

## **Bank Profitability Determinants: The Case of Bangladesh**

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*The study seeks to explore bank profitability as an indicator of economic stability in a developing country setting. This study examines the profitability determinants of listed private commercial banks on the Chittagong Stock Exchange (CSE). Data was compiled and analyzed from secondary sources of information. This paper applies Trend Analysis, Standard Deviation, Correlation and Regression as the statistical tools for the analysis. Information was gathered on Deposits, Advances, Total Assets, Equity, Net Income, Number of Branches, Number of Employees and Non-Performing Loans. The results demonstrate that Deposits, Advances, Total Assets, Equity and Net Income have significant impacts on bank profitability. Significance of the profitability determinants is also found to vary among generation wise private commercial banks.*

### **1. Introduction**

The banking system plays a vital role for economic development. Ahuja (2015) opines that a positive relationship exists between financial development and economic growth. Banking development is stated to be important for economic growth (Fernandez et al, 2016). The banking sector of early transition economies is stated to be more competitive (Djalilov and Piesse, 2016). Over the last few years the banking world has been undergoing significant changes due to deregulation, technological innovations, globalization etc. Apergis (2015) stresses the importance of competition policies as a catalyst for financial stability. In Bangladesh, private banking institutions have demonstrated robust growth in previous years, and it can be expected that the growth will sustain itself in coming years. The business environment of a developing economy like Bangladesh has a significant impact on the profitability and performance of the banks.

Private Commercial Banks (PCBs) started their journey in Bangladesh in 1982. Since their inception that have played a vital role in the economic development of the country. With the help of developed banking technologies and client-focused mentality, they try to ensure quality services in quick time to their customers. Their prudence in selecting appropriate borrowers and sector of providing loans and monitoring them closely has decreased the percentage of non-performing loan. Prudent regulatory measure of the central bank including guidance regarding prudential norms of capital adequacy, classification of loans, on-site and off-site supervision have made the PCBs sound in their respective banking operations.

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Previous studies although they have examined certain aspects of the financial markets of Bangladesh (Wurgler, 2000; Alfaro et. al. 2004) till date the authors were unable to locate a study which comprehensively examined the performance of the private commercial banks across numerous financial indicators. The motivation behind the preparation of the article is to explore bank profitability as an indicator of economic stability in a developing country setting. The findings of the paper are different from other studies because it concentrates on Chittagong, whereas previous studies in the context of Bangladesh have mostly focused on the capital Dhaka. The paper also differs from other studies due to the fact that it concentrates on a developing country setting, and uses a smaller sample size relative to other studies due to the availability of data. The focus on Chittagong enhances the coverage within developing country settings.

The primary objective of this article is to measure the profitability determinants of selected private commercial banks listed on the Chittagong Stock Exchange (CSE). The research question for the study is stated as follows: What are the determinants of profitability of selected private commercial banks listed on the Chittagong Stock Exchange?

The specific objectives of the article are stated as follows:

- To determine the principal factors of bank profitability
- To conduct a technical assessment of the factors which affect the profitability

Section 1 of the paper is the introductory section. Section 2 discusses the literature review conducted for the article. Section 3 highlights the methodology and the statistical models applied for the analysis. Section 4 discusses the findings of the paper, while Section 5 is the concluding section.

## **2. Literature Review**

Recent research on the determinants of bank profitability has focused on the impact of macroeconomic factors on bank performance. Al-Haschimi (2007) studies the determinants of bank net interest rate margins in 10 SSA countries. He finds that credit risk and operating inefficiencies (which signal market power) explain most of the variation in net interest margins across the region. Using bank level data for 80 countries in the 1988–95 period, Demirgüç-Kunt and Huizinga (1998) analyze how bank characteristics and the overall banking environment affect both interest rate margins and bank returns. The results suggest that macroeconomic and regulatory conditions have a pronounced impact on margins and profitability. Lower market concentration ratios lead to lower margins and profits, while the effect of foreign ownership varies between industrialized and developing countries. Athanasoglou, Brissimis and Delis (2008) examined the impacts of bank specific, industry specific and macroeconomic determinants of bank profitability in a panel of Greek banks from 1985 to 2001. The study found that all bank specific determinants, with the exception of size, have an impact on bank profitability. The business cycle is found to have a positive impact on profitability, with a significant impact in the upper phase of the cycle.

