Int J Acc Research (IJAR)
DOI: 10.12816/0044415

An Open Access Journal
Vol. 3 (4), 2018

ARABIAN GROUP OF JOURNALS

ACCOUNTING RESEARCH
International Journal of Accounting Research

Research Article | Homepage: www.arabianjbmr.com | AGJ

IMPACT OF BANK SPECIFIC AND MACROECONOMIC DETERMINANTS ON THE PROFITABILITY OF COMMERCIAL BANKS – AN EVIDENCE FROM MSM LISTED BANKS IN SULTANATE OF OMAN

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Abstract

The role of banks in augmenting the economic growth of a given country is highly acknowledged. Impact of macroeconomic variables on profitability of commercial banks have shown a mutual dependence. Due to oil crisis in the Middle East, Sultanate of Oman's economy had witnessed few market corrections both in money market and capital market. Despite these financial chaos, Sultanate of Oman's commercial banking sector has registered a sustained growth. The aim of the study is to observe the bank specific and macro-economic determinants of the bank's profitability in Sultanate of Oman over the time period from 2007 to 2016, taken six banks for the study. The bank profitability is measured by return on assets (ROA) and return on equity (ROE) as a function of bank specific determinants such as Assets size, Capital Adequacy, Asset quality, liquidity, Deposit and Income-Expenditure structure; macroeconomic elements like GDP, Inflation rate and Real Interest Rate. Using a balanced panel data set, the study showed that asset size and non-interest income have a positive and significant effect on bank profitability but whereas, Deposits has a negative relationship. With regard to macroeconomic variables, the GDP rate has a positive and real interest rate and inflation rate affects the profitability of banks negatively. This study suggested that banks can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio. In addition, higher GDP can lead to higher profitability in banks.

Keywords: Bank profitability, commercial banks, Return on Assets, Return on Equity, Sultanate of Oman banking sector

Introduction

During the globalization era, countries have started implementing financial reforms to boost their economies by opening gates to MNC's and inviting them to invest and also to stabilize the domestic businesses. To accommodate these, financial institutions and markets growth seems essential. Sultanate of Oman from the beginning had taken various measures to improve and to develop its financial intermediaries. The year 1998 is observed as 'year of the private sector' in Oman, allowing many private sector firms to contribute to the economy by providing them the necessary infrastructural, legal and institutional framework (Al-lamki, Salmam, 2015). Dates back to 1948, where a British bank of the Middle East was established in the capital city of Oman, Muscat. Since then, till date many reforms and positive changes have been taking place to enhance country's economy.Financial intermediaries execute many key functions in economies; payment channels, finding the equilibrium between demand and supply of money, mange with complex financial derivatives, providing transparency among marker players and also risk management operations. Oman banking system has traditionally occupied a pivotal role in Oman financial system. Oman banking sector has 17 licensed local and foreign commercial banks and two Islamic banks namely Alizz Bank and Bank Nizwa. All the banks are subject to

monitored by Central Bank of Oman (CBO) which regulates licenses, interest rates and issues development bonds and notes.

The recent global and gulf oil price crisis have led the economy to have further changes. CBO report of 2015, it is mentioned that oil prices continue to decrease further by 32% from August 2015 to February 2016 due to the fact that ample supply from the organization of the Petroleum Exporting Countries (OPEC) (CBO Annual report, 2015). Despite dwindling oil prices and enlarging budget deficit, the banking sector continued on its track of strong growth. In the year 2015 it has registered a 16.5%. The bank credit registered an increase of over 12.1% during the year 2015, while deposits grew by 8% during 2015.Regardless of dip in the economic activity and restrained credit growth, commercial banks maintained a healthy level of profits recording RO 393.4 million in 2015 compared to RO 362.9 million in the previous year. (CBO Annual report, 2015). In the year 2015, the IMF has estimated a GDP growth rate as 4.1%, the rate higher than the world's average, but in 2016 it is declined to 1.8 percent.

