

Determinants of the Profitability of Commercial Banks in Ethiopia

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Abstract

The purpose of this study was to examine the determinants of the profitability of commercial banks in Ethiopia. To this end, explanatory study was carried out on the selected nine commercial banks. The study observes the effect of independent variables on the profitability, Return on Assets (ROA) was used as a fundamental index of profitability. The researcher used secondary data in general and annual financial statements of selected commercial banks, and macroeconomic data about GDP growth rate and inflation rate in particular. The study employed a purposive sampling technique to select a public commercial bank (Commercial Bank of Ethiopia), and eight private commercial banks (Oromia International Bank, Dashen Bank, Abyssinia Bank, Zemen Bank, Birhan international Bank, Lion International Bank, Cooperative Bank of Oromia and Addis international bank) from private banks operating in Ethiopia covering the period from 2016 to 2020. The study examines the determinants of Ethiopian commercial banks' profitability by employing bank-specific variables (capital adequacy, operational cost efficiency, employee efficiency, customer deposit, non-interest income, credit risk, liquidity risk, overhead, net interest margin and non-performing loans), industry-specific variables (bank size and market concentration), and macroeconomic variables (GDP growth rate and inflation rate). Data was analyzed using inferential statistics. Specifically, the researcher has used a linear regression model with the aid of SPSS version 21 for examining the determinants of profitability. A total of fourteen explanatory variables were included in this and out of these, 10 variables were found to have a statistically significant impact on the profitability of commercial banks. Capital adequacy, employee efficiency, bank size and market concentration have positive coefficient and statically significant impact on the commercial banks' profitability. On the other hand, operational cost efficiency, credit risk, liquidity risk, overhead, non-performing loans and inflation rate have negative significant impact on the banks' profitability.

Key Words: Profitability, commercial banks, banks

1. Introduction

Finance is the blood life of trade, commerce and they play the role of vanes in the Circulation of the funds in economy. The economic development of any country rests on upon strong banking system. Hence, commercial banks are the main pillar of the financial system as banks provide different opportunity and services to the clients. According to Haque and Tarik (2012), the significance of the banking sector is immense in the development and richness of any state. The economic development and prosperity comes from the well-rounded, developed and perfect banking system. Strong banking system plays important role in efficient allocation and utilization of credit. This is why bank is considered as a backbone of all the industries, as every transaction where money is involved, the bank is the main pillar of funding.

The determinants of the profitability of commercial banks range from those which are under the control of bank management and policy objectives (bank-specific factors) to those factors which are beyond bank management level (industry-specific factors and macroeconomic factors). The Ethiopia's commercial banks demonstrate a vital role in contributing to national economy by intermediating between the savers and productive investors. The financial performance of banks affects the interests of depositors, shareholders, regulators, potential investors and corporate owners. As banks dominate the financial sector of Ethiopia, ensuring the financial health of commercial banks is likely going to ensure the health of the performance of the financial system of the country (Abebaw and Kapur, 2011).

In Ethiopia, commercial banks play important primary role as financial intermediaries in the economic growth process, channeling funds from savers to borrowers for investment. As financial

intermediaries, commercial banks play a vital role in the operation of an economy. In such a way, commercial banks are key providers of funds and their stability is of paramount importance to the financial system (Bentum, 2012). As well, Abebe (2014) stated that banks play a pivotal role in the economy of a country. This is particularly true in the case of Ethiopia where no capital market exists.

As per Athanasoglou, Brissimis and Delis (2005), economies that have a profitable banking sector are better able to withstand negative shocks and contribute to the stability of the financial system. On the other hand, banks' insolvencies can result in systemic crisis. Thus, it is important to identify and examine the determinants of commercial banks' profitability.

