What Drives Profitability in the Albanian Banking System?

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Abstract—*The Present work aims to study the profitability of the banking system in Albania and the main factors that determine it. Among many variables, liquidity, capital adequacy and inflation are considered to be the most important deterministic variables. The Albanian banking industry has passed through many obstacles during the last decade; these obstacles significantly affected the banks' profitability. For this reason the main focus of this article is to analyse the profitability of Albanian banking industry and to find which of these variables statistically explains the variation of profitability. The article tests the relationship between the explanatory variables and explained variable through a multiple regression analysis. The article is a quantitative analysis covering a time frame from 1998 until 2015 and is based on secondary data. The article is expected to prove the existence of a significant relationship between profitability and the determinants mentioned above.*

Keywords*: profitability, liquidity, capital adequacy, inflation, commercial banks*

I. INTRODUCTION

Whenever we speak of banking system, the discussion leads to liquidity and profitability issues. These two factors together with solvency are considered to be the most important indicators of the financial system of a country. The Albanian banking system has gone through many challenges and ups and downs. The recent financial crisis[1] posed a major threat for Albanian commercial banks[2]. Even though, none of the commercial banks operating in Albania went to default, they were all risked and heavily affected in terms of financial profitability and liquidity.

In this work, the financial structure effect and inflation are added as significant indicators in explaining the performance and liquidity conditions for commercial banks in Albania. Banking system computes more than 90 per cent of Albanian financial system. For this reason when determining the factors that affect the profitability of banking system, we indirectly generate significant information regarding the profitability for the whole financial system.

In the second section of this paper, a theoretical background is provided aiming to select the most appropriate definitions for each of the variables and also explain the relationship between profitability, liquidity, capital adequacy and inflation within Albanian commercial banks. In this section the research question and the hypothesis, derive from the literature frame. The third section puts together the data design and the methodology followed to conclude the hypothesis prominence. The following section is a summary of the variables statistical description and an analysis of the main findings. The last section of this paper reveals the main concluding remarks.

A. Research Focus and Objectives

This paper aims to find out the relationship that exists between profitability and its deterministic variables in Albanian commercial banks; secondly to provide a theoretical background for each of the variables, thirdly the article aims to analyse the effect of liquidity, capital adequacy and inflation into profitability, lastly the main objective of this article, is to analyse the prominence of the hypothesis and conclude whether this hypothesis stands for Albanian banking system.

II. LITERATURE REVIEW

This section of the work reviews the theoretical background of the relationship between profitability and independent variables such as liquidity, capital adequacy and inflation. Further, this section states the definition of the variables, the most appropriate proxies used for each indicator, the academic discussion regarding their relationship and after completing the theoretical frame, it ends up with the hypothesis development.

A. Variable Definition

Considerable research is made in terms of profitability and the variables affecting it. Liquidity is considered to be one of the most important indicators. According to Shim and Siegel (2000) liquidity is defined as the capacity of the company to liquidate maturing short-term debt. They state that keeping liquidity ratio into an adequate level is a condition, which determines the continuity of the company in the market.

Referring to Owolabi and Obida (2012) profitability is defined as the ability of the company to make profits from all business activities. In other words profitability is an indicator of management efficiency in using the

[1] Problem solving needs a pro-active answers from the state and from enterpreneurs also (Varga – Csiszárik-Kocsir, 2015)
[2] The crisis had a deep impact of all over the world from financies to investments as well (Csiszárik-Kocsir, 2015)

resources and adding value to the company. Owlabi et.al (2012) finds that the main indicators in measuring the profitability are Return on Investment, Return on Equity and Return on Assets. In this article ROA is used as the main proxy for identifying profitability.

Another determinant of profitability is financial structure. To measure this indicator the ratio of capital adequacy is used. The relationship between profitability and financial structure is studied before from Petria, Capraru and Ihnatov (2015), Berger 1995 and Pilloff and Rhoades 2002. Most of these studies mentioned use Return on Assets as a proxy for profitability, and solvency or capital adequacy as a proxy for financial structure. While in terms of macroeconomic effects, inflation is taken as an explanatory variable as well; Petria et.al (2015) and Alfani and Rustandar (2013) state that inflation should always be considered when speaking of profitability and liquidity.

B. Relationship between Profitability, Liquidity, Capital Adequacy and Inflation

Agarwal and Mishra (2007) strongly emphasize the reason why liquidity should be studied together with profitability. Even though they consider liquidity as the factor which determines whether the firm will survive or not; further they state that liquidity should be considered together with profitability, due to the fact that firms who do not make profit can be treated as under par, but adding the lack of liquidity may take it to default.

