



Capital Structure, Growth and Profitability: Evidence from Domestic Commercial Banks in Cambodia

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Abstract: This paper aims to examine the impact of capital structure and growth on profitability of domestic commercial banks in Cambodia. The study uses a panel least squares (PLS) method using a sample of 10 domestic commercial banks in Cambodia over the period of 2005-2013 to examine the relationship between capital structure, growth and profitability of commercial banks. The finding reveals that capital structure variables including debt to equity (DE), equity to loan (EL), and equity to deposit (ED) have significantly negative impact on return on assets (ROA) and return on equity (ROE) with 1% significance level. Moreover, the growth variables including growth in assets (GA) and growth in equity (GE) have shown positive relationship with ROA and ROE. Significant relationship exists only between GE and ROE at 1% significance level.

Keywords: Capital Structure, Growth, Return on Assets, Return on Equity, Profitability, Cambodia

1. Introduction

The banking industry has been playing a significant role in the economy of the developing country as well as the whole world. The growth of the bank profitability is a very crucial indicator for each bank. Higher bank profitability helps the bank to perform better and grow faster among the competitors. Bank profitability is associated with bank capitalization, high lending activities, low credit risk and efficient cost management (Ramadan, Kilani, & Kaddumi, 2011).

The profitability of the banks is determined by various factors such as internal and external. It is also dependent on economic or industrial situation. For example, the management efficiency, asset quality, interest income, capital adequacy and inflation are the factors affecting the profit of domestic commercial banks (Frederick, 2015). Some of the determinants have a significant positive impact on the profit of the bank, while some are negatively influenced. Williams (2003) has found that bank profitability have a negative impact on competitor market share and bank license status, whereas it has a positive impact on the size and GDP growth.

High and sufficient profits are the central point to help the banks grow and survive. When the profit is low and insufficient, the banks face many problems. Some indicators such as capital, risk, and other internal control variables are likely to affect the bank profitability both positively and negatively.

In Cambodia, banking sector is somewhat lower compared to some other countries in Asia. Even though the profitability of the sector is increasing eventually and look very fruitful, if we look into detail, the seven major banks held around 80% of total profitability. Besides those big banks, remaining banks held only a very small percentage, and around 10 banks possessed of less than 1%. Therefore, we can conclude that there is a rising of profitability, but most of profit flowed only into the major banks.

On the other hand, this study examines capital structure and growth as the main variable categories. The term capital structure can be defined as the framework of different types of financing employed by banks to acquire resources for its operations and growth; commonly it includes equity capital and long-term loan capital. The decision on capital structure is crucial for both managers and regulators as well as for the interest of shareholders (Lama, Sharifah, & Jarita, 2014).

Therefore, banks must consider whether they want to increase the equity or debt capital in order to maximize shareholders' wealth.

In addition to capital structure, growth is the main determinant of profitability. Asset growth, equity growth, deposit growth and loans growth affect the bank profits in both negative and positive way. For instance, asset growth has a positive relationship with bank profitability (Chronopoulos, Liu, McMillan, & Wilson, 2015).

The rest of the article is organized as the following: Section 2 reviews relevant literatures on the determinants of bank profitability. While section 3 describes the empirical model, section 4 reports the empirical findings. Finally, section 5 provides conclusion and recommendation.

Table 1: List of Selected Domestic Commercial Banks in Cambodia 2013

No	Name of Banks	Branches	Staff
1.	Aceda Bank Plc.	238	9,357
2.	Advanced Bank of Asia Ltd.	17	444
3.	ANZ Royal Bank (Cambodia) Ltd.	17	530
4.	Cambodia Asia Bank Ltd.	6	308
5.	Cambodia Mekong Bank Public Ltd.	6	113
6.	Cambodian Public Bank Plc.	26	669
7.	Canadia Bank Plc.	45	1,623
8.	Foreign Trade Bank of Cambodia	6	191
9.	Union Commercial Bank Plc.	5	216
10.	Vattanac Bank Ltd	4	256

Source: National Bank of Cambodia, 2013

2. Literature Review

In the literature, there were some research studies, which focus on capital structure, growth and profitability in different contents and countries. Some studies focused on only the capital structure and profitability while other researchers examined about the effects of growth on bank profit or performance. Previous studies were included with elements either growth or capital structure to their research articles in order to find out the relationship of those components with the profitability of the banks.