The research question stated in the previous section highlights the focus of the paper on the private commercial banks of Chittagong. Studies have been undertaken on private commercial banks of Bangladesh, however mostly they have tended to focus on the banks of the capital of the nation. A review of the published literature has demonstrated that whether a paper focuses on banks of the developed or developing nations, the emphasis has been on

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the banks located in the main hub of finance, rather than the banks which may exist in other urban centres. The paper attempts to address this gap in the context of a developing nation. On the basis of this research gap, the hypothesis for the paper can be stated as follows: What factors impact the profitability of selected private commercial banks listed on the Chittagong Stock Exchange?

Gelos (2006) studies the determinants of bank interest margins in Latin America using bank and country level data. He finds that spreads are large because of relatively high interest rates (which in the study is a proxy for high macroeconomic risk, including from inflation), less efficient banks, and higher reserve requirements. In a study of United States banks for the period 1989–93, Angbazo (1997) finds that net interest margins reflect primarily credit and macroeconomic risk. In addition, there is evidence that net interest margins are positively related to core capital, non-interest bearing reserves, and management quality, but negatively related to liquidity risk. Saunders and Schumacher (2000) apply the model of Ho and Saunders (1981) to analyze the determinants of interest margins in six countries of the European Union and the US during the period 1988–95. They find that macroeconomic volatility and regulations have a significant impact on bank interest rate margins. Athanasoglou et. al. (2006) study the profitability behavior of the south eastern European banking industry over the period 1998–02. The empirical results suggest that the enhancement of bank profitability in those countries requires new standards in risk management and operating efficiency, which, according to the evidence presented in the paper, crucially affect profits. A key result is that the effect of market concentration is positive, while the picture regarding macroeconomic variables is mixed.

Allen and Saunders (2004) survey the literature on pro-cyclicality in operational, credit, and market risk exposures. They find that such cyclical effects mainly result from systematic risk emanating from common macroeconomic influences or from interdependencies across firms as financial markets and institutions consolidate internationally. Heggstad and Mingo (1976) found that the greater the market share, the greater a bank's control over its prices and the services it offers. Heggsted (1977) and Mullineaux (1978), however, found that market share had an adverse relationship with profitability. Slovin and Sushka (1984) also found evidence that banks with rapid growth in deposit and hence higher liquidity set lower loan rates. Staikouras and Wood (2011) examine the profitability determinants of European banks, and find that profitability of the banks is not only influenced by management decisions but also due to changes in the external macroeconomic environment. The surveyed literature examines various determinants of bank profitability across various regions of the world. However it is found that the numbers of financial indicators in those studies are relatively fewer in comparison to the present study.

### **3. The Methodology and Model**

The study selected 30 private commercial banks for the sample and collected information on the following aspects of each bank: Deposits, Advances, Total Assets, Equity, Net Income, Number of Branches, Number of Employees and Non-Performing Loans. Statistical tools of trend analysis, standard deviation, correlation and regression are applied. The other indicator ratios calculated for the analysis include ROA, ROE, Advance Deposit Ratio, Equity/Total Asset ratio, NPL as percentage of total advances, Business Per Employee (BPE) and also Cumulative Average Growth Rate (CAGR) of variables.

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Private commercial banks were selected as they were the focus of the study. The number of banks was limited to 30 otherwise the analysis models would become too cumbersome for analysis. The variables were selected based on previous studies conducted across the globe to ensure comparability. The study models were also selected based on previous studies to ensure comparability, and also to reduce the impact of any errors or bias present in the collected information.

### 4. The Findings

**Table 1: Aggregate Statistics for Private Commercial Banks**

Sl. No.	Variables	Mean & Standard Deviation (Figures in crore)	Equation for trend line $Y_c = a + bx$	$r^2$
1.	Deposit	630,139.7 (58,888.1)	$Y_c = - 102674 + 36238x$	0.959
2.	Advance	428,135.7 (84,678.4)	$Y_c = - 19673 + 26929x$	0.821
3.	Total Asset	757,896.7 (70,602.9)	$Y_c = - 7228 + 44167x$	0.957
4.	Equity	64,991.7 (7,819.8)	$Y_c = - 2816 + 4057x$	0.972
5.	Net income	11,598.2 (1,314.0)	$Y_c = 9503 + 4598x$	0.715

In Table 1, the straight line trend is represented by the equation  $Y_c = a + bX$ . Where,  $Y_c$  denotes the trend values to distinguish them from the actual  $Y$  values. 'a' is the  $Y$  intercept or the value of the  $Y$  variable when  $X = 0$ . 'b' represents the slope of the line of the amount of change in  $Y$  variable that associated with the change of one unit in  $X$  variable. Here the 'X' variable represents time. The square of correlation coefficient ( $r^2$ ) is called the squared multiple correlation coefficient. The coefficient of correlation is denoted by  $r$ . The value of  $r$  lies between 0 and 1. The higher the  $r^2$ , the greater the percentage of the variation of  $Y$  as explained by the regression model, that is, the better the "goodness of fit" of the regression model to the sample observations.

