

# PRIVATE COMMERCIAL BANKS AND ECONOMIC GROWTH IN THE EMERGING MARKET: AN ECONOMETRIC OVERVIEW

Sara Tasneem \*, Shamim Ahmad \*\*

\* Corresponding author, Dhaka School of Economics, University of Dhaka, Dhaka, Bangladesh

Contact details: Dhaka School of Economics, University of Dhaka, Dhaka, Bangladesh

\*\* Dhaka School of Economics, University of Dhaka, 4/C Eskaton Garden Road, Ramna, Dhaka 1000, Bangladesh



## Abstract

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Economic growth is the single most contributory matter in the economic development process. Behind the satisfactory growth rate, the financial system of Bangladesh has contributed. In the economic growth of a country, the banking sector plays a significant role (Alam et al., 2021). In the decade of the 1980s, the banking sector started to contribute under private ownership and Bangladesh watched economic progress from the median of the decade. The simultaneity of phenomena implies that the development of banking sector under private ownership promotes economic growth (supply-leading hypothesis) while the acceleration of economic growth necessitates the development of private banking sector (demand-following hypothesis). Hence, the study aims at the detection of supply-leading or demand-following hypothesis regarding the relation between the functions of private commercial banks (PCBs) and economic growth in Bangladesh. The study has applied the Granger causality test to detect the hypothesis. The development of PCBs and economic growth reinforce each other. To develop the PCBs, recent irregularities should be eradicated. To develop the economy, all the impediments of real sectors should be addressed.

**Keywords:** Economic Growth, Private Commercial Banks, Demand-Following Hypothesis, Supply-Leading Hypothesis, Granger Causality

**Authors' individual contribution:** Conceptualization — S.T. and S.A.; Methodology — S.T. and S.A.; Validation — S.A.; Formal Analysis — S.T.; Investigation — S.T. and S.A.; Writing — Review & Editing — S.T. and S.A.; Visualization — S.T. and S.A.

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## 1. INTRODUCTION

Economic growth unpretentiously determines the economic well-being of any country. In the long run, a nation's economic fortunes are regressed by the growth of potential output (Samuelson & Nordhaus, 1998). Bangladesh's economy is growing at an impressive pace. Citing International Monetary Fund (IMF) statistics, World Economics (2024)

reported, out of the 32 countries Bangladesh is the fastest emergent economy in the Asia-Pacific economies. And its contribution to the global economy has been 1.9% over the past ten years. Specifically, in 2022 Bangladesh's contribution to global economic growth was 0.9% (World Economics, 2024). IMF statistics showed with a nominal gross domestic product (GDP) per capita of USD 2,470 in 2023, Bangladesh is the 35th largest economy

in 2022 with a GDP size of USD 460.8 billion, with a real GDP growth rate of 5.50% (World Economics, 2024). In the fiscal year 2022–2023, medium-term forecasts for GDP growth rates are 7.5%, 7.8% in the fiscal year 2023–2024 and 8.0% in the fiscal year 2024–2025 (Finance Division, Ministry of Finance, Government of the People's Republic of Bangladesh, 2023, p. 3). The average growth rate achieved is around 6% for a couple of fiscal years. Behind the 6% growth rate, among other factors, the financial system of Bangladesh has contributed. A well-developed and better-functioning financial system supports faster economic growth (Rahman, 2004). Schumpeter (1911) accentuates the well-structured financial system, productive investment, and efficient allocation of bank resources. 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. In many emerging economies including Bangladesh, commercial banks dominate financial system.