Objective of the study

- To analyze the impact of bank specific determinants on Return on Assets (ROA) & Return on Equity (ROE) of banks
- To study the impact of macroeconomic elements such as Inflation rate, GDP & Interest rates on Return on Assets (ROA) & Return on Equity (ROE) of banks

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Literature Review

The banking sector of Oman started out with only three registered banks with their branches in 1972 and along with its social and economic development, their number grew to17 commercial banks back in the year 2010 when seven were incorporated locally and 10 were foreign banks offshore branches. Six of the local banks are listed on Muscat Securities Market while the rest of the 17 commercial banks have around 429 branches all over the country. Empirical results exhibit that there is a positive relationship between bank profitability, cost efficiency, banking sector development, stock market development and inflation in China (TAN, Y. and FLOROS, C., 2012) The ratio of nonperforming loans, the management quality and the ratio of liquid assets to total assets have a significant impact upon the banking profitability. Instead, other factors, respectively the ratio of total equity to total asset, the ratio of loans to total assets, funding costs and income diversification of bank did not have an important effect upon the profitability (ROMAN, A. and DANULETIU, A.E., 2013) According to LIU, S., (2013) In USA during economic recession, it is observed that there was a non-linear relationship between the bank's profitability and the capital adequacy ratio. It is argued that the larger the asset size would certainly bring confidence to investors through the diversification process especially in the credit risk period. The study shows that banks with smallest asset size suffered negative relationship with profitability. The findings proved that larger banks has an advantage to smaller ones.

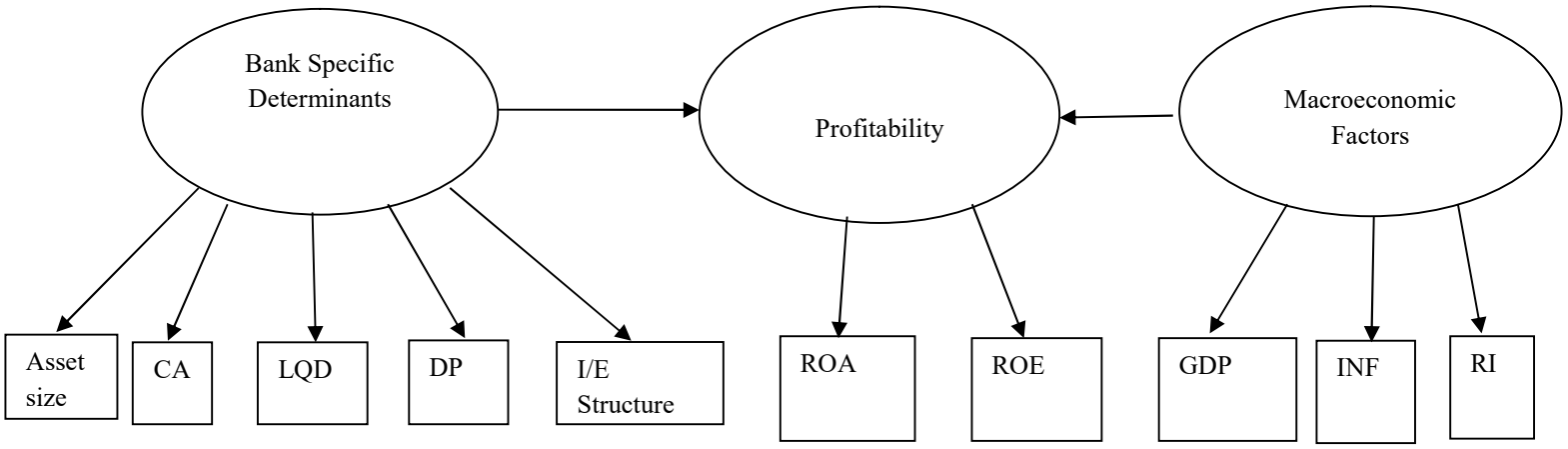
It is observed that the study indicates a negative relationship between the bank's profitability and the deposits ratio. The study shows a positive and statistically significant relationship exists between ROA and Capital adequacy (CA) and suggests a nonlinear relationship between return on assets and capital adequacy ratio. The impact of bank size on bank profitability in China has observed as negative, credit risk has significantly positive to NIM. Liquidity is found to be significantly and positively related to NIM. It is observed that higher cost efficiency, lowered degree of non-traditional activities, improved banking sector and capital market regulations tend to increase profitability of Chinese banks (TAN, Y. and FLOROS, C., 2012)(BOADI, E.K., LI, Y. and LARTEY, V.C., 2016 & (SAN, O.T. and HENG, T.B., 2013) Loans portfolio has shown good results and has a significant impact on the profitability. Regarding deposits impact on profitability, the study showed that there was neither positive nor negative relationship has been identified. Lack evidence to prove this. The impact of macroeconomic variables on the profitability of banks in the context of Ghana banks showed that inflation has a significant relationship whereas GDP has a minimal impact.

