loss of productivity due to adjustment procedures. Employees may be allowed to change branch after working for the current branch for a long time. Monetary and nonmonetary benefits of all types of employees including directors and managers should be identical in all PCBs to restrain the turnover.

xi) To generate sound investment income, the government should implement prudent reform measures to overcome irregularities in capital market. The well-functioning capital market is a need indeed. However, PCBs will not be assigned to get the capital market well-functioning.

xii) To get non-interest income, PCBs should check the computer literacy of citizens and digitalization pace of the country to get the technology oriented services more acceptable to all classes of people of the economy. PCBs should provide training (as a part of CSR) for underprivileged citizens to improve computer literacy.

xiii) To avoid the chance of default (phenomenon of NPL), loan proposals should be screened more prudently. Proper monitoring and controlling should be undertaken to check the purpose and implementation of loan as stated in proposal after disbursement. Installment of smaller amount of loan without changing the sanctioned amount is expected to be a good recovery. Diversified collateral system may work to protect moral hazard (thinking in advance not to pay the loan) of non-performing loan. The business entity having good record of contribution to economy should be merged with the business having poor performance to restrain non-performing loan. It can be in the form of vertical merger, horizontal merger or conglomerates.

8.2.3 Policies to Promote the Relationship (Supply Leading or Demand Following) between the Development of Private Commercial Banks and Economic Growth

The study has suggested following policies based on the findings of the Granger Causality test. The policies suggested in this segment are expected to strengthen the relationship between the development of PCBs and economic growth.

i) PCBs and the economy both should be developed proportionally. The causality test has revealed a mixture of Demand Following and Supply Leading hypothesis between the development of private commercial banks and economic growth. To develop the PCBs, recent irregularities should be eradicated. The application of good governance is required. To develop the economy, all the impediments of real sectors should be addressed. The sector specific policies should be implemented.

ii) Private banking sector should prioritize core banking functions. Accepting deposit and lending money for capital accumulation are growth accelerating functions. To augment deposition, special incentives should be taken to increase the marginal propensity to save. To augment aggregate demand as well as economic growth, more financial incentives to underprivileged citizens should be provided to increase consumption propensity at national level.

iii) PCBs should be the only medium of exchange for export transactions for private and public sector. The export earnings by PCBs and economic growth are bi directionally related. PCBs should be covered with flexible terms and conditions by the Central Bank to conduct export oriented functions. On the other hand incentives should be taken to augment economic growth.

iv) The Central Bank should announce stimulus packages on investment by PCBs. It can be in the form of low interest rate on lending by PCBs from the Central Bank. In addition, creation of a sound national investment climate should be prioritized in macroeconomic policies and strategies.

v) The Granger cause relations of non-performing loan are divergent in three measures of growth. The phenomenon of NPL must be restrained at any cost. Application of good governance, strict monitoring of loan recovery and selection of feasible projects for loan can restrain the incidence of non-performing loan.

vi) The PCBs should focus on the branch performance rather than branch number. The regulatory authority should monitor and control the inter branch and intra branch services of PCBs. The regulatory authority mainly the Central Bank may permit more new banks instead of new branches of an existing bank.

vii) The PCBs should focus on how to generate the banks' income and increase profitability. To generate sound investment income, the government should implement prudent reform measures to overcome irregularities in capital market. To get non-interest income, PCBs should check the computer literacy of citizens and digitalization pace of the country to get the technology oriented services more acceptable.

8.3 CONCLUSION

The study has shed light on a relevant fact over time, i.e., the substantial contribution of PCBs to economic growth. The association between PCBs and economic growth is of critical importance to the economy of Bangladesh. In addition, economic growth determines the overall welfare of a country. Therefore, with particular attention, pattern of economic growth of Bangladesh has been examined. However, an in-depth scrutiny of existing studies has been undertaken to discover the gap in the area of interest. This scrutiny has paved the way to framework development which is essential to reach the objectives of the study. The research process adopted by the study has been guided by the positivist approach to find an 'appropriate fit' to answer the research questions. Underlying the design and implementation processes are the philosophical assumptions regarding the nature of knowledge, reality and existence. The study has tended to adopt an epistemological position as scientific and hypothetico-deductive. This views social processes as being subject to casual laws, applying objectivity, rationality and rigorous scientific methods of enquiry to establish truth. The research process has started with a hypothesis. Experimental groups are observed, measured and statistically manipulated to establish the cause-effect relationship between variables.