**Table 2: CAGR of selected variables of generation wise PCBs**

Generation of Banks	Mean & Std Dev of CAGR of Deposit	Mean & Std Dev of CAGR of Advance	Mean & Std Dev of CAGR of Total Asset	Mean & Std Dev of CAGR of Equity	Mean & Std Dev of CAGR of Net Income
First Generation	21.54% (8.23%)	25.68% (18.61%)	18.37% (10.78%)	17.04% (15.96%)	11.91% (11.87%)
Second Generation	15.64% (29.02%)	15.15% (31.07%)	16.20% (30.78%)	16.53% (29.72%)	6.02% (29.80%)
Third Generation	25.25% (5.52%)	19.93% (14.39%)	26.94% (5.43%)	30.11% (5.85%)	22.16% (11.18%)

Table 2 shows that the CAGR of deposit, advance, total asset, total equity and net income of the PCBs of the second generation banks is lower than that of the first generation banks, while the CAGR of those variables of the third generation banks is higher than that of the first generation banks respectively. Interpreting Table 1 along with Table 2, the

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hypothesis developed in Section 2 is proven, although as the results show, the degree of profitability among private commercial banks demonstrates notable variability.

The independent variables considered for the regression analysis include natural log of Advance/Deposit (A/D), Total Asset (TA), Equity/Total Asset (E/TA), Non Performing Loan/Total Advance (NPL/A), Business Per Employee (BPE) calculated as (Deposit + Advances)/ Number of Employees, Number of Bank Branches (NBB) and dependent variables are Net Income (NI), Return on Asset (ROA) and Return on equity (ROE).

**Table 3: Correlation Matrix of selected Independent Variables (Year 2013)**

Variables	Adv/Dep	Total Asset	No. of Branches	NPL/Adv	Equity/Asset	BPE
<b>Adv/Dep</b>	1.000	0.153	-0.046	0.174	-0.235	0.323
<b>Total Asset</b>	0.153	1.000	0.601	-0.324	0.220	0.033
<b>No. of Branches</b>	-0.046	0.601	1.000	-0.174	0.152	-0.447
<b>NPL/Adv</b>	0.174	-0.324	-0.174	1.000	-0.909	-0.309
<b>Equity/Asset</b>	-0.235	0.220	0.152	-0.909	1.000	0.189
<b>BPE</b>	0.323	0.033	-0.447	-0.309	0.189	1.000

Return on Asset (ROA) indicates how profitable a bank is relative to its total assets. ROA provides an idea that how efficient management is at using its assets in generating earnings. ROA is calculated by dividing a bank's net income by its total assets. Return on Equity (ROE) is the amount of net income returned as a percentage of shareholders equity. It measures a bank's profitability revealing how much profit it generates with the money shareholders have invested. ROE is calculated by dividing a bank's net income by the shareholder's Equity. Net Income, Return on Asset (ROA) and Return on equity (ROE) have been considered as measure of PCBs' profitability. In order to identify the prominent variables that affect the profitability of banks as described by the Log of Net Income, Return on Asset (ROA) and Return on Equity (ROE), Multiple Regression Model has been applied.

**Mathematically the equation is as follows:**

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + \mu$$

Where,

Y= Log of Net Income (Income after Tax), Return on Asset (ROA) and Return on Equity (ROE) a= constant term,

b<sub>1</sub> to b<sub>6</sub> = Regression coefficients for the respective variables,

x<sub>1</sub> = Log of Advance/Deposit (A/D), x<sub>2</sub> = Log of Total Asset (TA), x<sub>3</sub> = Log of Equity/Total Asset (E/TA),

x<sub>4</sub> = Log of Non Performing Loan/Total Advance (NPL/A),

x<sub>5</sub> = Log of Business Per Employee (BPE) calculated as Deposit + Advances/ Number of Employees, x<sub>6</sub> = Log of Number of Bank Branches (NBB), μ = Error Term.

Here, Y [i.e. Log of Net Income, Return on Asset (ROA) and Return on Equity (ROE)] is the dependent variable, while the rest x<sub>1</sub> to x<sub>6</sub> are independent variables. This test has been used

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to find out whether there is a linear relationship between dependent variable and any of the independent variables under consideration.

