



## Banks Specific Factor that Determinate the Profitability of Commercial Banks in Republic of North Macedonia

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**Abstract:** Banking sector plays an important role in economy and has significant impact on country's economic growth. The purpose of this seminar paper is by utilizing empirically analyses to identify the key determinants of commercial banks' profitability by case study, Republic of North Macedonia. Performance evaluation of commercial banks is grounded on the banks specific factors, exploiting data for the period 2012 -2018 for 13 commercial banks. For this purpose, the return on assets (ROA) is taken as a dependent variable, whereas capital adequacy (CAP), bank size (SIZE), credit risk (CR), revenue diversification (DIV), liquidity (L) and leverage (LEV) represent the independent variables. The regression analysis indicate that that commercial banks profitability in Republic of North Macedonia has been driven mainly by factors such as liquidity and size.

**Keywords:** Bank Profitability; the profitability determinants; commercial banks; ROA

**JEL Classification:** E50

### 1. Introduction

Commercial banks have always played an important role in the country's economy and play a decisive role in the development of industry and commerce. They act not only as caretakers of the country's wealth, but also as domestic resources, necessary for country's economic development.

The main role of a financial system all-over the world is to lubricate the gears facilitating the economic operations. The banking system plays a major role in transferring funds from the saving units to the investing units. If a financial system

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is efficient, it should demonstrate improvements in profitability, increasing the volume of funds flowing from saver to borrowers, and better quality services for consumers (Levine & Loayza, 2000).

Commercial banks play a vital role in the economic resource allocation of countries. They channel funds from depositors to investors continuously. However they can perform such aim if they generate the necessary income to cover their operational cost incurring in the due course. In other words, for sustainable intermediation function, banks need to be profitable. Beyond the intermediation function, the financial performance of banks has critical implications for economic growth of countries. Good financial performance rewards the shareholders for their investment. Such approach, in return, encourages additional investment and brings economic growth. On the other hand, poor banking performances can lead to banking failure and crisis, which have negative repercussions on the economic growth (Ongore dhe Kusa, 2013).

Banking sector during the two last decades has encountered major transformations in its environment, resulting in significant impacts on its performance. Therefore, the question imposed is to identify what are the factors influencing a bank profitability? According to previous studies, factors that significantly affect the bank's profitability are particular bank factors and macroeconomic factors. Internal factors are the individual bank characteristics that affect the performance of the bank (Poposka.K, Trpkovski M., 2013). Such factors are essentially influenced by internal management and board decisions. External factors are broad sectors or wide-ranging factors of the country that are beyond the control of the company and affect the profitability of the banks.

The main reason for the research of this topic is to investigate banks factors determinants of profitability that affecting of commercial banks.

## **2. Review of Literature**

A number of previous research have been attempting to find the key determinants of profitability of commercial banks. Bank profitability is usually expressed as a function of internal and external determinants. There are a number of studies that have to do with bank profitability. Some studies base their analysis on cross-country evidence, while some scholars focus on the banking system of individual countries. The first group of studies includes Haslem (1969), Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (1999), Abreu and Mendes (2001), Hassan and Bashir (2003) Goddard and Molyneux and Wilson (2004), Staikouras and Wood (2004), Athanasoglou (2005), Micco et al. (2007) , Flamini et al. (2009) , Ben Naceur and Omran (2011), Lee et al. (2014), Dietrich and Wanzenried (2014), Petria et al.

(2015), Menicucci and Paolucci (2016), Deng (2016), Djalilov and Piesse(2016), Ozili (2016), Ahmad et al. (2016).

Molyneux and Thornton (1992) analyzed the profitability of the banking sector 18 different European countries. According to the results of regression analysis, they reached a conclusion that the higher capital and interest rate will increase the profitability of the banks. Demirguc-Kunt and Huizinga (1999), analyzed the banking sector in 80 different countries in the year's 1988-95 by using regression analysis. They defined a positive relationship between the inflation rate and profitability of the banks. The study of Goddard and Molyneux and Wilson (2004), evaluated the profitability of the banks in 6 European Union member countries. By using GMM they determined that there is a positive relationship between bank size and profitability. Dietrich and Wanzenried (2014) focused on the determinants of bank profitability in the 35 European countries. By using the regression analyses they concluded that size and capital ratio are important determinants of banks' profitability while higher loan loss provisions result in lower profitability levels.

Djalilov and Piesse (2016) investigate the determinants of bank profitability in the early transition countries of Central and Eastern Europe by applying the GMM model for the period 2000–2013. They research concluded that credit risk, capital, size, concentration, GDP growth, inflation, financial freedom and property rights influence bank profitability. Ahmad et al. (2016) focused on the determinants of banks profitability in 78 Asian and 89 American. They used regression analyses showed that bank-specific variables rather than macroeconomic variables influence bank profitability.