Khatun (2018) presented that the expanded banking sector of Bangladesh has been suffering from severe challenges due to mismanagement, cheats, and heists. The study expressed concerns for the deterioration of banking performance. The probable impacts of the poor health of the 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 more severe in state-owned banks than in private commercial banks (PCBs). Bangladesh Bank (2024) revealed that in 2022, the state-owned commercial banks (SCBs) held a 24.2% share of the total assets which were 24.9% in 2021. PCB's share of the total assets was 67.8% in 2022 which was 67.4% in 2021. Foreign commercial banks (FCBs) held 5.7% share of the total assets in 2022, which was 5.5% in 2021. Specialized banks (SBs) share of the total assets was 2.3% in 2022 which was 2.2% in 2021. At the end of December 2021, total assets of the banking sector stood at BDT 23142.8 billion which was 13.28% higher than that of the previous year. Total deposits of the banking sector stood at BDT 16981.2 billion in 2022 which was BDT 15181.4 billion in 2021 showing an increase of 11.9%. From the year 2021 to 2022, considering the share in total deposit of the banking sector, SCBs share decreased from 26.3% to 25.4%, PCBs share increased from 66.8% to 67.1%, FCBs share increased from 4.2 % to 4.7% and SBs share increased from 2.7% to 2.8%. The above discussion reflects the efficient functions and activities of PCBs. With the passage of time, the importance of sound and well-functioning PCBs is also recognized (Bangladesh Bank, 2024, pp. 31–33).

In the decade of 1980s, the banking sector started to contribute under private ownership in Bangladesh. Not surprisingly, Bangladesh watched economic progress from the median of the decade. The simultaneity of phenomena implies that the development of banking sector under private ownership promotes economic growth (supply-leading hypothesis) owing to efficient operations while the acceleration of economic growth necessitates the development of private

banking sector (demand-following hypothesis). Three general hypotheses have been disclosed in empirical studies of financial systems and economic growth literature. 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). It should be mentionable that in some countries, supplies of financial resources induce domestic output growth (known as the supply-leading hypothesis). Conversely, output growth creates the demand for financial resources (known as the demand-following hypothesis). Hence, an investigation of the causation between private commercial banking and economic growth is of immense significance for robust economic growth and a vibrant banking sector. The significance of the association between private commercial banks and economic growth is immense. In these circumstances, it is an endeavor to understand the causal link between the PCBs' functions and economic growth. From time to time, the supply-leading hypothesis and demand-following hypothesis reinforce to output growth. In Bangladesh's economy, there exists a mentionable space in the identification of the demand-following or the supply-leading hypothesis. In these circumstances, existing studies have failed to notice which hypothesis is applicable to Bangladesh regarding the expansion of PCBs and economic growth.

The research question is as follows:

*RQ: Is it the function of private commercial banks to accelerate economic growth or economic growth to drive the private commercial banks to be developed?*

Hence, the question of the identification of demand following or supply leading hypothesis for Bangladesh's economy is in quest of the present study. So, the study aims at the determination of demand-following or supply-leading hypothesis following the research question and discovering the gap in the literature of the problem area. The study has applied the Granger causality test to detect the hypothesis. It has estimated the pair-wise regressions for one dependent variable and six independent variables. The causality test has revealed an amalgamation of the demand-following and supply-leading hypotheses.

The structure of the article is as follows. Section 2 reviews the relevant literature on the specified area and presents the hypothesis. Section 3 illustrates the methodology adopted in the empirical analysis of the study. The justification of the selection of variables and the relevance of the Granger causality test to the objective of the study has been made. Section 4 depicts the results of the Granger causality test. The literal meaning of the result has been expressed. Section 5 arranges a discussion of the results. The section has carefully observed the message of the results for Bangladesh's economy. Finally, Section 6 contains the conclusion. The conclusion focuses on the findings of the study with the policy implications for the economic growth and private banking sector for an emerging economy like Bangladesh. The potential and scope of future study along with the limitations of the present study have been indicated in the conclusion.