The expected relationships between the dependent variables (i.e. Log of Net Income, ROA and ROE) and any of the selected independent variables considered for the model are as follows:

**Table 4: Regression Coefficients (Considering NI as Dependent Variable)**

Year	Variable	Unstandardized Coefficients		Standardized Coefficient	t	Significance
		B	Std. Error	Beta		
2004-2013	Log of Advance/Deposit	-158861	.2126		-3.045	.007
	Log of Total Asset	0.0044024	.9754	1.144	4.085	.001
	Log of No. of Branches	.305113	.184	-.390	-1.123	.276
	Log of NPL/Advance	-.24717	.3214	-.161	-.996	.333
	Log of Total Equity/Total Asset	.21100	.230	.049	.478	.639
	Log of Business Per Employee	.310744	.1181	-.052	-.231	.820

Table 4 presents regression coefficients obtained from the Multiple Regression Model. Six independent variables have exerted influence on profitability (net income) of the PCBs. As expected, TA, NBB, BPE are found to have positive and NPL/A has negative relationship with net income (in case of TA and NPL/A). Advance Deposit Ratio also has negative relationship during 2004-2013. Interpreting Table 3 along with Table 4, the hypothesis developed in Section 2 is proven, although as these tables demonstrate, the significance of the profitability determinants are positive in some cases (e.g. TA), while it is negative in other cases (e.g. NPL/A).

**Table 5: Regression Coefficients (ROA as dependent variable)**

Year	Variable	Unstandardized Coefficients		Standardized Coefficient	t	Significance
		B	Std. Error	Beta		
2004-2013	Log of Advance/Deposit	-2.208	.732	-.549	-3.016	.007
	Log of Total Asset	.926	.473	.907	1.959	.066
	Log of No. of Branches	-.484	.435	-.639	-1.114	.280
	Log of NPL/Advance	-.106	.106	-.268	-1.003	.329
	Log of Total Equity/Total Asset	.144	.306	.080	.469	.644
	Log of Business Per Employee	-.144	.633	-.085	-.227	.823

Table 5 presents the regression coefficients obtained from the Multiple Regression Model. Six independent variables have exerted influence on ROA of the PCBs as found in case of considering Net Income as dependent variable. TA, NBB, BPE are found to have positive and NPL/A has negative relationship with ROA (in case of TA, BPE and NPL/A) or in maximum cases (in case of NBB). But in case of E/TA, it is found to have positive impact for three times and negative impact for the remaining three times. However, the relationship is observed to be negative in case of A/D. As a result, the hypothesis developed in Section 2 is proven, although the significance of the profitability determinants is positive in certain cases (e.g. TA) while it is negative for other cases (e.g. NPL/A).

**Table 6: Regression Coefficients (ROE as dependent variable)**

Year	Variable	Unstandardized Coefficients		Standardized Coefficient	t	Significance
		B	Std. Error	Beta		
2004-2013	Log of Advance/Deposit	-2.210	.730	-.421	-3.027	.007
	Log of Total Asset	.928	.471	.696	1.968	.065
	Log of No. of Branches	-.486	.434	-.491	-1.120	.277
	Log of NPL/Advance	-.106	.106	-.205	-1.004	.329
	Log of Total Equity/Total Asset	-.857	.305	-.365	-2.806	.012
	Log of Business Per Employee	-.145	.631	-.066	-.230	.821

Table 6 displays the regression coefficients obtained from the Multiple Regression Model. Six independent variables have exerted influence on ROE of the PCBs as found in case of

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considering net income and ROA as dependent variables. TA, NBB, BPE are found to have positive and NPL/A has negative relationship with ROA (in case of BPE and NPL/A) or in maximum cases (in case of TA, NBB). The relationship is observed to be negative in case of A/D and E/TA. As a result, the hypothesis developed in Section 2 is proven, with the observation that the significance of the profitability determinants being positive in some cases (e.g. TA, NBB) while being negative in others (e.g. NPL/A).



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**Table 7: First Generation PCBs in respect of profitability determinants**