Second group of studies which assess banks profitability by specific country includes: Athanasoglou et al. (2005), Kosmidou et al. (2006), Dietrich and Wanzenried (2011), Albertazzi et al. (2016), Tan et al. (2016). Albertazzi et al. (2016) focused into the determinants of profitability of Italian banks. By using regression analyses they concluded that decrease in economic growth is the main cause of low profitability of Italian banks. Tan et al. (2016) by using the GMM model find that credit risk, liquidity risk, capital risk, security risk and insolvency risk significantly influence the profitability of Chinese commercial banks.

Athanasoglou et al. (2005) examine the effect of bank specific, industry-specific and macroeconomic determinants of bank profitability, using an empirical framework that incorporates the traditional Structure-Conduct-Performance (SCP) hypothesis and they apply a GMM technique to a panel of Greek banks that covers the period 1985-2001. According to the empirical results, capital is important in explaining bank profitability and that increased exposure to credit risk lowers profits. Additionally, labor productivity growth has a positive and significant impact on profitability, while operating expenses are negatively and strongly linked to it. The estimated effect of size does not provide evidence of economies of scale in banking.

Likewise, the ownership status of the banks is insignificant in explaining profitability, denoting that private banks do not in general make relatively higher profits, at least during the period under consideration.

### **3. Variables and Hypotheses**

#### **3.1. Dependent Variables**

The main objective of the research is to determine the extent to which bank-specific, macroeconomic measures influenced profitability. Based on a review of the literature, we identified various variables with which to measure the bank's profitability such as: return on assets (ROA), return on equity (ROE), and net interest margin (NIM as a common measure (Ezra, 2013). The NIM, ROA, and ROE are the three most commonly used financial performance indicators of banks. The ROA measures the overall performance of the bank and it has been frequently used in studies on bank determinants. The ROE is the return on the shareholder's investment. A business with a high return on equity is more likely to be capable of generating cash internally (Athanasoglou, Brissimis & Delis, 2008;)

#### **3.2. Independents Variables**

##### **A. Capital Adequacy of the Bank**

A banks' safety and financial stability can be scrutinized by the use of this ratio. The greater the value of this ratio, the smaller will be the chances of bankruptcy. Therefore "to prevent the bank from bankruptcy it is necessary to maintain a significant level of capital adequacy "(Chen, 2003, p. 21). The capital adequacy for banking institutions the ratio should be superior to 8% or we can say that the total capital must be over 8% of its risk weighted assets. According to Basel III these ratios has been increased for the additional buffers such as Capital Conservation Buffer and Countercyclical Buffer (Poposka, Stojanovska & Iloska-Trajkovska, 2017). However, it is important to note that in some countries the required minimum capital may vary depending on the local regulators.

H1: There is a significant relationship between capital adequacy and commercial bank profitability

##### **b. Size of the bank**

The size of the bank can be measured with the natural logarithm of total assets. Yuqi li (2007) indicate that older banks expected to be more profitable due to their longer tradition and the fact that they could build up a good reputation. Obviously, the above empirical studies include age as one of their explanatory determinant and indicate a

positive relationship between age and profitability. Angoff Roger Brown (2007) found that there is a positive and significant relationship between the age of a company and its profitability as measured by ROA. Similarly, Hafiz Malik (2011) in his Pakistan study found that there is significantly positive association between age & size of the company and profitability. The older the firm the more may be the profitability of the firm. Flamini et.al (2009) indicated that size is used to capture the fact that larger firms are better placed than smaller firms in harnessing economies of scale in transactions and enjoy a higher level of profits. According to Athanasoglou *et al.*, (2005) the effect of a growing size of a bank on profitability has been proved to be positive to a certain extent.

H2: There is a significant relationship between company size and commercial bank profitability

Credit risk - The ratio of provision for loan losses-to-total loans was used.

Some authors describe this factor as assets quality (Kosmidou et al., 2006), which can be usually measured only indirectly by taking into account the loan-loss provisions. As provisions roughly indicate the probability of loans to become non-performing, higher provisions are expected to be negatively related to bank profitability. Again, different authors try to capture this effect by using different indicators, for example Athanasoglou et al. (2006) use loan-loss provisions to loans ratio and Kosmidou K. et al. (2006) loan-loss provision to total assets ratio. In either case the relationship with bank profitability is expected to be negative.

H3: There is a significant relationship between credit risk and profitability of commercial banks

d. Revenue diversification in the bank

The decline in interest margins during the last decade has changed the traditional role of banks and forced them to search for new sources of revenue. In this context, Elsas et al. (2010) find that, initially, commercial banks typically increase diversification by moving into fee-based businesses. Then they expand their business into trading activities or by underwriting insurance contracts. Recently, both Chiorazzo et al. (2008) and Elsas et al. (2010) conclude that revenue diversification enhances bank profitability via higher margins from non-interest businesses.