For instance, Lyroudi, McCarty, Lazaridis and Charzigagios (1999) found a negative relationship between quick ratio (which is one of the main indicators of measuring liquidity) and profitability in UK firms. Meanwhile, Vishnani and Shah (2009) in their study about corporate performance emphasize that current ratio is most appropriate measure for liquidity. Further, Velnampy and Nimalathason (2010) in their research about firm size and profitability in the banking system found a significant negative relationship between these two variables.

Eljelly (2004) studied the correlation between liquidity, profitability and size for a sample of companies in Saudi Arabia, and found that the size of the firm has a significant effect on the profitability of the corporates. Eljelly (2004) further found a negative relationship between liquidity and profitability for these companies. Further, Wang (2002) studied the relationship between liquidity management and company profitability in Japanese and Taiwanese companies and noticed a statistically significant negative relationship between liquidity (measured by cash conversion cycle) and profitability (measured by return on assets). The same findings count for Blatt (2001). Meanwhile, Sharma and Kumar (2011) noticed a negative relationship between the cycle of cash conversion (a proxy for liquidity) and profitability.

An inverse relationship between profitability and liquidity was found by Marques and Braga (1995), who studies this relation for some food companies; Blatt (2001) noticed the same findings. Dong (2010), also studied factors affecting profitability, and among them a strong negative relationship between was found between liquidity and profitability indicator. This is an indication that, under ceteris paribus when all other variables are considered to be constant, an in increase in profitability usually happens when there is a decrease in liquidity (to measure which, CCC was used)

Another important determinant explaining the profitability in the analysis of Petria et.al (2015) when analysing 27 banking systems, is inflation. But they fail to find significant statistical evidence. The relationship between profitability and inflation is also studied form Alfani and Rustandar (2013), who found a statistically significant negative relationship, indicating that during periods of low inflation, the banks' profitability tends to be higher. A similar study is conducted for the banking industry in Pakistan and the factors affecting profitability. Khan, Shahid, Bari, Anam, Shehzad and Siddique (2014), state that in highly inflated markets, lending decreases and as a consequence capital investment and hence profitability becomes less effective.

In terms of capital adequacy, Olalekan and Adeyinka (2013) failed to find a significant relationship between this indicator and bank profitability. Further Agbeja, Adelakun and Olufemi (2015) found a significant relationship between profitability and capital adequacy for Nigerian banking system.

After completing the theoretical background, the research question becomes much clear. Therefore, this worksis articles' main question is: Which are the most significant indicators affecting the profitability of commercial banks in Albania. This research question is in line with the hypothesis stated in the following section.

C. Hypothesis Development

In order to respond to the research question stated above, this article hypothesizes that: ***During low profit periods, banks face an excess of liquidity in their portfolio.***

Based on the literature above, a negative relationship between these two variables is expected. This would be in line with the findings of Marques and Braga (1995), Dong (2010), Blatt (2001), Eljelly (2004), Wang (2002), Sharma and Kumar (2011) etc. Section four provides the results and empirical evidence in support of this hypothesis.

III. DATA AND METHODOLOGY

This section provides evidence concerning the data collection and methodology used to generate the empirical findings. The timeframe where the analysis is based lies from last quarter of 1998 until the first quarter of 2015. The sample is constituted from 16 commercial banks operating in Albania. The data, which is generated from Bank of Albania, was processed using STATA software.

A. Data Design

In this section of the analysis, information about data collection and variables computation is provided. Profitability is generated from Return on Assets (ROA), which is generated from Bank of Albania. Liquidity is constituted using the current ratio, which is calculated based on the formula (1):

$$Current\ Ratio = \frac{short\ term\ loans}{current\ deposits} \quad (1)$$

Capital Adequacy is also generated from Bank of Albania, and is computed as the ratio between equity and total assets here:

$$Capital\ Adequacy = \frac{Equity}{Total\ Assets} \quad (2)$$

Inflation data is generated from the change in consumer price index. All these variables are generated into quarterly basis. The table below is as summary of the variables explanation; for each variable, the source where it was generated from is shown, and the indicator chosen and the proxy for each indicator are provided. The last column of Table 1 indicates the expected correlation based on the literature review (authors provided in the sixth column).