Name of PCB	CAGR, Mean & Std Dev of A/D	CAGR, Mean & Std Dev of TA	CAGR, Mean & Std Dev of E/TA	Mean & Std Dev of NPL/A	CAGR, Mean & Std Dev of BPE	CAGR, Mean & Std Dev of NBB
<b>A.B. Bank Ltd.</b>	1.88% 0.82 (0.10)	16.44% 5,909.67 (3747.31)	11.19% 0.065 (0.024)	-18.99% 0.098 (0.082)	15.72% 4.55 (2.49)	2.54% 70 (5.44)
<b>IFIC Bank Ltd.</b>	-1.34% 0.96 (0.09)	10.02% 3,958.66 (1,578.94)	5.80% 0.063 (0.014)	-18.29% 0.150 (0.118)	8.97% 2.74 (0.87)	5.81% 69 (12.22)
<b>Uttara Bank Ltd.</b>	-1.27% 0.69 (0.10)	8.53% 5,311.70 (1,480.80)	9.77% 0.057 (0.023)	-15.27% 0.177 (0.096)	7.70% 2.07 (0.67)	0.64% 203 (5.66)
<b>Pubali Bank Ltd.</b>	2.87% 0.78 (0.09)	12.64% 6,952.16 (2,990.68)	9.44% 0.066 (0.026)	-24.13% 0.153 (0.129)	11.58% 1.98 (0.87)	1.35% 362 (17.66)
<b>National Bank Ltd.</b>	-0.18% 0.84 (0.05)	15.58% 5,952.53 (3,244.32)	9.61% 0.076 (0.029)	-17.92% 0.134 (0.107)	10.86% 3.23 (1.21)	6.81% 94 (24.01)
<b>Islami Bank Ltd.</b>	0.15% 0.90 (0.03)	20.91% 16,589.17 (9,448.07)	1.88% 0.066 (0.007)	-14.38% 0.047 (0.027)	7.51% 3.81 (0.78)	8.79% 165 (49.37)
<b>The City Bank Ltd.</b>	0.23% 0.78 (0.07)	15.93% 4,499.65 (2,408.50)	15.74% 0.061 (0.028)	-17.82% 0.123 (0.104)	11.51% 2.98 (1.09)	1.48% 80 (4.72)
<b>U.C. Bank Ltd.</b>	1.08% 0.80 (0.05)	21.61% 4,934.53 (3,631.43)	3.57% 0.059 (0.012)	-26.83% 0.102 (0.103)	18.33% 3.36 (1.93)	3.08% 86 (9.25)
<b>ICB Islami Bank Ltd.</b>	-1.20% 0.97 (0.15)	2.34% 2,096.48 (476.67)	N/C -0.002 (0.175)	15.17% 0.422 (0.310)	3.23% 4.53 (1.04)	-0.30% 32 (1.76)

Table 7 demonstrates that CAGR of Advance/Deposit is positive for 5 banks and negative for 4 banks. The mean stands between 0.69 (in case of Uttara Bank Ltd.) and 0.97 (in case of ICB Islami Bank Ltd.). The CAGR for Total Asset is positive for all 9 banks. It is found to be highest in case of UCBL (21.61%) and lowest in case of ICB Islami Bank Ltd. (2.34%). The CAGR for Equity/Total Asset is positive for all banks except ICB Islami Bank Ltd. Non Performing Loan as percentage of Advance is found to have decreasing trend with the exception being ICB Islami Bank Ltd. Business per Employee is found to have increasing trend for all selected banks. No. of Bank Branches is found to have an increasing trend except in the case of ICB Islami Bank Ltd. According to the findings in Table 7, the hypothesis developed in Section 2 has been proven, although notable variations are found among the first generation private commercial banks.

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**Table 8: Second Generation PCBs in respect of profitability determinants**