## 2. LITERATURE REVIEW

The financial system contributes to the acceleration of economic growth for both developed and developing countries. The financial system has a fundamental impact on the economic growth process, so a better understanding of the evolution and structure of the financial system is necessary (Levine, 1997). A well-developed and better-functioning financial system supports 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 the financial system, PCBs play a crucial role in economic growth and socio-economic development. Levine (1997) focuses on the role of banks as providers of liquid deposits to saving-oriented people, undertakers 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 the banking sector. Levine (1997) argues that countries with larger banks and more active stock market grow fast. In countries having well-developed banks and securities markets, industries and firms relying on external finance grow disproportionately faster than countries with poor financial systems. So, the financial system creates a significant blow on economic growth.

The banking sector usually plays a noteworthy contribution in emerging economies with underdeveloped financial markets like Bangladesh. Hence, a bank's efficient functions such as lending capacity and profitability exert influence on economic growth. Mashamba et al. (2023) examine the interplay between bank profitability and economic growth in sub-Saharan Africa (SSA). They investigate the contribution of bank performance to economic growth in SSA by examining the impact of bank profitability on growth as well as the mediating role of stability in this interplay. The study employs a panel data set of 26 SSA economies that covers the year 2000 to 2020. The application of the generalized method of moments (GMM) surprisingly finds no impact of profitability to economic growth in SSA economies due to inefficient intermediation in the form of high bank margins and low lending volume. However, a positive contribution of bank profitability to growth was noted in low-income economies, supporting the notion that banks dominate in economies with underdeveloped financial markets.

Banks profitability is beneficial to economic growth. As efficient functions of banks result in profitability, the development of banking sector is determined by efficient functions. The profitability of economic growth remains an open question for emerging economies. Klein and Weill (2018) empirically investigate the impact of bank profitability on economic growth. The application of GMM to a panel of 132 countries for the period 1999–2013 documents a positive impact of bank profitability on economic growth in both the short and long run.

Aziz et al. (2017) opine that the sound financial sector expansion dominated by the banking sector might influence the economic growth of the country. This study inspects the causal relationship between banking sector development and the economic growth of Bangladesh for the period from 1980 to 2016. This study uses three conventionally accepted proxies for the banking sector development, namely the ratio of quasi-money (RQM), interest margins (IM), and total domestic credit to the private sector (PC) provided by the banking sector. Considering the rate of inflation as a control variable, the growth rate of real gross domestic product (RGDP) is used as the dependent variable. This study employs the Granger causality tests within a framework of co-integration and the vector error correction model (VECM). The empirical results show that the measures of banking sector development have unidirectional long-run Granger causality between private credit and economic growth, between the ratio of quasi-money and economic growth, and between interest margin and economic growth. Results also indicate that a negative long-run relationship exists between private credit and the growth rate of RGDP. A statistically significant bi-directional long-run causal relationship also exists between the rate of inflation and the RGDP growth rate. However, only the RQM is positively related to the growth of RDGP in the short run.

In a study, Levine and Zervos (1998) inspect the practical association between different measures of 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.

In an investigation of the linkage between finance and growth, Berger et al. (2003) contribute to both the final growth literature and 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.

The role of the development of the financial sector in economic growth and domestic and foreign capital accumulation is analyzed by Ahmad 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 the financial system. The results also imply that domestic capital is more instrumental than foreign capital to increase per worker output and promoting long-term economic growth. Domestic capital plays a significant role in attracting foreign capital.

Rehman and Cheema (2013) examine long-term and casual relationship 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.

To scrutinize the finance-growth nexus in Bangladesh, Rahman (2004), uses the period 1976 to 2005 and a long-run vector auto regressions model precised by Blanchard and Quah (1988). The analysis is done by dividing the period into three: 1) the full sample period 1976–2005, 2) the pre-financial sector reform program (FSRP) period 1976–1990, and 3) the post-FSRP period 1991–2005. Although the results show the positive impact of financial development both on the 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 the pre-FSRP are misleading. There is a significant difference between the pre- and post-FRSP periods in the results. The task of a competitive financial environment is crucial for Bangladesh. The preface of FRSP in 1990 creates competition by hiking the relative credit share of PCBs compared to those of nationalized commercial banks (NCBs).