In a comparative study between Saudi Arabia and Jordan it is observed that the diseconomies of scale that exist from a level of size upwards. Growing banks may face diminishing marginal returns so average profits would decline with size. Information advantage and the enforcement power gain from size are insignificant for large banks. (ALMAZARI, A.A., 2014)The empirical results of the study conducted in Nigeria suggested that banks can improve their profitability through increasing capital and liquidity, decreasing operating cost with conscious effort to maintain transparency in their

operations (EBENEZER, O.O., OMAR, W.A.W.B. and KAMIL, S., 2017)The capital (RC) is one of the best factors that considerably affect the profitability of the Tunisian commercial banks. This may indicate that the well-capitalized banks have higher profitability (NESSIBI, O., 2016.) The study conducted on Turkey banks showed that the asset size has a positive and significant impact on profitability. It is observed that loans and profitability have a negative relationship. Bank specific variable, non-interest income over assets have showed a positive relationship. Macroeconomic variables like real interest rate have a positive effect on profitability but GDP and Inflation rate have not important effect on bank profitability. (ALPER, D. and ANBAR, A., 2011)

Considering the Albanian banks, the study has revealed that the profitability of banks has a positive relationship with deposits to total assets and also with GDP. Inflation has a negative relationship with the profitability. (DURAJ, B. and MOCI, E., 2015). Several empirical studies have showed the importance of liquidity and capital ratio and also the impact on profitability of banks (NESSIBI, O., 2016). Staikouras and Wood (2003) also studied the European banking profitability and their outcomes show that among bank specific determinants loan to assets ratio, the loan loss provisions have opposite but the level of equity and funding gap positively impact the bank profit. Dietrich et al. (2011).The study on the Swiss banks profitability found capital adequacy ratio, cost-income ratio, interest margin negatively affect banking profit In a recent study of ISLAM, M.S. and NISHIYAMA, S., (2016) conducted on South Asian countries banks, it is observed that bank specific determinants have positively affects its profitability and on the other hand liquidity position funding gap, cost of funds and productivity ratio found negatively correlated. Economic growth rate found negative influence while rate of inflation positively affects bank profit.

Conceptual Framework



Research Methodology

Data and Methodology

In the empirical study, to analyse the determinants of bank profitability, taken eleven variables, two of them under dependent and the rest are as explanatory variables. The independent variables are divided into sub-categories such as bank specific, and macroeconomic determinants of bank profitability.

Data Sample

The study considered balanced panel data 6 commercial banks pertaining to the period of 2007- 2016. On the basis of literature review, some significant bank specific variables and macroeconomic variables that are expected to have an impact on the banks profitability.

Variable Description

Dependent Variables

In the literature review profitability typically measured by ROA (Return on Assets), ROE (Return on Equity) and NIM (Net interest margin) ROA is defined as net profit over total assets and it is expressed in percentage. ROE is defined as net profit over shareholders equity. Net Interest Income is the difference between interest income and interest expenses shown as a percentage of total assets.In the given study, we use only two measures of profitability: Return on Assets (ROA) and Return on Equity (ROE). ROA aims at improving banks return, i.e. profitability over its sources of funds. But whereas ROE is all about the ability to produce profits by using shareholder's equity.

Bank specific Independent variables

Bank specific variables as internal factors which determines by bank's management decisions and policy objectives, such as asset size, Liquidity, Capital adequacy, Asset quality, Deposit and Income-Expenditure structure. We use the following six

Asset size

Mostly in finance literature total assets of the banks are used as a proxy measurement for bank size. It is represented by natural logarithm of total assets (Log A). As the asset level increase the scale of economies will decrease. (LIU, S., 2013) The impact of bank size on the profitability is generally seen as positive (Smirlock, 1985)

Capital adequacy

The capital adequacy ratio has been a crucial financial trait mainly affects the bank's profitability. It is observed that the test has nonlinear character of this relationship (LIU, S., 2013). The higher this ratio means the lower the dependence on external debt.