<b>Name of PCB</b>	<b>CAGR, Mean &amp; Std Dev of A/D</b>	<b>CAGR, Mean &amp; Std Dev of TA</b>	<b>CAGR, Mean &amp; Std Dev of E/TA</b>	<b>Mean &amp; Std Dev of NPL/A</b>	<b>CAGR, Mean &amp; Std Dev of BPE</b>	<b>CAGR, Mean &amp; Std Dev of NBB</b>
<b>Eastern Bank Ltd.</b>	-1.27% 1.04 (0.12)	16.26% 4,045 (2,139)	2.43% 0.111 (0.022)	-15.25% 0.065 (0.042)	11.03% 7.59 (2.85)	8.34% 29 (9.34)
<b>NCC Bank Ltd.</b>	0.73% 0.93 (0.05)	17.91% 3,908 (2,307)	4.64% 0.077 (0.016)	-12.94% 0.059 (0.027)	8.43% 4.59 (1.40)	9.21% 46 (14.79)
<b>Prime Bank Ltd.</b>	2.84% 0.83 (0.06)	25.52% 6,637 (4,852)	2.43% 0.082 (0.012)	0.85% 0.012 (0.003)	11.76% 7.34 (2.82)	13.71% 52 (24.63)
<b>Dhaka Bank Ltd.</b>	-0.37% 0.88 (0.09)	16.73% 4,668 (2,637)	5.22% 0.063 (0.009)	14.66% 0.028 (0.014)	10.98% 8.20 (3.13)	12.66% 33 (14.34)
<b>Al-Arafa Bank Ltd.</b>	1.98% 0.95 (0.09)	23.11% 2,686 (2,151)	11.95% 0.079 (0.024)	-21.12% 0.044 (0.038)	14.96% 3.66 (1.66)	6.91% 48 (12.36)
<b>Southeast Bank Ltd.</b>	-0.58% 0.89 (0.06)	24.72% 5,829 (4,015)	9.95% 0.078 (0.029)	4.39% 0.034 (0.010)	14.24% 7.85 (3.20)	19.31% 36 (18.95)
<b>Social Investment Ltd.</b>	-4.37% 0.91 (0.16)	17.07% 2,603 (1,270)	4.85% 0.061 (0.016)	-0.71% 0.058 (0.024)	9.13% 4.75 (1.23)	15.61% 29 (14.20)
<b>Dutch Bangla Bank Ltd.</b>	-1.09% 0.77 (0.07)	22.30% 4,471 (2,915)	3.48% 0.060 (0.009)	17.06% 0.018 (0.014)	1.55% 7.04 (1.74)	24.19% 41 (29.87)
<b>The Trust Bank Ltd.</b>	2.26% 0.75 (0.12)	33.87% 2,454 (2,010)	-1.01% 0.081 (0.023)	6.42% 0.021 (0.007)	8.03% 4.84 (1.34)	18.29% 26 (16.60)
<b>Bank Asia Ltd.</b>	-0.001% 0.91 (0.05)	36.39% 3,656 (3,142)	1.30% 0.069 (0.009)	61.58% 0.020 (0.009)	11.44% 8.53 (2.61)	21.48% 25 (13.44)
<b>Exim Bank Ltd.</b>	0.86% 0.94 (0.03)	30.26% 4,551 (3,399)	8.35% 0.073 (0.020)	N/C 0.016 (0.009)	14.12% 6.49 (2.74)	19.42% 31 (15.84)
<b>First Security Bank Ltd.</b>	-0.82% 0.90 (0.10)	30.45% 2,498 (1,854)	0.31% 0.059 (0.013)	1.10% 0.080 (0.058)	20.67% 6.92 (3.87)	23.49% 24 (19.97)
<b>Mutual Trust Bank Ltd.</b>	0.34% 0.88 (0.05)	29.51% 2,636 (1,898)	1.46% 0.078 (0.016)	N/C 0.013 (0.017)	6.69% 7.43 (1.75)	25.34% 27 (18.63)
<b>Mercantile Bank Ltd.</b>	-0.13% 0.88 (0.06)	20.88% 3,960 (2,441)	5.93% 0.069 (0.015)	36.84% 0.024 (0.014)	9.35% 6.62 (1.63)	16.59% 33 (16.48)
<b>One Bank Ltd.</b>	-1.11% 0.86 (0.06)	22.96% 2,492 (1,663)	7.12% 0.067 (0.014)	25.32% 0.033 (0.023)	0.71% 6.45 (0.71)	25.89% 23 (14.82)
<b>Premier Bank Ltd.</b>	-1.13% 0.88 (0.05)	34.49% 2,601 (2,046)	0.60% 0.085 (0.013)	22.29% 0.030 (0.023)	14.73% 6.12 (2.26)	22.21% 25 (12.92)
<b>Standard Bank Ltd.</b>	-1.54% 0.93 (0.06)	32.35% 2,306 (2,085)	3.35% 0.101 (0.028)	9.48% 0.011 (0.006)	18.81% 5.50 (2.97)	19.22% 26 (14.68)
<b>Commerce Bank Ltd.</b>	-8.78% 1.19 (0.49)	16.72% 753 (341)	-5.79% 0.161 (0.050)	-15.28% 0.318 (0.144)	16.61% 2.06 (0.90)	0.41% 25 (0.32)

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Table 8 shows that CAGR of Advance/Deposit is positive for 6 banks and negative for 12 banks. The mean stands between 0.75 (in case of The Trust Bank Ltd.) and 1.19 (in case of Commerce Bank Ltd.). The CAGR for Total Asset is positive for all banks. The CAGR for Equity/Total Asset is positive for all banks except Trust Bank Limited and Commerce Bank Ltd. The mean is highest in case of Commerce Bank Ltd. (16.1%) and lowest in case of First Security Bank Limited (5.9%). Non Performing Loan as percentage of Advance is found to have a decreasing trend for 5 banks and an increasing trend for 11 banks. Business per Employee is found to have increasing trend for 9 banks. This trend is highest in case of First Security Bank Ltd. (20.67%) and lowest in case of One Bank Limited (0.71%). No. of Bank Branches is found to have an increasing trend for all 18 banks. According to the findings of Table 8, the hypothesis developed in Section 2 has been proven, although notable variations are found among the second generation private commercial banks.