TABLE 1:
VARIABLE DESCRIPTION

Indicat	Proxy	Abr		Authors	C
Profitability	Return on Assets	ROA	Source: Bank of Albania	*Marques et.al (1995), Dong (2010), Blatt (2001), Eljelly (2004), Wang (2002), Sharma et.al (2011)*	
Liquidity	Current Ratio	CR		*Marques et.al (1995), Dong (2010), Blatt (2001), Eljelly (2004), Wang (2002), Sharma et.al (2011) etc.*	-
Capital Adequacy	Equity/ T.Assets	C.A		*Olalekan et.al (2013), Agbeja, et.al (2015), Petria, et.al (2015), Rhoades 1995, Berger (1995) Pilloff et.al 2002.*	+
Inflation	Change in CPI	CPI		*Alfani et.al (2013), Khan, et.al (2014),Petria et.al (2015)*	+

Source: Author

B. Methodology

In order to identify the relationship between profitability and its determinants, a quantitative approach is used; where profitability is considered to be the explained variable, while liquidity, capital adequacy and inflation are the explanatory variables. For instance, the function below can be stated:

Profitability = f(Liquidity, C.Adequacy, Inflation) (3)

After examining the distribution of these variables, it was found that most of them did not meet the normal distribution requirement; for this reason Return on Assets, Capital Adequacy and Current Ratio are transformed into logarithmic. All these variables are run using a multiple regression analysis and the estimated model is stated based on the equation below:

$$Log(ROA) = \beta_0 + \beta_1 Log(C.R) + \beta_2 Log(C.A) + \beta_3 CPI + \varepsilon \quad (4)$$

IV. FINDINGS

This section provides the main findings, summary descriptive of the variables correlation and the analysis of the results. The aim of this section is to verify the hypothesis. Table 2 summarizes the main variables and provides descriptive statistics for the listed indicators.

TABLE 2
DESCRIPTIVE STATISTICS

	Mean	Std.Dev	Min
Log ROA	-0.180	0.7661	-2.659
Log C.R	2.462	1.0724	0.018
Log C.A	2.956	0.3389	2.104
CPI	0.220	0.7397	-1.067

	Max	Pr(Skw)	Pr(Krt)
Log ROA	0.727	0.0001	0.0970
Log C.R	3.67	0.0215	0.0177
Log C.A	3.73	0.0950	0.0838
CPI	2.26	0.1994	0.5662

As shown in table 2 the final sample, after dropping the missing values, is left with 64 observations. When comparing the mean with the interval of the minimum and maximum values for each variable, it can be noticed that return on assets (as a proxy for profitability) is mostly left skewed, due to the fact that the mean is -0.18 indicating that on average Logged ROAs' value is approximately -0.18; meanwhile current ratio and capital adequacy are very close to the normal distribution in terms of the mean being almost in the middle of the minimum to maximum values interval. While change in consumer price index mean indicates that, on average, after values are ranked from lowest to highest, the medium of the interval of this proxy is 0.22.

In terms of normal a distribution shape, the Jarque Bera[3] test for skewness and kurtosis is used. Kurtosis checks for how small and sharp the central peak is relative to the standard bell curve. Standard normal distribution is called mesocurtic. According to the Jarque Bera's p-values, it can be stated that all variables, except change in price index (which is a proxy for inflation) are normally distributed and can be considered mesocratic.

Meanwhile, skewness is an indicator of the asymmetry and deviation from normal distribution. The negative sign of skewness shows that the distribution observations is left skewed and vice versa. Table 2 shows that in line with kurtosis normality test, the results are almost the same; the only variable lacking normal distribution shape is inflation index.

The variables were also tested for multicollinearity, which refers to the case when two or more explanatory variables in a multiple regression exhibit high pairwise correlations. This can lead to inflated standard errors of coefficients and low significance of estimated coefficients. To check whether our variables exhibit any problematic correlation a Variance Inflation Factor test is computed[4]. As indicated in table A1 the VIF-values range from 1.02 to 1.16. According to Jiao et al., (2012) VIFs greater than 5, indicate a severe multicollinearity. This means that our

[3] The Jarque Bera test which tests whether residuals from a linear regression model are normally distribute or not, is shown in appendix A.

[4] See appendix section, table A.1

variables are not strongly correlated with each other and therefore, the regression model does not suffer from multicollinearity.

A. *Spearman Correlation Matrix*

Table 3 shows the correlation matrix between variables. Spearman correlation matrix uses the rho coefficient to measure the strength of the monotonic relationship (the dependence) between variables. If a high dependence exists between variables, this is an indication of the existence of a high correlation between them, which is not a good indication, as it leads to biased results.