The role of private commercial banks to economic growth of Bangladesh has been examined in the study. Bangladesh is a country blessed with various natural resources. The country has attracted different nations for trade since ancient periods. The ingredients of economic growth belong to Bangladesh. The study has started with the question regarding the pattern of economic growth. How the growth has been occurred? Bangladesh is a country enfolded with diverse anticipated and unanticipated clogs. The study has tried to find the growth path. Despite the existence of clogs, GDP growth in Bangladesh is on an increasing path. Growth has benefited from noteworthy macroeconomic activities, sharp declines in the population growth rate, reasonable levels of savings and investment rates, and the low initial income level. The study has found a gap to be filled. Albeit economic growth is indebted to the services of PCBs, no question has been made to get the answer of the contribution of PCBs to growth cycle. It has been a deliberate attempt of the present study to find the answer of how PCBs are involved through various functions to move the wheels of economic growth. The study has proposed a model along with some hypotheses to

investigate the role of PCBs to accelerate economic growth. According to the study, PCBs have lent hand to domestic production through heterogeneous economic functions. All the bank specific variables have been associated in the long run with nominal GDP, real GDP and nominal per capita GDP. Though some variables have substantial impacts, some others have impact not up to satisfactory level. But as they are co integrated, the variables have scope to work further in favor of economic growth.

In 1980s, banks started its journey in private ownership. To protect the health of banking sector, non-bank financial institutions got permitted to operate in the same decade. The country has experienced an expansion of banks in private ownership since 1980s. Simultaneously, Bangladesh's economy has achieved an output growth. The emerging private banking sector has contributed to accelerate domestic production through mobilization of financial resources within the country. Financial inclusion by banks has created the opportunities for the economy to grow. The cooperation has increased as new banks have entered the economy. Banks have assisted the economy by creating liquidity, minimizing the cost of obtaining fund and pooling the risks on behalf of the citizens.

Economic growth and development of PCBs are intermingled. At times, economic escalation requires banking sector support. On the other hand, banking services pave the way to economic growth. So, it is a concern to discover the predecessor. The study has another question to ascertain the predecessor. The causality test has revealed a mixture of Demand Following and Supply Leading hypothesis between the development of private commercial banks and growth.

Notable contributions for the researchers, academicians and policy makers have been made in a various ways by the study. It has contributed in the problem area. Three significant research gaps mentioned at the end of the literature review have been filled. The study has made substantial contribution to the literature of financial system and economic growth by empirically verified the role of PCBs to accelerate the economic growth of Bangladesh. It is an acknowledgement of the contributions of PCBs as the performance of PCBs is relatively sound**.** The proposed model, empirical verification of the model, econometric investigation of economic growth carry interest for academicians and suggested policies have been expected to be useful for policy

makers. It will assist to generate policies to clean the newly found inconsistencies in banking sector.

A possibility for further research in the problem area has been created. Further research can be conducted in the following aspects.

- The scheduled banks differ in terms of performance, efficiency and involvement in economic growth. So there exists a noticeable divergence. Future study can be initiated to portray and compare the role of four types of scheduled banks to economic growth.
- Citizens of all classes of society are the stakeholders of economic growth and banking services. An analysis of their opinions on banking services and performance is of enormous significance for banking sector development .The opinions can be obtained by gathering primary information. The results of such analysis can then be compared with that of secondary information.

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APPENDIX - I

Results of Linear Trend Models derived from STATA

MGDP stands for nominal gross domestic product in analysis.

twoway (tsline MGDP69)

. regress MGDP69 Time69

```
    Source |       SS       df       MS              Number of obs =      10
-------------+------------------------------           F(  1,     8) =  158.46
       Model |  15.3257135     1  15.3257135           Prob> F       =  0.0000
    Residual |  .773730097     8  .096716262           R-squared     =  0.9519
-------------+------------------------------           Adj R-squared =  0.9459
       Total |  16.0994436     9  1.78882707           Root MSE      =  .31099

------------------------------------------------------------------------------
     MGDP69 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     Time69 |   .4310061   .0342391    12.59   0.000     .3520505    .5099616
      _cons |  -840.6672   67.26285   -12.50   0.000    -995.7756   -685.5588
------------------------------------------------------------------------------
```

. twoway (tsline MGDP79)