1.1 Statement of the problem

According to the study of Binh T. and Dung P. (2020), the roles of the banking sector are definitely vital in the context of developing countries. Furthermore, along with the growth of investment projects in diverse industries supported by commercial banks, more vacancies open for domestic citizens and hence the unemployment rates can be lessened. When the business cycle is in contraction or in any unfavorable phase, the central bank of each developing country can cure the vulnerable economy by regulating a proper monetary policy for commercial banks to implement. As a result, the inflation or deflation and other attached risks would be under the control and, thus, the economy of the country can be improved. In brief, the growth of a developing economy depends principally on the soundness and health of the banking sector, especially commercial banks.

One of the crucial indicators for health of the banking sector has been long demonstrated to be profitability. A commercial bank always strives to have "good health", or profitability due to the following reason. In the context of globalization, deregulation and intensive competition from an increase in the share of non-bank institutions, commercial banks are required to maintain profitable, otherwise, the survival can be threatened. Profitable banks have the ability to diversify their business, so that unsystematic risks can be hedged effectively. For instance, during the financial crises occurred in 2008, profitable banks were survived successfully and acted as protectors to cure the whole economy (Ramlall, 2009).

As it is stated in the study of Philip (1989), during the last three decades, the banking sector all around the world has experienced major transformation in its environment due to enhancement in the requirement of financial services and high technological facilities, resulting in significant impacts on its profitability. A sound and profitable banking sector is better able to resist negative shocks and subsidizes to the stability of the financial system. Hence, identification and analysis of the determinants of commercial banks' profitability have attracted for many years the interest of academic researchers as well as bank management, supervisors and financial service partakers.

Even though the primary objective of every commercial bank is to make profit, profitability is not the same across commercial banks. This because of profitability is determined by different bank-specific factors, industry-specific factors and macroeconomic factors that have been influencing the profitability of banks over time. Bank-specific banks factors are those internal factors which bank's managements can control. Whereas industry-specific factors and macroeconomic factors are external factors that are outside or beyond bank's management control (Staikouras and Wood, 2002).

According to the review of existing literature such as Ongore V.(2013), the main bank-specific factors (internal determinants) that play a major role in influencing the profitability of commercial banks are investment in government securities, other investments, non-performing loans, overhead expenditure, savings deposit, fixed deposits, capital adequacy, Operational cost efficiency, employee efficiency, labor productivity, non-interest income, credit risk, liquidity risk and net interest margin. Similarly, industry-specific factors and

macroeconomic factors (external determinants) include interest rates, inflation rates, GDP growth rate, bank size, market growth and market share.

Even if the measurement of profitability varies among studies, the determinants of profitability are empirically explored in the banking literature. For example, study conducted by Semu (2010), Belayneh (2011), Damena (2011), and Mohana & Berhanu (2008) tried to examine the determinants of Ethiopian commercial banks' profitability by employing independent variables such as capital, bank size, loan and advance, saving deposit, fixed deposit, non-interest income, non-interest expenses and credit risk as bank-specific; market concentration as industry-specific variable and economic growth, saving interest rate and inflation as macroeconomic variable. Although the studies were focused on the similar variables that determine the profitability of commercial banks, their findings and conclusions were inconsistent.

Sawe (2011) argues that the determinants of commercial banks' profitability vary with the dynamicity of time. Therefore, conducting a timely study by employing recent data is vital as profitability of commercial banks vary with the dynamic environment. This is why the researcher has attempted to investigate the determinants of commercial banks' profitability in Ethiopia using the most recent annual reports of the last five years (2016-2020).

1.2 Objectives of the study

The objective of the study was to examine the determinants of Ethiopian commercial banks' profitability focusing on their effect on return on asset (ROA) over the period 2016- 2020.

In line with above general objective, the specific objectives of the study are:

1. To investigate the effect of bank-specific variables on the profitability of commercial banks.
2. To analyze the impacts of industry-specific variables on the profitability of commercial banks.
3. To scrutinize the influences of macroeconomic variables on the profitability of commercial banks.

1.3 Research Hypothesis

In order to achieve the above research objectives, the researcher has laid down the following research hypothesis. As it is specified by Creswell (2009), a more formal way of stating research questions is by developing hypotheses between independent and dependent variables. Hence, on the basis of theories and past empirical studies, the researcher has derived and tested fourteen research hypotheses about the determinants of commercial bank' profitability.