The study by Velnamby and Niresh (2012) found that debts to equity proxy as capital structure has a negative relationship to profitability measured by return on assets (ROA). However, when return on equity was used, the result was positive. Indeed, their results suggested that 89% of bank total assets are mostly debt capital, so it can be concluded that the banking sector in Sri Lanka is highly geared institutions. Similarly, the findings by Chinaemerem and Anthony (2012) confirms that debt ratio negatively impacts on firm's financial measures which proxy by ROA and ROE; their studies used panel data with OLS estimator for the period 2004-2010; it implies that the decrease of profitability happens whenever the total debts are increasing.

According to Taani (2013) examined the debt to equity as capital structure variables on banking performance in Jordan, the results showed that the proxies of bank performance, such ROCE, NP, and NIM were to be significantly and positively relationship with total debts except ROE. Unlike this finding, Ibrahim (2009) studied the structure of firm's capital on its performance in Egypt over the period 1997-2005; the result revealed the negative significant relationship between total debt and return on assets.

A study conducted by Pastory, Marobhe, and Kaaya (2013) using panel data analysis about the commercial bank performance in Tanzania examined the capital structure variables and found that the ratios of capital structure has a negative relationship with performance of the bank within 5% significance level. This result concluded that debt level

has negatively affected bank performance. Similarly, Salim and Yadav (2012) found that ROA, ROE and EPS have negative relationships with both short-term and long term debt while total debt has been used as independent variable. Another studied by Krishnan and Moyer (1997) also shown the negative between total debt to equity variable with return on equity covered 81 corporations from Asia.

Chinaemerem and Anthony (2012) investigated “the impact of capital structure on performance of listed public sector banks in India during 2008 – 2012”; the findings revealed asset growth has a positive relationship with return on assets, return on equity and earning per share which are the proxies of bank performance. Chronopoulos et al. (2015) had shown similar result about the asset growth variable; the positive and statistically significant at 1% level with return on assets for US banks had been found during 1984-2010.

Yao, Yu, Zhang, and Chen (2011) found that it is noteworthy that negative relationship between growth of asset and return from stock; suggesting that higher asset growth firms are associated with decreasing of future firm profitability. Therefore, it can be concluded that asset growth has an inverse relationship with stock return. As like, Jang and Park (2011) studied the inter-relationship between firm growth and profitability; the result showed that growth rates had negative impact on profit level of the restaurant firms.

However, the study by Chronopoulos et al. (2015) discovered differently with US banking sector; they claimed that “faster growing banks appear more profitable than their slower growth counterparts as the coefficient on asset growth is positive and statistically significant at the 1% level”. Nevertheless, there is positive relationship between the growth and firm performance in Malaysian listed companies during 1995-2011 (Salim & Yadav, 2012).

In short, there are several papers studied about the relationship between capital structure and profitability while a few research articles focused on growth and profitability. Most findings stated that capital structure had negative relationship with bank profitability whereas growth in assets and in equity had positive but growth in loans and in deposits had negative impact on profitability of the bank. The similar result on this study is expected for commercial banks in Cambodia over the period of 2005-2013.