H3: There is a significant relationship between revenue diversification and commercial bank profitability

e. Liquidity

This ratio is estimated by total customer deposit/total assets. The bank's liquidity is measured by using this ratio, which aids in mitigating the risk of bank's failure. If the bank lacks sufficient liquidity, then it may fails in paying its depositors and financing its routine payments. Rudolf emphasizes that the liquidity expresses the

degree to which a bank is capable of fulfilling its respective obligations (Rudolf, 2009).

H4: There is a significant relationship between liquidity and commercial bank profitability

f. Leverage

Empirical evidences with regard to leverage found to be statistically significant relationship but negative. For instance Renbao Chen and Kie Ann Wong (2004), in Canada, Hamadan Ahamed Ali Al-Shami (2008) in UAE, Hifza Malik (2011) in Pakistan, Sylwester Kozak (2011) in UK Swiss Re (2008) in Egypt and Flamini et..al (2009) in Sub-Saharan countries found that negative but statistically significant relationship between leverage and profitability of firms .

H5: There is a significant relationship between leverage and commercial bank profitability

#### 4. Data and Methodology

The used data are obtained from the Nacional Bank of Republic of North Macedonia web site, respectively from the financial reports of commercial banks in Republic of North Macedonia.

In order to prove empirically the factors affecting profitability of commercial banks in Republic of North Macedonia, we use (OLS) as our valuation method. OLS is a method used to calculate unrecognized parameters in a linear regression model. Panel analysis is characterized as cross-sectional and observed over a certain period of time. It is used by the researchers since there is more data to work with and the analysis would run into lesser risk of obtaining biased results, considering that the observed samples are arranged according to the determined period.20For our research, we have used the following equation:

$$(1) \quad ROA_{i,t} = \beta_0 + \beta_1 \cdot CAP_{it} + \beta_2 \cdot SIZE_{it} + \beta_3 \cdot DIV_{it} + \beta_4 \cdot LIQ_{it} + \beta_5 \cdot LEV_{it} + \beta_7 \cdot Du_{it} + \varepsilon_{it} :$$

$\beta_0$	-	Constante
$ROA_{it}$	-	Return on asset at time t
$CAP_{it}$	-	Capital adequacy at time t
$SIZE_{it}$	-	Size at time t
$DIV_{it}$	-	Revenue diversification at time t
$LIQ_{it}$	-	Liquidity at time t
$LEV_{it}$	-	Leverage at time t
$Du_{it}$	-	Commercial banks
$\varepsilon_{it}$	-	Residuali

Before proceeding further with econometric analysis of the data, the first step to be taken is testing the validity of the model verifying between the respective tests if they are fulfilling the assumptions of the classical model of linear regression (OLS). In the table below are presents the results of tests for the validity of the model.

**Table 1.**

Test	Type of test	Statistics	Hypothesis
Heteroskedasticity	Breusch-Pagan-Godfrey	Prob. 0.1146	The variance of error is constant
Serial correlation	Breusch-Godfrey Serial Correlation LM Test	Prob.0.8221	The errors are not serial correlation.

*Source: Authors' Calculations*

## 5. Analyses and Discussion of Results

The result of the regression analyses has been indicated on the Table 2.

**Table 2. Analysis Results**

Dependent Variable: ROA

Method: Least Squares

Sample: 1 91

Included observations: 91

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAP	-0.021877	0.124354	-0.175928	0.8608
CR	-0.020003	0.063807	-0.313496	0.7547
DIV	0.002107	0.014993	0.140549	0.8886
LEV	-0.000556	0.000910	-0.611262	0.5427
LIQ	0.022609	0.011325	1.996350	0.0491
SIZE	0.008908	0.001533	5.810742	0.0000
C	-0.137570	0.066915	-2.055899	0.0429
R-squared	0.375550	Mean dependent var		0.003344
Adjusted R-squared	0.330947	S.D. dependent var		0.018549
S.E. of regression	0.015172	Akaike info criterion		-5.464880
Sum squared resid	0.019337	Schwarz criterion		-5.271737
Log likelihood	255.6520	Hannan-Quinn criter.		-5.386959
F-statistic	8.419732	Durbin-Watson stat		1.921393
Prob(F-statistic)	0.000000			

*Source: Authors' Calculations*

The regression Analysis result (Table 2.) shows R-squared statistics and adjusted R squared statistics value of 37.55% and 33.09% respectively. The result indicates that the change in the independent variable explain 33.09% of the change in the dependent variable. Take in consideration that the independent variables used in the analysis are capital adequacy, bank size credit risk, revenue diversification, liquidity and leverage which explain 37.55% of changes in the profitability of banks as measured by return on assets. The remaining value of change was explained by other factors which are not included in the model. So these variables together, seems to be the best explanatory variables of profitability of commercial banks in Republic of North Macedonia.