Asset quality

To understand the asset quality, Loans to total assets (LA) ratio can be studied. Which indicates the source of income for banks and thus contributes to profitability in a positive manner. Total loans ratio is one of the important measure of asset quality and reflects changes in the strength of bank's loan portfolio that affects performance of bank negatively (Aydogan, 1990). The higher the ratio the poorer the quality and therefore the higher the risk of the loan portfolio will be.

Liquidity

The ratio of liquid assets to total assets is a measure of liquidity. In this study (LQD) is a measure of liquidity. It is higher the ratio the more liquid the ban would be. Lack of current assets i.e. liquidity is one of the good reasons of bank failure. Though there could be a threat in terms of banks efficiency, but holding most of the liquid assets may hamper financial returns. (TAN, Y. and FLOROS, C., 2012). Molineux and Thorton (1992) had concluded that there is a negative correlation between liquidity and profitability levels.

Deposits

Deposits are the chief source for banks in improving the base for funds that transforms them into loans and thus earning profitability. It has a positive effect on the profitability of banks.

Income- expenditure structure

This study had taken net interest margin (NIM) and non-interest income (NII) ratios to evaluate income-expenditure structure. Net interest margin focuses on profit earned on spread income. Non-interest income will consider fees collected from customers on various activities such as, deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges, inactivity fees and check and deposit slip fees.

Macroeconomic Independent Variables

Economic activity (GDP), Inflation and Real Interest rate.Various empirical studies have proved that bank profitability has been sensitive to macroeconomic variables. External factors determinants generally three macroeconomic variables such as Gross domestic product (GDP), annual inflation rate (INF) and real interest rate (RI). This study has these three variables.

Annual real GDP growth rate

Gross domestic product is the total economic activity after adjusted for inflation. It has numerous ways of creating impact on bank specific determinants. Demand for money and supply of money changes and thus influences deposits and loans. The increase of the GDP of the country has positive impact in the profitability of the banking sector in Albania associated with the other internal factors that are analyzed. (AL-OMAR, H. and AL-MUTAIRI, A., 2008)

Annual inflation rate:

Incremental growth in consumer price index (CPI) for all goods and services. The previous studies have concluded that relationship between inflation and profitability may have a positive or negative whether it is predicted or unpredicted (Perry, P. 1992). ALPER, D. and ANBAR, A., (2011) have addressed the same in their studies that if the inflation rate is anticipated banks can adjust interest rate to improve its revenues. On the other hand, if it is not the costs may grow faster than the revenues. Among the macroeconomic determinants we found inflation affect the profitability positively (ISLAM, M.S. and NISHIYAMA, S., 2016)

Real interest rate

Interest rate influences profitability in an undeviating and solid manner in which sometimes banks do suffer but on the other hand increases its revenue. In the Albanian financial sector it appears that effect of the interest rates resulting in lower profitability for the banks. (DURAJ, B and MOCI, E., 2015)

Table 1. Variables measure and Notation

Variable status	Variable Name	Measure	Notation
Dependent Variables	Profitability	Return on Assets (ROA) = Net profit/Total Assets	ROA
		Return on Equity (ROE) = Net profit/Equity	ROE
Bank specific Independent variables	Asset size	Natural logarithm of Total Assets	Log A
	Capital Adequacy	Equity/ Total Assets	CA
	Asset quality	Loans/ Total Assets	LA
	Liquidity	Liquid Assets/Total Assets	LQD
	Deposit	Deposits/ Total Assets	DP
	Income- Expenditure Structure	Net Interest Margin = Net Interest Income/Total Assets	NIM
		Non-Interest Income = Non- Interest Income/Total assets	NII
Macroeconomic Independent Variables	Economic Activity	Annual Real GDP Growth Rate	GDP
	Inflation	Annual Inflation Rate (CPI)	INF
	Interest Rate	Real Interest Rate	RI

Table-2. Hypothesis List

Null Hypothesis	Alternative hypothesis
There exist relationship between Asset size and profitability. H0	There exist no relationship between Asset size and profitability. Ha
There exist relationship between Non-interest income and profitability. H0	There exist no relationship between Non-interest income and profitability. Ha
There exist relationship between Deposits and profitability. H0	There exist no relationship between Deposits and profitability. Ha
There exist relationship between GDP and profitability. H0	There exist relationship between GDP and profitability. Ha
There exist relationship between Inflation and profitability. H0	There exist relationship between Inflation and profitability. Ha

Using a balanced panel data set, the study showed that asset size and non-interest income have a positive and significant effect on bank profitability but whereas, Deposits has a negative relationship. With regard to macroeconomic variables, the GDP rate has a positive and real interest rate and inflation rate affects the profitability of banks negatively. This study suggested that banks can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio. In addition, higher GDP can lead to higher profitability in banks.