3. Methodology

The study on the capital structure, growth and profitability - evidence from commercial banks in Cambodia will be conducted using quantitative analysis. Quantitative method will be analyzed to give empirical findings, so the testing of the hypothesized predictors with bank profitability is required. The empirical findings will be used to suggest some essential recommendations to the bank owners as well as shareholders, thus they can identify which elements of capital structure and growth should be paid more attention in order to increase their profits and bank performance. The conceptualized framework is illustrated below:

3.1 Data and Variables

The study used the balanced panel data from annual reports of National Bank of Cambodia (NBC) with covered the 10 commercial banks over the period of 2005 to 2013. There are 25 commercial banks in 2013 included domestic banks and foreign branches; however, the sample includes only the most long life 10 commercial banks. Whereas 13 banks was not included due to the inadequacy of the period of the data, 2 banks as they are new, 10 foreign commercial banks and 8 specialized banks as they do not run for commercial purposes.

The financial ratios were calculated using Microsoft Excel 2013, and they were put through Reviews 8 to get the results. This study used two important measures of bank profitability; return on assets (ROA) and return on equity (ROE) as the dependent variables, similar to the studies by Trujillo-Ponce (2013); Ashraf (2012); Anbar and Alper (2011); and Karim, Sami, and Hichem (2010). The proportion of profit before income tax to total assets computed the return on assets while the return on equity was the ratio of profit before income tax to total equity.

The independent variables were divided into three categories : capital structure, growth and control variables. The capital structure included debts to equity, equity to loans, and equity to deposits. Growth variables were used in assets, equity, deposits, and loans. In addition, four control variables were used such as non-interest income, inflation rate, gross domestic product (GPD) and bank interest rate.

Table describes the variables used in the regression model:

Table 2: Definitions of variables used in a regression model

Classification of Variables	Notation	Measurement	Expected signs
Profitability			
Return on Assets	ROA	Profit before income tax/Total Assets	
Return on Equity	ROE	Profit before income tax/Total Equity	
Capital Structure			
Equity to Loans	EL	Total Equity/Total Loans	-
Debt to Equity	DE	Total Liabilities/Total Equity	-
Equity to Deposits	ED	Total Equity/Total Deposits	-
Growth			
Assets	GA	Log(assets _t) – Log (assets _{t-1})	+/-
Equity	GE	Log(equity _t) – Log (equity _{t-1})	+/-
Loans	GL	Log(loans _t) – Log (loans _{t-1})	+/-
Deposits	GD	Log(deposits _t) – Log (deposits _{t-1})	+/-
Control Variables			
Non-interest income	NII	Non-interest income/total assets	?
Inflation Rate	CPI	Consumer Price Index	?
Gross Domestic Product	GDP	Annual GDP Rate	?
Bank Interest Rate	BIR	Annual Interest Rate	?

3.2 Model Specification

To test the relationship between capital structure, growth and profitability; here capital structure and growth are the independent variables. To analyze the relationship between the variables, Eviews 8 software and Panel Least Squares (PLS) method are used. Since the profitability is a function of capital structure, growth and control variables, we can express this relationship by the following formula:

$$\text{Prof}_{it} = f(\text{CS}_{it} + \text{GR}_{it} + \text{CV}_{it}) \quad (1)$$

Where: Prof is the profitability which measures by ROA and ROE; CS denotes capital structure, including debts to equity (DE), equity to loans (EL), equity to deposits (ED) while GR is the growth variables such as growth in assets (GA), growth in equity (GE), growth in loans (GL), and growth in deposits (GD). CV is control variables which are added to fit the regression model; it includes inflation rate (CPI), gross domestic product (GDP), bank interest rate (BIR), and non-interest income (NII). From these dependent and independent variables, the following regression models can be estimated by converting formula (1) as follows:

$$(A) \text{ROA}_{it} = C + \beta_1 \text{DE}_{it} + \beta_2 \text{EL}_{it} + \beta_3 \text{ED}_{it} + \beta_4 \text{GA}_{it} + \beta_5 \text{GE}_{it} + \beta_6 \text{GL}_{it} + \beta_7 \text{GD}_{it} + \beta_8 \text{CPI}_{it} + \beta_9 \text{GDP}_{it} + \beta_{10} \text{BIR}_{it} + \beta_{11} \text{NII}_{it} + e$$

$$(B) \text{ROE}_{it} = C + \beta_1 \text{DE}_{it} + \beta_2 \text{EL}_{it} + \beta_3 \text{ED}_{it} + \beta_4 \text{GA}_{it} + \beta_5 \text{GE}_{it} + \beta_6 \text{GL}_{it} + \beta_7 \text{GD}_{it} + \beta_8 \text{CPI}_{it} + \beta_9 \text{GDP}_{it} + \beta_{10} \text{BIR}_{it} + \beta_{11} \text{NII}_{it} + e$$