In the 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 Udejaja (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: 1) broad-money stock-to-GDP ratios, 2) growth in net domestic credit to GDP, 3) growth in private sector credit to GDP, and 4) 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. 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 the ordinary least squares (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 the 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 five banks of Lebanon, the annual growth rate of total sector's deposits and one year lag of credit to the resident private sector as a percent of GDP. The findings prove a one-way causality from growth to bank development. The banking sector does not influence economic growth significantly.

The variables are the annual real GDP growth rate, the labor 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. Robust 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.

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), the authors studied the variables real per capita GDP, domestic credit to the 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.

The above discussion on existing literature gives birth to the formulation of a research hypothesis regarding the causal link between the development of private commercial banks and economic growth for an emerging economy like Bangladesh. While a hypothesis is defined as a tentative and testable statement. It can be defined also as a testable statement showing a rationally speculated relationship among the concerned variables.

In Bangladesh's economy, privatization in the banking industry began in the decade of 1980s. On the other hand, the economy started to grow in the mid-1980s. In these circumstances, existing studies have implied the existence of a hypothesis that is applicable to Bangladesh's economy regarding the expansion of PCBs and economic growth.

Hence, the study has derived the hypothesis of a causal relationship between the functions of PCBs and economic growth. More precisely, the study hypothesizes the existence of the causal link between the PCBs' functions and economic growth.

### 3. RESEARCH METHODOLOGY

The present section has explained elaborately the methodology adopted in the study. The present study is causal in nature as the purpose of the present study is hypotheses testing, i.e., causal study. The study has checked the relationships among concerned variables through hypothesis testing. The present research has exposed properties of the scientific approach 'hypothetico-deductive' which works in a sequential, methodical, rational, and meticulous manner and is popularized by Austrian philosopher Karl Popper (Sekaran & Bougie, 2013). The research employs both qualitative and quantitative information from diverse sources.

#### 3.1. Data source and collection

All the scheduled PCBs incorporated in Bangladesh are the population of this research. The sample size 43 of this study is all PCBs except ICB Islami Bank Ltd. due to the unavailability of data. 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. Both internal and external secondary sources have been used to collect data viz: 1) Bangladesh Bank, 2) Ministry of Finance of Bangladesh, 3) Bangladesh Bureau of Statistics, 4) Bangladesh Institute of Development Studies, 5) World Bank, 6) IMF, etc. Sources of secondary data from these organizations for 39 years, i.e., 1984 to 2022. Data have been collected on a solo basis (bank only) not on a consolidated basis (the bank and securities) in a natural environment with minimal interference to the regular activities of the bank.

The study has worked on nine series. The values of the variable *RGDP* have been collected from the WB database. The figures of *RGDP* have been converted to BDT from US\$. The formulations of the other series have followed a different track. The values of observations of a specific variable for a particular year have been summed up.

The data analysis of this study is econometric in nature. Data have been analyzed using the software Microsoft Excel, Stata, and EViews.

#### 3.2. Variables of the study

The identification and incorporation of the bank-related variables are the innovations of this study. In the analysis of causation, different bank-specific functions have been used as variables in empirical analysis. While examining the long-term association between bank performance and the economic growth of India. Alam et al. (2021) consider the variables such as interest margin return on assets, bank investment, and lending capacity of the bank with GDP.

One of the economic growth measures, 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, irrespective of who owns the production factors. The representative of economic growth *RGDP* is considered to Granger cause of the development of private commercial banks. *RGDP* is tested with some banking functions that are considered to Granger cause economic growth either positively or negatively. The selective functions of PCBs are net loan and advances (*LAD*), number of branches (*NOB*), non-performing loan (*NPL*), total income of banks (*GIT*), export earnings (*EXP*), and investment by banks (*INV*).

In Bangladesh, PCBs sanction loans to diversified sectors of the economy to grow, individuals and households to meet consumption demand, exporters, and importers to facilitate international trade, and new entrepreneurs to start a business. PCBs disburse loans in urban and rural areas of Bangladesh. In this way, PCBs are operating to boost up GDP.