**Table 9: Third Generation PCBs in respect of profitability determinants**

<i>Name of PCB</i>	<i>CAGR, Mean &amp; Std Dev of A/D</i>	<i>CAGR, Mean &amp; Std Dev of TA</i>	<i>CAGR, Mean &amp; Std Dev of E/TA</i>	<i>CAGR, Mean &amp; Std Dev of NPL/A</i>	<i>CAGR, Mean &amp; Std Dev of BPE</i>	<i>CAGR, Mean &amp; Std Dev of NBB</i>
<b>BRAC Bank Ltd.</b>	5.12% 0.80 (0.12)	79.14% 4,158.41 (4,251.93)	-18.81% 0.141 (0.194)	N/C 0.029 (0.022)	31.41% 1.86 (0.92)	62.32% 35 (39.33)
<b>Jamuna Bank Ltd.</b>	3.77% 0.75 (0.09)	32.66% 2,483.68 (2,103.84)	-0.27% 0.073 (0.017)	N/C 0.017 (0.019)	24.55% 4.02 (1.96)	36.01% 28 (19.21)
<b>Shahjalal Bank Ltd.</b>	9.49% 0.88 (0.18)	47.42% 2,697.40 (2,609.73)	-4.01% 0.085 (0.022)	N/C 0.005 (0.006)	24.35% 5.87 (2.63)	41.20% 24 (20.03)

Table 9 displays that CAGR of Advance/Deposit is positive for all 3 banks. The mean stands between 0.75 (in case of Jamuna Bank Ltd.) and 0.88 (in case of Shahjalal Bank Ltd.). The Total Asset is found to have high increasing trend for all banks. The CAGR for Equity/Total Asset is negative. The mean is highest in case of Brac Bank Ltd. (14.1%) and lowest in case of Jamuna Bank Ltd (7.3%). Non Performing Loan as percentage of Advance is found to have a low amount for all three banks. Business per Employee is found to have an increasing trend for all 3 banks. No. of Bank Branches is found to have an increasing trend because of the expansion of businesses. According to Table 9, the hypothesis developed in Section 2 has been proven. A noteworthy observation of the results from Table 9 is that in comparison to the first and second generation private commercial banks, the third generation private commercial banks exhibit less variation in terms of the profitability determinants.

**Table 10: Mean, Standard deviation, Trend Equation of ROA and ROE of PCBs**

<i>Sl. No.</i>	<i>Variables</i>	<i>Mean &amp; Standard Deviation</i>	<i>Equation for trend line <math>Y_c = a+bx</math></i>
1.	<i>Return on Asset (ROA)</i>	1.4% (0.6%)	$Y_c = 0.014 - 6E-05x$
2.	<i>Return on Equity (ROE)</i>	21.6% (10.9%)	$Y_c = 0.306 - 0.016x$

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According to Table 10, the average ROA and ROE show soundness in profitability over time. The equation for trend line shows that both ROA and ROE demonstrate a decreasing trend due to the gradual increase of competition. As a result, the hypothesis developed in Section 2 has not been proven in this case.

**Table 11: ROA & ROE of First Generation PCBs**

<i>Name of PCBs</i>	<i>ROA</i>		<i>ROE</i>	
	<i>Mean</i>	<i>Standard Deviation</i>	<i>Mean</i>	<i>Standard Deviation</i>
<i>A.B. Bank Ltd.</i>	1.69%	1.17%	25.01%	16.43%
<i>IFIC Bank Ltd.</i>	1.40%	0.93%	21.79%	14.84%
<i>Uttara Bank Ltd.</i>	1.46%	1.22%	29.77%	31.74%
<i>Pubali Bank Ltd.</i>	1.45%	0.87%	25.15%	18.65%
<i>National Bank Ltd.</i>	1.92%	1.45%	23.65%	14.57%
<i>Islami Bank Ltd.</i>	1.34%	0.63%	20.96%	11.46%
<i>The City Bank Ltd.</i>	1.39%	0.94%	27.80%	27.31%
<i>U.C. Bank Ltd.</i>	1.35%	0.66%	23.57%	15.46%
<i>ICB Islami Bank Ltd.</i>	-3.64%	3.54%	-44.08%	77.26%

According to Table 11, both ROA and ROE are observed to be positive for all banks except ICB Islami Bank Ltd. ROA is highest for National Bank Ltd. (1.92%) and ROE for Uttara Bank Ltd. (1.46%). Therefore, for the first generation private commercial banks, it can be stated that the hypothesis developed in Section 2 has been proven for ROA and ROE.