Where: C is constant, e is error term, i denotes cross-sectional bank and t denotes time period.

4. Result and Discussion

4.1 Descriptive Statistics

In Table , the descriptive statistics are given to analyze and measure the domestic commercial bank's profitability in Cambodia. The table shows the mean, median, standard deviation, minimum and maximum values for each variables. Mean is represented the average value while standard deviation shows deviation of value from mean. On average, banks in our sample have a return on assets ROA of 2% and return on equity ROE 11% over the entire time period from 2005 to 2013. The standard deviation of ROA is 3% and ROE is 13% while the minimum and maximum vales are -8% and 16% for ROA; -38% and 33% for ROE. The mean of debt to equity (DE) is 430%, minimum value is 30% and maximum value is extremely high 1570%. The equity to loan (EL) ratio mean and standard deviation are approximately 66% and 74%, respectively. Whereas the mean of equity to debt (ED) is 47% and standard deviation is 55% for the selected banks. The mean of growth in assets (GA) is 8% with the standard deviation 11% and minimum value is -17% as well as 43% is the maximum value. For the loan, deposit, and equity growth variables, mean, standard deviation, minimum and maximum values are 10%, 9%, 7%; 18%, 13%, 10%; -62%, -19%, -30%; and 119%, 50%, 41%, respectively. However,

the four control variables such as CPI, GDP, BIR and NII are also shown up with their value of mean and standard deviation as following; means of CPI and GDP 6% and 8% while deviation values are 5% and 3% respectively. On the other hand, the BIR and NII means are 7% and 2% with the standard deviation are extremely small 1% and 2% respectively.

Table 3: Descriptive Statistics for Variables

	ROA	ROE	DE	EL	ED	GA	GL	GD	GE	CPI	GDP	BIR	NII
Mean	0.02	0.11	4.30	0.66	0.47	0.08	0.10	0.09	0.07	0.06	0.08	0.07	0.02
Median	0.02	0.14	4.50	0.36	0.22	0.07	0.07	0.08	0.05	0.05	0.07	0.07	0.01
Max	0.16	0.33	15.70	4.11	3.37	0.43	1.19	0.50	0.41	0.20	0.13	0.08	0.13
Min	-0.08	-0.38	0.30	0.20	0.06	-0.17	-0.62	-0.19	-0.30	-0.01	0.00	0.06	0.00
Std. Dev.	0.03	0.13	2.65	0.74	0.55	0.11	0.18	0.13	0.10	0.05	0.03	0.01	0.02
Skewness	-0.01	-0.95	0.93	3.08	2.49	1.05	1.88	0.72	0.85	1.82	-0.57	0.51	2.71
Kurtosis	8.80	4.72	5.99	13.16	10.92	4.77	17.53	3.95	6.95	5.61	3.34	2.54	11.92
Jarque	125.9	24.61	46.54	529.27	328.41	28.38	844.8	11.22	69.34	75.20	5.31	4.68	408.7
Prob.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.10	0.00
Sum	1.75	10.02	387.33	59.31	42.29	7.63	9.10	8.35	6.33	5.07	6.90	5.89	1.86
Sum Sq.													
Dev.	0.08	1.41	625.58	49.26	26.50	1.06	3.00	1.51	0.84	0.26	0.11	0.00	0.04
Observe	90	90	90	90	90	90	90	90	90	90	90	90	90

Source: Sample: 2005-2013

4.2 Relationship between Independent Variables

The Table presents the relationship between independent variables (what is the strength of one variable affecting the other variables). Table 3 shows the correlation among the independent variables is fairly low, so the low correlation coefficients explain that there is no multicollinearity exists.