The number of Branches of PCBs makes the transactions easier. It reduces the transaction, transportation, and information costs. More business transactions boost economic activities, mainly production of goods and services.

*NPL* of PCBs is the amount of loan that is not in operation. So, the borrowing firms cannot repay the money to banks. *NPL* makes the banks less safe and undermines economic growth.

According to CAMELS ratings, the earnings of banks (total income of PCBs-*GIT*) 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.

Exporting is a prime foreign currency earning tool for any economy. PCBs receive *EXP* on behalf of the economy. It facilitates the exporters by providing versatile services.

Diversification of banks' funds, reducing liquidity risk, maintaining a stable income, and increasing the wealth of the banks' shareholders are the prime benefits for banks resulting from *INV*. 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.

#### 3.3. Transformation of variables

The values of the variables have been converted to natural logarithmic form (Table 1). 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.

**Table 1.** Logarithmic transformation of variables

Variable	Abbreviation	Meaning
Real GDP ( <i>RGDP</i> )	<i>LnRGDP</i>	Natural logarithm of real GDP
Number of branches of PCBs ( <i>NOB</i> )	<i>LnNOB</i>	Natural logarithm of number of branches of PCBs
Net loan and advances of PCBs ( <i>LAD</i> )	<i>LnLAD</i>	Natural logarithm of net loan and advances by PCBs
Non-performing loan of PCBs ( <i>NPL</i> )	<i>LnNPL</i>	Natural logarithm of non-performing loan of PCBs
Export earnings by PCBs ( <i>EXP</i> )	<i>LnEXP</i>	Natural logarithm of export payment received by PCBs
Total income of PCBs ( <i>GIT</i> )	<i>LnGIT</i>	Natural logarithm of total income by PCBs
Investment by PCBs ( <i>INV</i> )	<i>LnINV</i>	Natural logarithm of investment by PCBs

**3.4. Granger causality test**

The study has applied the Granger causality test to detect the existence of either the demand following (economic growth promotes the development of private commercial banks) or the supply-leading hypothesis (development of private commercial banks causes economic growth). To figure out the causality, this test is commonly used. To assess the causality between the development of the private banking sector and economic growth, this test can be carried out. 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 a cause-and-effect relation exists. The test is introduced by the Clive Granger causality test. The test derives the cause and effect in the null hypothesis. Concisely, 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 the future cannot predict

the past. If variable *X* causes variable *Y*, then changes in *X* should precede changes in *Y*.

The detection of causation is commonly understood to be a case of regression analysis though it deals with the dependence of one variable on other variables that does not necessarily imply causation. The Granger causality test proves causality or the direction of influence. There is another test of causality that is sometimes used, the so-called Sims test of causality (Gujarati et al., 2017).

In the study, *RGDP* stands for economic growth where six bank-specific variables represent the development of private commercial banks. Hence, the study has estimated the following twelve pair-wise equations (Eq. (1) to Eq. (12)) to detect Granger causation. Eq. (1) postulates that current *RGDP* is related to past values of *NOB* as well as past values of itself. Eq. (2) postulates that the current value of *NOB* is related to past values of *RGDP* as well as past values of itself. As Granger causality requires the variables contained solely in the time series data, lagged values of the respective variable are considered in the estimation. The stochastic error terms in Eq. (1) and (2) are uncorrelated. Eq. (3) to (12) postulate similar attitudes for *RGDP* and *LAD*, *NPL*, *EXP*, *GIT*, and *INV*.