Data and Research method

The data consists 6 banks and spread over 10 years (2007–2016). The total number of observations was 60. Bank specific variables of selected banks from Muscat Securities Market listed was taken for the study from 2007 – 2016. These variables are derived from financial statements of each sample bank.To study the determinants of bank profitability, the study has used panel data. It comprises of both time series and cross sectional elements is known as a panel data. Panel data models estimates either using fixed effects or random effects model. In the fixed effects model, the individual specific effect is a random variable that is allowed to be correlated with the explanatory variables. The basic framework for the panel data is identified according to the following regression model of fixed effects model $Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$

Where – α_i (i=1….n) is the unknown intercept for each entity (n entity-specific intercepts). – Y_{it} is the dependent variable (DV) where i = entity and t = time. – X_{it} represents one independent variable (IV), – $\beta 1$ is the coefficient for that IV, – u_{it} is the error term

Descriptive Statistics

The basic descriptive statistics of the stated variables are presented in Table 2. For each variable, the following Table 2, shows mean, standard deviation, minimum and maximum values. On average, banks in our sample have a return on assets ROA of 2.2% and return on equity ROE 11.92% over the period of 2007 – 2016. The mean ROE varies across various banks and periods, the standard deviation of ROE is 78%, minimum and maximum values are 5% and 42%. When the mean of CA (Capital adequacy) is 12%, min value is 9% and max value is 26%. Liquidity ratio is the most important for banks to 14% average, while it varies between 3% - 28%. The net interest margin (NIM) amounts to 3.4%. Regarding the other independent variable, Table 2 presents the mean of macroeconomic variables over the year 2001- 2016. The average growth rate of real GDP is approximately 4.5 %(Min 2% and max 8%). When the mean of inflation rate is 3.6%, Real interest rate has a 6% mean value for 2007 – 2016 periods.

Table 2. Descriptive Statistics for Variables

	Mean	Std. Dev	Min.	Max.
ROA	0.02217	0.03484	0.01000	0.2200
ROE	0.1192	0.07840	0.05000	0.4200
Log A	14.53	0.7882	12.63	16.34
LQD	0.1410	0.05999	0.03000	0.2800
LA	0.7050	0.1011	0.4400	0.8600
DP	0.6348	0.2275	0.07000	0.8700
CA	0.1297	0.02597	0.09000	0.2600
NIM	0.03483	0.04571	0.01000	0.2800
NII	0.01033	0.004103	0.000	0.02000
GDP	0.04500	0.01761	0.02000	0.08000
INF	0.03600	0.03614	0.000	0.1300
RI	0.06200	0.1791	0.2000	0.4400

Table 3 explains the correlation matrix between independent variables. It is observed from the correlation matrix that there is a strong positive correlation between asset size (Log A) and Liquidity (LQD) and also between Inflation (INF) and gross domestic product (GDP) whereas deposits to total assets ratio (DP) and loans to assets ratio (LA) has strong negative relationship. Moderate positive correlation can be seen with Gross domestic product (GDP) to non-interest income (NII). Low positive correlations can be observed with gross domestic product (GDP) to capital adequacy (CA) and also inflation (INF) with capital adequacy ratio (CA), the same with inflation (INF) to non-interest income. Non-interest income (NII) and liquidity (LQD) has low positive correlation as well.

Table 3. Correlations between Independent variables

	Log A	LQD	LA	DP	CA	NIM	NII	GDP	INF	RI
Log A	1.000	0.529***	-0.155	0.097	-0.376	0.021	-0.016	-0.374	-0.378	0.159
LQD		1.000	-0.379	0.203	-0.437	-0.012	0.247*	0.082	0.006	0.081
LA			1.000	-0.420***	-0.014	-0.325	-0.147	-0.037	-0.016	-0.021
DP				1.000	-0.036	0.089	0.069	-0.015	-0.071	-0.013
CA					1.000	0.133	0.144	0.226*	0.246*	-0.037
NIM						1.000	0.009	-0.113	-0.123	0.100
NII							1.000	0.305**	0.249*	-0.024
GDP								1.000	0.847***	-0.309
INF									1.000	-0.536
RI										1.000