Table 4: Correlations between Independent Variables

Correlation Analysis: Ordinary
Included observations: 90

Correlation	DE	EL	ED	GA	GL	GD	GE	CPI	GDP	BIR	NII
DE	1.000										
EL	-0.477	1.000									
ED	-0.714	0.496	1.000								
GA	0.303	-0.067	-0.180	1.000							
GL	0.308	-0.138	-0.113	0.636	1.000						
GD	0.233	-0.003	-0.162	0.930	0.512	1.000					
GE	0.168	-0.103	-0.113	0.652	0.540	0.429	1.000				
CPI	-0.058	0.011	0.025	-0.072	0.180	-0.151	0.240	1.000			
GDP	0.015	0.226	0.104	0.049	0.057	0.086	-0.049	0.223	1.000		
BIR	-0.069	0.119	0.049	0.075	0.132	0.008	0.256	0.751	0.120	1.000	
NII	-0.395	0.048	0.462	-0.124	-0.100	-0.045	-0.123	0.076	0.159	0.126	1.000

4.3 Determinants of Return on Assets (ROA)

Multiple linear regression results focusing on the relationship of capital structure, growth and profitability of commercial banks are shown in Table using ROA as dependent variable. Using the Eviews 8 software with the panel least squares (PLS) estimator, the results of the model shows the value of R-squared 0.6677 which confirms that all the explanatory variables explain the return on assets (ROA) 67%. The value of F-statistic is 14.24 and p-value is 0 showing that the whole model is fit for the analysis.

In this study, the Table reflects that debt to equity (DE), equity to loans (EL) and equity to deposit (ED) have a negative impact with bank profitability at the 1% significant level over the period 2005-2013. The results imply that the debt level affects the bank profitability in a negative way.

On the other hand, growth in asset (GA) and growth in equity (GE) have a positive impact with profitability of the banks but these variables show no significance at all. This result indicated that even the high grow rate of assets or equity, it will not be possible to make the rate of return in profit of the bank. In contrast, loans growth and deposit growth have

negative impact on bank profitability; the growth in loans is significant at 10% level but growth in deposit is not significant on profit during the data period 2005-2013 (Table).

However, among the four control variables, there were two variables such as GDP and non-interest incomes (NII) have a significant positively affect bank profitability at 1% level of importance. It can conclude that NII and GDP increase the bank profit; the higher of NII will result high return to the bank (Table).

Table 5: Determinants of return on assets (ROA)

Dependent Variable: ROA

Method: Panel Least Squares

Sample: 2005 2013

Periods included: 9

Cross-sections included: 10

Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.025183	0.036717	0.685874	0.4948
DE	-0.003563	0.001243	-2.866504	0.0053***
EL	-0.025577	0.003607	-7.090922	0.0000***
ED	-0.021466	0.006124	-3.504926	0.0008***
GA	0.122055	0.088598	1.377619	0.1723
GL	-0.029279	0.015893	-1.842245	0.0692*
GD	-0.094397	0.059198	-1.594603	0.1148
GE	0.041718	0.038238	1.091012	0.2786
CPI	-0.016076	0.066643	-0.241224	0.8100
GDP	0.265804	0.065109	4.082438	0.0001***
BIR	0.032449	0.596489	0.054400	0.9568
NII	0.648599	0.122902	5.277349	0.0000***
R-squared	0.667652	Mean dependent var		0.019468
Adjusted R-squared	0.620782	S.D. dependent var		0.030792
S.E. of regression	0.018962	Akaike info criterion		-4.969204
Sum squared resid	0.028045	Schwarz criterion		-4.635896
Log likelihood	235.6142	Hannan-Quinn criter.		-4.834795
F-statistic	14.24488	Durbin-Watson stat		1.297365
Prob(F-statistic)	0.000000			

Note: *** significant at the 1% level; ** significant at the 5% level; *significant at the 10% level

4.4 Determinants of Return on Equity (ROE)

Similarly, using return of equity (ROE) as dependent variable, the value of R-squared is 0.69 which confirms that all the independent variables explain the ROE 69%. The value of F-statistic is 15.79 and p-value is 0 showing that the whole model is fit for the analysis.