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**Table 12: ROA & ROE of Second Generation PCBs**

Name of PCBs	ROA		ROE	
	Mean	Standard Deviation	Mean	Standard Deviation
<i>Eastern Bank Ltd.</i>	1.98%	0.91%	17.47%	6.20%
<i>NCC Bank Ltd.</i>	1.84%	0.88%	23.45%	10.27%
<i>Prime Bank Ltd.</i>	1.83%	1.17%	22.46%	13.29%
<i>Dhaka Bank Ltd.</i>	1.55%	0.47%	25.71%	13.14%
<i>Al-Arafa Bank Ltd.</i>	1.68%	0.62%	21.50%	5.41%
<i>Southeast Bank Ltd.</i>	1.82%	0.87%	26.57%	18.78%
<i>Social Investment Bank Ltd.</i>	0.90%	0.73%	15.76%	15.63%
<i>Dutch Bangla Bank Ltd.</i>	1.34%	0.68%	23.21%	13.90%
<i>The Trust Bank Ltd.</i>	1.35%	0.58%	17.03%	6.07%
<i>Bank Asia Ltd.</i>	2.01%	0.60%	29.74%	9.88%
<i>Exim Bank Ltd.</i>	2.01%	0.68%	29.55%	14.59%
<i>First Security Bank Ltd.</i>	0.54%	0.69%	9.65%	13.44%
<i>Mutual Trust Bank Ltd.</i>	1.63%	0.47%	21.55%	7.36%
<i>Mercantile Bank Ltd.</i>	1.69%	0.64%	26.54%	15.91%
<i>One Bank Ltd.</i>	1.56%	0.72%	24.34%	10.95%
<i>Premier Bank Ltd.</i>	1.91%	1.11%	22.22%	11.39%
<i>Standard Bank Ltd.</i>	1.99%	0.35%	20.52%	4.68%
<i>Commerce Bank Ltd.</i>	0.19%	0.31%	1.25%	2.29%

According to Table 12, both ROA and ROE are positive for all banks. ROA is highest for Exim Bank Ltd. (2.01%) where ROE is highest for Bank Asia Ltd. (29.74%). Both ROA and ROE are lowest for Commerce Bank Ltd. Therefore, for the second generation private commercial banks, it can be stated that the hypothesis developed in Section 2 has been proven for ROA and ROE.

**Table 13: ROA & ROE of Third Generation PCBs**

Name of PCBs	ROA		ROE	
	Mean	Standard Deviation	Mean	Standard Deviation
<i>BRAC Bank Ltd.</i>	0.64%	0.99%	9.72%	10.93%
<i>Jamuna Bank Ltd.</i>	1.05%	0.74%	15.64%	11.97%
<i>Shahjalal Bank Ltd.</i>	1.65%	0.67%	20.81%	8.80%

According to Table 13, both ROA and ROE are positive for all banks. ROA and ROE are highest for Shahjalal Bank Ltd. having and lowest for Brac Bank Ltd. Therefore, for the third generation private commercial banks, it can be stated that the hypothesis developed in Section 2 has been proven for ROA and ROE.

## **5. Summary and Conclusions**

The paper on listed private commercial banks on the Chittagong Stock Exchange (CSE) found results which are different from previous studies in the context of capital markets in developing nations in the following aspects. Firstly, the paper uses a combination of variables which were explored in previous studies. Secondly, the paper also applies a mix of statistical tools and techniques not used in previous models. Finally, the paper focuses on a banking hub not extensively addressed in the research literature. Therefore the article advances the knowledge on financial markets in developing nations through the study of a financial centre which has not received significant coverage in the published literature. The noteworthy limitations of the study are that it focuses on one financial centre of the nation, and does not include commercial banks from the public sector.

The economy of the nation has been growing steadily, and all major economic indicators have demonstrated positive trends. The study combines numerous financial indicators to examine the profitability of private commercial banks in the context of Chittagong, otherwise known as the commercial capital of the nation. The study is important since it focuses on private commercial banks in Chittagong, whereas previous studies have shown a tendency to focus on Dhaka. The methodology applied in the study can be used for any category of companies listed on the stock exchanges of the nation, and therefore more rigorous studies can be conducted in the coming years on the share price volatility of companies in the nation, and appropriate policies can be formulated and implemented for sustainable economic growth and stability.

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