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

$$LnNOB_t = \sum_{k=1}^n \alpha_k LnRGDP_{t-k} + \sum_{j=1}^n \beta_j LnNOB_{t-j} + \varepsilon_t \tag{2}$$

$$LnRGDP_t = \sum_{k=1}^n \alpha_k LnLAD_{t-k} + \sum_{j=1}^n \beta_j LnRGDP_{t-j} + \varepsilon_t \tag{3}$$

$$LnLAD_t = \sum_{k=1}^n \alpha_k LnRGDP_{t-k} + \sum_{j=1}^n \beta_j LnLAD_{t-j} + \varepsilon_t \tag{4}$$

$$LnRGDP_t = \sum_{k=1}^n \alpha_k NPL_{t-k} + \sum_{j=1}^n \beta_j LnRGDP_{t-j} + \varepsilon_t \tag{5}$$

$$LnNPL_t = \sum_{k=1}^n \alpha_k LnRGDP_{t-k} + \sum_{j=1}^n \beta_j LnNPL_{t-j} + \varepsilon_t \tag{6}$$

$$LnRGDP_t = \sum_{k=1}^n \alpha_k LnEXP_{t-k} + \sum_{j=1}^n \beta_j LnRGDP_{t-j} + \varepsilon_t \tag{7}$$

$$LnEXP_t = \sum_{k=1}^n \alpha_k LnRGDP_{t-k} + \sum_{j=1}^n \beta_j LnEXP_{t-j} + \varepsilon_t \tag{8}$$

$$\text{LnRGDP}_t = \sum_{k=1}^n \alpha_k \text{LnGIT}_{t-k} + \sum_{j=1}^n \beta_j \text{LnRGDP}_{t-j} + \varepsilon_t \tag{9}$$

$$\text{LnGIT}_t = \sum_{k=1}^n \alpha_k \text{LnRGDP}_{t-k} + \sum_{j=1}^n \beta_j \text{LnGIT}_{t-j} + \varepsilon_t \tag{10}$$

$$\text{LnRGDP}_t = \sum_{k=1}^n \alpha_k \text{LnINV}_{t-k} + \sum_{j=1}^n \beta_j \text{LnRGDP}_{t-j} + \varepsilon_t \tag{11}$$

$$\text{LnINV}_t = \sum_{k=1}^n \alpha_k \text{LnRGDP}_{t-k} + \sum_{j=1}^n \beta_j \text{LnINV}_{t-j} + \varepsilon_t \tag{12}$$

To test the Granger causation, the F-statistic of is applied to test the hypotheses of these pair-wise regressions. If the F-value exceeds the critical F-value at the chosen level of significance, the null hypothesis can be rejected. The study considers a 5% level of significance.

#### 4. RESULTS

The present study applies the Granger causality test to detect the demand-following or supply-leading hypothesis (whether private commercial banking activities promote economic growth or economic growth push the banking sector (private) to go up).

The results are shown in Table 2. If the p-value of the F-statistic is greater than 0.05 the null

hypothesis cannot be rejected and vice versa. From Table 2, it has been observed that *LnNOB* does not Granger cause *LnRGDP* and *LnRGDP* does not Granger cause *LnNOB*. The p-values of the F-statistic of both the hypotheses are greater than 0.05 meaning that the null hypothesis of no Granger cause cannot be rejected. The hypotheses of no Granger cause running from *LnLAD* to *LnRGDP* and *LnRGDP* to *LnLAD* cannot be accepted. *LnNPL*, *LnEXP*, *LnINV* does Granger cause *LnRGDP*. *LnRGDP* does not Granger cause *LnNPL* (p-value is greater than 5%). P-values postulate that *LnGIT* does not Granger cause *LnRGDP* and *LnRGDP* does not Granger cause *LnGIT*. Finally, *LnRGDP* does not Granger cause *LnINV*.

Table 2. 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).

There exists no Granger cause relation between *LnNOB*, *LnGIT*, and *LnRGDP* as both the null hypotheses have been accepted. *LnLAD* does Granger cause *LnRGDP* and *LnRGDP* does Granger cause *LnLAD*. So, the relation is bidirectional. *LnNPL* Granger causes *LnRGDP* unidirectionally. The Granger cause relation between *LnEXP* and *LnRGDP* is bidirectional as both the null hypotheses are rejected. There is no granger causation between *LnGIT* and *RGDP*. The rejection of the null hypothesis proves the unidirectional relation running from *LnINV* to *LnRGDP*.