As seen in the Table , the debt to equity variable has negative impact on return on equity (ROE) with the 10% significance level while equity to loans and equity to deposit shows the negative coefficient to the profitability of commercial banks during the period of 2005-2013 with the of 1% significance level. Thus, the bank profitability which determines by return on equity is being affected by capital structure.

Moreover, the results also confirm that the growth in loans (GL) and growth in deposit (GD) have negative impact on profitability where significance level of GL is in 1% significance level but no significance found with the growth in deposit (GD) over the period 2005-2013. The results implied that when the rate of loan growth is high, the rate of return will be decreased. Nevertheless, the asset growth and equity growth show in different results: a positive impact on profit

of variables growth in assets (GA) and growth in equity (GE) was found but no significant signal for these two variables (Table).

For the four control variables, only GDP has high positive impact on return on equity (ROE) with a 1% significance level. Whereas, the other three variables such CPI, BIR and NII show positive coefficient but without significant at all. This indicates that GDP could reinforce the profitability of commercial banks in Cambodia (Table).

Table 6: Determinants of return on equity (ROE)

Dependent Variable: ROE

Method: Panel Least Squares

Sample: 2005 2013

Periods included: 9

Cross-sections included: 10

Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.146821	0.145022	1.012410	0.3145
DE	-0.011271	0.004910	-2.295786	0.0244*
EL	-0.125427	0.014247	-8.803814	0.0000***
ED	-0.062868	0.024190	-2.598900	0.0112***
GA	0.131607	0.349939	0.376086	0.7079
GL	-0.240365	0.062773	-3.829122	0.0003***
GD	-0.073547	0.233816	-0.314550	0.7539
GE	0.403655	0.151030	2.672689	0.0092***
CPI	0.094303	0.263222	0.358265	0.7211
GDP	0.973069	0.257163	3.783857	0.0003***
BIR	0.412307	2.355970	0.175005	0.8615
NII	0.480722	0.485431	0.990300	0.3251
R-squared	0.690042	Mean dependent var		0.111310
Adjusted R-squared	0.646330	S.D. dependent var		0.125936
S.E. of regression	0.074894	Akaike info criterion		-2.221911
Sum squared resid	0.437515	Schwarz criterion		-1.888603
Log likelihood	111.9860	Hannan-Quinn criter.		-2.087501
F-statistic	15.78611	Durbin-Watson stat		1.019647
Prob(F-statistic)	0.000000			

Note: *** significant at the 1% level; ** significant at the 5% level; *significant at the 10% level

5. Conclusion

The current study tried to analyze the capital structure and growth which affected the profitability of commercial banks in Cambodia over the period 2005-2013. The two categories of predictors which are capital structure and growth were investigated. Findings indicated that all the three variables of capital structure such as debt to equity (DE), equity to loan (EL), and equity to deposit (ED) had negative impact on profitability measured by return on assets as well as return on equity. On the other hand, the variables of growth such as growth in assets (GA) and growth in equity (GE) had positive impact on both ROA and ROE, but loans growth (GL) and deposits growth (GD) shown negative influence on bank profitability. In addition, among the four control variables, GDP and NII had a positive impact on return on assets (ROA) while only GDP had positive impact on return on equity (ROE). Other two variables like CPI and BIR had positive impact on ROE but no significance found. However, only CPI affected on ROA without any considerable sign. Overall, the profitability of the commercial banks in Cambodia was negatively influenced by capital structure whereas growth variables had both positive and negative impact on ROA and ROE.

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