Regarding the statistical significance of Fisher value it is (0.000), indicating strong statistical importance of the estimated model, which extends the reliability and validity of the model.

Based on the result of Table 2. The coefficient of capital adequacy, credit risk and leverage against ROA were negative. This indicates that there was an inverse relationship between the aforementioned three independent variables and ROA .On the other hand revenue diversification, liquidity and size had a positive relationship with ROA and significant with liquidity and size.

The results of empirical analysis show that between bank size and profitability (ROA) has a significant correlation (0.0000) at 1%, and they are positively correlated between them. A positive correlation indicates that the bank enjoys economies of scale, which reduces the cost of collecting and processing information. (Athanasoglou, 2008)

Considering ROA as a measure of profitability, the liquidity coefficient is positive and significant.

The liquidity coefficient is statistically verified as an important factor in banks 'profitability and has a positive impact on banks' profitability. Similar results have also been made in research like (Fungacova and Poghosyan, 2011) find a positive relationship between the ratio of liquid assets to total assets and profitability in Russia.

## **Conclusion**

The main objective of this research is to analyzes the banks determinant factors of profitability of commercial banks in Republic of North Macedonia for the period 2012 -2018. The study used a balanced panel data of ninty one observation from 2012 to 2018 of 13 commercial banks . The commercial banks werw analysed using the OLS to examine the bank's profitability, which is measured by ROA as a the linear function of various specific variables. Continuing to take into account various



research, we find that bank specifications such as liquidity and size are positively correlated with ROA. The size of total assets has a positive impact on profitability (ROA), with low level of importance for the model. This direct relationship between bank size and profitability shows that large commercial banks outperform better than small commercial banks because big banks can benefit from economies of scale and also with the increased of the size they can reduced the costs. Otherwise, it said that big banks have the advantages of their size to generate more returns. The results also found a significant positive relationship between liquidity and bank profits. In general, the results suggest that the two variables are important in determining the commercial banks profitability and statistically significant and commercial banks in Republic of North Macedonia need to consider them to increase their profitability. Internal factors depend on the decisions of the company itself, and thus by optimizing their decisions, companies can maximize their profitability.

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## Appendix

### Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.772399	Prob. F(6,84)	0.1146
Obs*R-squared	10.22599	Prob. Chi-Square(6)	0.1155
Scaled explained SS	56.16142	Prob. Chi-Square(6)	0.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 01/23/20 Time: 13:25

Sample: 1 91

Included observations: 91

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001236	0.003300	0.374606	0.7089
CAP	0.005325	0.006132	0.868486	0.3876
CR	0.002287	0.003146	0.726753	0.4694
DIV_	-0.000127	0.000739	-0.172003	0.8638
LEV	1.51E-05	4.49E-05	0.337461	0.7366
LIQ	-0.000327	0.000558	-0.585434	0.5598

SIZE	-0.000210	7.56E-05	-2.775120	0.0068
R-squared	0.112373	Mean dependent var		0.000212
Adjusted R-squared	0.048972	S.D. dependent var		0.000767
S.E. of regression	0.000748	Akaike info criterion		-11.48416
Sum squared resid	4.70E-05	Schwarz criterion		-11.29101
Log likelihood	529.5291	Hannan-Quinn criter.		-11.40624
F-statistic	1.772399	Durbin-Watson stat		2.123465
Prob(F-statistic)	0.114615			

## Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.196384	Prob. F(2,82)	0.8221
Obs*R-squared	0.433799	Prob. Chi-Square(2)	0.8050

## Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 01/23/20 Time: 13:28

Sample: 1 91

Included observations: 91

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAP	-0.000225	0.125648	-0.001790	0.9986
CR	0.003158	0.064654	0.048847	0.9612
DIV_	-0.001022	0.015228	-0.067098	0.9467
LEV	-1.72E-05	0.000920	-0.018692	0.9851
LIQ	0.000716	0.011516	0.062215	0.9505
SIZE	0.000141	0.001564	0.090151	0.9284
C	-0.005156	0.068130	-0.075684	0.9399
RESID(-1)	0.039836	0.112958	0.352659	0.7252
RESID(-2)	0.058215	0.112747	0.516337	0.6070
R-squared	0.004767	Mean dependent var		-1.99E-17
Adjusted R-squared	-0.092329	S.D. dependent var		0.014658
S.E. of regression	0.015320	Akaike info criterion		-5.425702
Sum squared resid	0.019245	Schwarz criterion		-5.177375
Log likelihood	255.8694	Hannan-Quinn criter.		-5.325518
F-statistic	0.049096	Durbin-Watson stat		1.979535
Prob(F-statistic)	0.999940			