. regress MGDP79 Time79

```
    Source |       SS       df       MS              Number of obs =      10
-------------+------------------------------           F(  1,     8) =    3.63
       Model |  44.1747413     1  44.1747413           Prob> F       =  0.0930
    Residual |  97.2291247     8  12.1536406           R-squared     =  0.3124
-------------+------------------------------           Adj R-squared =  0.2265
       Total |  141.403866     9  15.7115407           Root MSE      =  3.4862

------------------------------------------------------------------------------
```

```
    MGDP79 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    Time79 |   .7317455   .3838188     1.91   0.093    -.1533422    1.616833
     _cons |  -1433.561    757.851    -1.89   0.095    -3181.169    314.0461
------------------------------------------------------------------------------
tsline MGDP89)
. regress  MGDP89 Time89
    Source |       SS       df       MS              Number of obs =      10
-------------+------------------------------           F(  1,     8) =   30.80
     Model |  103.454403     1  103.454403            Prob> F      =  0.0005
   Residual |  26.8674429     8  3.35843036            R-squared     =  0.7938
-------------+------------------------------           Adj R-squared =  0.7681
     Total |  130.321846     9  14.4802051            Root MSE      =  1.8326
------------------------------------------------------------------------------
    MGDP89 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    Time89 |   1.119818   .2017628     5.55   0.001     .6545522    1.585084
     _cons |  -2200.563   400.3988    -5.50   0.001    -3123.884   -1277.242
------------------------------------------------------------------------------

. regress MGDP99 Time99
    Source |       SS       df       MS              Number of obs =      10
-------------+------------------------------           F(  1,     8) =   69.98
     Model |  578.460896     1  578.460896            Prob> F      =  0.0000
   Residual |  66.1325254     8  8.26656568            R-squared     =  0.8974
-------------+------------------------------           Adj R-squared =  0.8846
     Total |  644.593422     9  71.6214913            Root MSE      =  2.8752
```

```
------------------------------------------------------------------------------
    MGDP99 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    Time99 |   2.647952   .3165451     8.37   0.000     1.917997    3.377906
     _cons |  -5241.831   631.3498    -8.30   0.000    -6697.727   -3785.936
------------------------------------------------------------------------------


. regress MGDP09 Time09
      Source |       SS       df       MS              Number of obs =      10
-------------+------------------------------           F(  1,     8) =   84.90
       Model |  2289.59396     1  2289.59396            Prob> F      =  0.0000
    Residual |  215.74028      8  26.9675349            R-squared    =  0.9139
-------------+------------------------------           Adj R-squared =  0.9031
       Total |  2505.33424     9  278.370472            Root MSE     =   5.193
------------------------------------------------------------------------------
    MGDP09 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    Time09 |   5.268079   .5717335     9.21   0.000     3.949659    6.586499
     _cons |  -10489.63   1146.041    -9.15   0.000    -13132.41   -7846.856
------------------------------------------------------------------------------
twoway (tsline MGDP17)
. regress MGDP17 Time17
      Source |       SS       df       MS              Number of obs =      8
-------------+------------------------------           F(  1,     6) =  158.05
       Model |  15513.8843     1  15513.8843            Prob> F      =  0.0000
    Residual |  588.96251      6  98.1604183            R-squared    =  0.9634
-------------+------------------------------           Adj R-squared =  0.9573
```

```
      Total |  16102.8468     7  2300.40669         Root MSE      =  9.9076

------------------------------------------------------------------------------

     MGDP17 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]

-------------+----------------------------------------------------------------

     Time17 |   19.21921   1.528775    12.57   0.000     15.47844    22.95999

      _cons |  -38527.13    3078.19   -12.52   0.000    -46059.19   -30995.07

------------------------------------------------------------------------------
```

APPENDIX - II

Commands for Summary Statistics in STATA

```
. summarizeLoanandAdvance

   Variable |      Obs       Mean    Std. Dev.       Min        Max

-------------+--------------------------------------------------------

LoanandAdv~e |       34    1083761    1633490    1570.7    5892981

. summarize Export

   Variable |      Obs       Mean    Std. Dev.       Min        Max

-------------+--------------------------------------------------------

     Export |       34    607431.7    821950.3     878.1    2475407

. summarize Investment

   Variable |      Obs       Mean    Std. Dev.       Min        Max

-------------+--------------------------------------------------------

 Investment |       34    207740.8    315000.9     219.7   944565.7

. summarizeNonPerformingLoan

   Variable |      Obs       Mean    Std. Dev.       Min        Max

-------------+--------------------------------------------------------

NonPerform~n |       34    53770.52    78257.56         0   303684.1

. summarizeGrossIncome

   Variable |      Obs       Mean    Std. Dev.       Min        Max

-------------+--------------------------------------------------------

GrossIncome |       34    187194.2    279812.2     19.37    1017382

.summarizeNoofBranch

   Variable |      Obs       Mean    Std. Dev.       Min        Max

-------------+--------------------------------------------------------

NoofBranch |       34    1698.706    1212.556        14       4321
```

```
. summarizeRGDPt

    Variable |      Obs       Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
RGDPt |       34    5.08e+12    4.03e+12   8.69e+11   1.42e+13

. summarizeGDPcap

    Variable |      Obs       Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
GDPcap |       34    607.0033    217.0597   386.0614   1127.272
```