TABLE 3
CORRELATION MATRIX

	Log ROA	Log C.R	Log C.A	CPI
Log ROA	**1.000**			
Log CR	**-0.3880*** (0.0015)**	**1.000**		
Log CA	**0.5150*** (0.0000)**	**-0.3705*** (0.0026)**	**1.000**	
CPI	**0.0102 (0.9364)**	**0.0812 (0.5238)**	**0.0487 (0.7024)**	**1.000**

*P values in parenthesis: * significant at 10%, ** significant at 5%, ***significant at 1%*

The Spearman correlation coefficient varies from -1 to 1. Table 3 shows that a weak relationship (below 0.40) exists between liquidity and profitability, inflation and profitability, capital adequacy and liquidity; a moderate relationship exists between inflation and capital adequacy, capital adequacy and profitability. There are no strong correlations (above 0.80), indication that no biased results are expected. If referring to p-values in parenthesis, all the correlations are statistically significant (indicating the existence of a linear relationship between variables), apart from CPI (proxy for liquidity), which appears to be not statistically significant (linear relationship does not exists).

B. *Analysis of Results*

This section provides the empirical evidence of the relationship between variables, based on a multiple regression analysis. The explained variable (profitability) is regressed with the explanatory variables (liquidity, capital adequacy and inflation). The output of the regression analysis is provided in table 4.

TABLE 4
REGRESSION ANALYSIS

Log ROA	Coef.	St. Err	T	P value	95% Conf Interval	
Log CR	**-0.21*** **	**0.085**	**-2.48**	**0.016**	**-0.38**	**-0.04**
Log CA	**0.679*** **	**0.273**	**2.48**	**0.016**	**0.13**	**1.22**
CPI	**0.394**	**0.117**	**0.34**	**0.738**	**-0.19**	**0.27**
Cons	**-1.673** **	**0.907**	**-1.85**	**0.070**	**-3.48**	**0.14**
No. Obs: 64						
R Square: 0.246						
F (3.60) = 6.52						
Prob > F = 0.0007						

*P-values in asterisk. Coefficients: * significant at 10%, ** significant at 5%, ***significant at 1%*

This regression analysis has an R Square of approximately 24.6%, indicating that 24.6% of the variance is explained by this model. Considering the p-values it can be said that the only variable that does not have a statistical significant relationship with profitability is inflation (respective p-value 0.738). For this reason it is impossible to draw a conclusion concerning the relationship between inflation and profitability. While based on the statistically significant p-values, liquidity and capital adequacy can be interpreted. Therefore the deterministic equation is stated as below5:

$$Log(ROA) = 1.67 - 0.213Log(C.R) + 0.679Log(C.A) \quad (5)$$

The equation indicated that profitability is a function of liquidity and capital adequacy. The statistically significant coefficient of approximately -0.21 indicates that in ceteris paribus conditions, where all other variables are considered constant, an increase in liquidity (current ratio) of 1%, leads to a decrease of profitability (ROA) by 0.21%. Using the same logic, it is found that an increase of 1% of capital adequacy, leads to an increase of approximately 0.68% in profitability, under ceteris paribus conditions.

V. Concludi ng Remarks

To sum up… this study identifies the main variables affecting profitability in an Albanian banking system, which are liquidity and capital adequacy. The study also finds that there is no statistically significant relationship between inflation and profitability for commercial banks.

The findings are in line with this hypothesis and the literature stated in the sections above. Liquidity and Capital Adequacy are the main determinants of profitability in Albanian banking system.

The main finding of this article indicates that in order to increase profitability, commercial banks in Albania should lower the current ratio, by increasing current deposits and increase capital adequacy by increasing equity.

This study identifies the main variables affecting profitability in Albanian banking system, which are liquidity and capital adequacy. The study also finds that there is no statistically significant relationship between inflation and profitability of commercial banks. The main finding of this article indicates that in order to increase profitability banks in Albania should lower the current ratio and increase capital adequacy.

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VI. APPENDIX

Variance Inflation Factor Test

	VIF	1/VIF
Log Current Ratio	**1.16**	**0.8601**
Log Cap.Adequacy	**1.15**	**0.8719**
Change in CPI	**1.02**	**0.9838**
MEAN VIF	**1.11**	

Jarque Bera Residual Distribution Normality Test

	Obs	Pr(Sk)	Pr(Krt)	Adchi2	Prob>chi2
Res	**64**	**0.0025**	**0.1481**	**9.54**	**0.0085**

The value 0.0085 indicates that in overall the residuals in this linear regression analysis are normally distributed; therefore this model provides enough evidence.