The study has placed the alternative hypotheses of the Granger causality test for RGDP below:

- *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.*

Alternative hypotheses have been placed to explore only. However, the analyses are centered on the null hypothesis.

#### 5. DISCUSSION

The study reveals the bidirectional Granger causation between real GDP and net loan and advances postulates by PCBs postulates that demand following and supply leading hypotheses reinforce each other. And it proves lending as a core banking function for the emerging economy to grow. The economic growth in Bangladesh relies on private banks' lending as other components of the financial system still are performing poorly. No Granger

causation between the number of branches and real GDP denies demand following or supply-leading hypothesis. The increase of the number of branches does not necessarily indicate economic growth while economic growth in Bangladesh takes place irrespective of the number of branches. The number of branches does not assure banking development under private ownership in Bangladesh. The unidirectional Granger causation from non-performing loan proves an adverse impact on economic growth though supporting the supply-leading hypothesis. Economic growth trickles down to offset the phenomenon of nonperforming loans and promotes loan recovery of private commercial banks. The study denies the expected Granger causation between the total income of private commercial banks and real GDP. Total income implies managerial efficiency to promote banking development. Moreover, economic growth follows banks' profitability owing to managerial efficiency. The bidirectional Granger causation between export earnings by PCBs and economic growth supports both demand following and supply-leading hypotheses. As exports are a component of GDP, more exports are beneficial to the health of growth. Hence, growth involves an augmentation of exports in Bangladesh. To facilitate export, private commercial banks array versatile opportunities for the economy. Finally, banks' investment creates a new horizon for economic growth in emerging economies like Bangladesh maintaining supplying leading hypothesis.

## 6. CONCLUSION

The study has started the journey with the question of the causal relationship between the development of PCBs and economic growth for an emerging economy like Bangladesh. The study aims at the detection of supply-leading or demand-following hypothesis about the causation between the development of PCBs and economic growth in Bangladesh. In Bangladesh's economy, privatization in the 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 development of PCBs has promoted economic growth and economic growth has created the development through demanding more financial services from PCBs. 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. The study has applied the Granger causality test to detect the hypothesis. The causality test has revealed an amalgamation of demand-following and supply-leading hypotheses. The development of PCBs and economic growth reinforce each other. The study has suggested the following policies based on the findings of the Granger causality test. The suggested policies are expected to strengthen the relationship between the development of PCBs and economic growth. PCBs and the economy both should be developed proportionally. Private commercial banks should promote lending activities. The central bank should reduce the reserve ratios to promote loans and advances. However, to mitigate the volume of non-performing loans, strict monetary regulations should be monitored. To develop the PCBs, recent irregularities should be eradicated. The application of good governance is needed. To develop the economy, all the impediments of real sectors should be addressed. Moreover, a smooth coordination of fiscal and monetary policies is essential to augment the export and investment of PCBs in emerging economies like Bangladesh. The study has tried to cover all the aspects related to the area of research interest. There are some minor drawbacks in the study. It focuses on the Granger causation between economic growth and the development of PCBs. However, the banking sector of Bangladesh is comprised of scheduled and non-scheduled banks. The scheduled banks consist of SCBs, FCBs, and PCBs. The study could include the SCBs and FCBs under the label of scheduled banks though the ownership structure is different. The study considering all the scheduled banks would provide more prudent recommendations for the banking sector. In the future, there is room to shed light on scheduled banks and economic growth in emerging economies like Bangladesh. Moreover, a bank under private ownership cannot be included due to unavailability of data. The inclusion of the omitted private bank in a new study on the same area will be of profound interest in the future. Last but not least, a study on the financial system as a whole and economic growth for an emerging economy like Bangladesh, will be conducted in a broader aspect which is beyond the scope of the present study.

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