Empirical Results from Panel data analysis

Table 4. Determinants of Return on Assets (ROA)

	Coef.	Std.Err	t	p
Log A	0.006	0.007	0.816	0.419
LQD	-0.072	0.106	-0.677	0.502
LA	-0.008	0.052	-0.150	0.882
DP	-0.079	0.020	-3.858	< .001
CA	-0.073	0.198	-0.370	0.713
NIM	0.007	0.099	0.069	0.945
NII	0.831	1.119	0.743	0.461
GDP	0.757	0.486	1.557	0.126
INF	-0.501	0.264	-1.902	0.063
RI	-0.050	0.030	-1.695	0.097

Constant	-0.009	0.118	-0.080	0.936

From the following Table 4 and 6 shows the estimated parameters and t-statistics from the application of fixed effects model, using profitability indicators such as ROA and ROE, which are the dependent variables. Deposits to total assets (DP) is highly significant and positively related to ROA at 1% level of significance. It shows that deposits of the bank have significant positive impact on profitability. Inflation and real rate of interest are also among positive and moderately significant related to ROA at 10%. Regarding other bank specific variables namely bank size, liquidity, loans to assets, capital adequacy, net interest margin and non-interest income shows no impact on bank profitability. Macroeconomic variable such as gross domestic product does not have a significant impact on bank's return on assets.

Table 5.

Linear Regression

R	**R^2**	**Adjusted R^2**	**RMSE**
0.555	0.308	0.167	0.032

Table 5 explains the co-efficient of determination is about 30.8%, which means the model explains moderately the variability of the response data around its mean.

Table 6. Determinants of Return on Equity (ROE)

	Coef.	**Std. Err**	**t**	**p**
Log A	0.037	0.016	2.358	0.022
LQD	-0.679	0.231	-2.940	0.005
LA	-0.335	0.113	-2.965	0.005
DP	-0.060	0.044	-1.349	0.183
CA	-0.267	0.431	-0.618	0.539
NIM	0.364	0.215	1.695	0.096
NII	4.015	2.433	1.650	0.105
GDP	1.689	1.058	1.597	0.117
INF	-0.597	0.573	-1.041	0.303
RI	-0.005	0.064	-0.073	0.942
Constant	-0.119	0.257	-0.463	0.646

It is observed from table 6, Bank size (log A) 5%, liquidity 1% and loans 1% shows a positive and significant relationship with profitability, when ROE is used as the dependent variable. Other bank-specific variables do not have significant impact on the profitability using ROE. The macroeconomic variables do not influence significantly on banks profitability using return on equity.

Table 7. Linear Regression

R	**R^2**	**Adjusted R^2**	**RMSE**
0.595	0.354	0.222	0.069

Table 7, explains about linear regression is about 35.4%, which is again the model explains a moderately variable response for which the data is around its mean.

Conclusions

Commercial banks performance in any given country will be influenced by uncertainties like macroeconomic variables and also bank specific determinants. This study had examined such variables by taking all MSM (Muscat Securities Market) listed banks in Sultanate of Oman. To meet the objective of the study, fixed effects model has been used in analyzing 6 commercial banks financial statements for the period of 10 years (2007- 2016). Though there are significant and moderate relationship exists between ROA and ROE with that of independent variables. But it is advised for the banks to improve ROA and ROE in the long run to sustain their profitability. The findings are; the assets size of the banks have positive relationship with profitability considering return on equity (ROE). Liquid assets to total assets and loans to total assets do have negative impact on profitability. This indicates that the bank's credit portfolio volume and poor asset quality had an impact on the return on equity. Deposits to total assets has a negative impact on the profitability of banks considering return on assets (ROA). As it is evident from Table 5 and table 7, that ROA's R^2 is 30.8 whereas ROE's R^2 is 35.4%, which means less liner regression. Regarding macroeconomic variables, inflation rate (INF) and real interest rate (RI) has registered a negative relationship. Other bank specific determinants have no impact on the profitability. Capital adequacy, net interest margin, non-interest income does not impact the profitability under ROE. Under ROA indicators capital adequacy, net interest margin, non-interest income, assets size, liquidity and loans to assets fails to impact profitability

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