These are:-

Hypothesis 1: Capital adequacy has a positive and significant effect on the profitability of commercial banks.

Hypothesis 2: Operational cost efficiency has a negative and significant effect on the profitability of commercial banks.

Hypothesis 3: Employee efficiency has a positive and significant effect on the profitability of commercial banks.

Hypothesis 4: Customer deposit has a positive and significant effect on the profitability of commercial banks.

Hypothesis 5: Non-interest income has a positive and significant effect on the profitability of commercial banks.

Hypothesis 6: Credit risk has a negative and significant effect on the profitability of commercial banks.

Hypothesis 7: Liquidity risk has a negative and significant effect on the profitability of commercial banks.

Hypothesis 8: Overhead has a negative and significant effect on the profitability of commercial banks.

Hypothesis 9: Net interest margin has a positive and significant effect on the profitability of commercial banks.

Hypothesis 10: Non-performing loans has a negative and significant effect on the profitability of commercial banks.

Hypothesis 11: Bank size has a positive and significant effect on the profitability of commercial banks.

Hypothesis 12: Market concentration has a positive and significant effect on the profitability of commercial banks.

Hypothesis 13: GDP growth rate has a positive and significant effect on the profitability of commercial banks.

Hypothesis 14: Inflation rate has a negative and significant effect on the profitability of commercial banks.

1.4 Scope of the study

It is believed in the literature that more observation means more information for generalization. However, the researcher made use of audited and published financial statements from the year 2016 up to 2020 on the banks' official websites. As well, the study is restricted to identification and examination of the key determinants of the profitability of selected Ethiopian commercial banks. Regarding the sample commercial banks included in this study, the study includes the one large public commercial bank (Commercial Bank of Ethiopia) and eight private commercial banks (Oromia International Bank, Dashen Bank, Abyssinia Bank, Zemen Bank, Birhan international Bank, Lion International Bank, Cooperative Bank of Oromia and Addis international bank). This is because of it is difficult to address and easily manage data of all commercial banks operating in the country. The determinants of profitability that have been considered in the study include capital adequacy, operational cost efficiency, employee efficiency, customer deposit, non-interest income, credit risk, liquidity risk, overhead, net interest margin, non-performing loans, bank size, market concentration, GDP growth rate and inflation rate. On the other hand, the profitability of commercial banks was measured with return on assets (ROA).

2. Review of Related Literature

2.1 Theoretical literatures

Definition and measures of profitability

According to Banwo (1997), profitability connotes a situation where the income generated during a given period exceeds the expenses incurred over the same length of time for the sole purpose of generating income. The fundamental requirements here are that the income and the expenses must occur during the same period of time (Matching Concept) and the income must be a direct consequence of the expenses. The period of time may be one week, three months, one year or other period of time (Sabo, 2007).

Three indicators, namely: Return on Assets (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) were identified by Ahmed (2003) to be mostly employed in the literature to measure profitability. According to Akinola (2008), the Profitability of commercial banks can be measured by Profit before Tax (PBT), Profit after Tax (PAT), Return on Equity (ROE), Rate of Return on Capital (ROC) and Return on Assets (ROA).

ROA determines the capacity of bank management in generating income by employing company assets at hand (Ongole and Kusa, 2013). This implies that the ratio portrays how much net income is produced on each unit of assets. Likewise, Kumbirai and Webb (2010) have indicated that the higher the ROA, the higher the bank profitability and vice versa. They also defined Return on equity (ROE) is also one of the many measures that determine how much profits are realized for the company concerning the total amount of shareholders' equity as indicated on a statement of financial position. ROE is termed as the percentage rate of return on each unit of equity invested by bank's shareholders. Thus, the higher the return on equity, the better for the bank as it will be in a position to raise more funds internally (Ongole and Kusa, 2013).

Kalluci (2011) has stated the favor of ROA to ROE to measure bank's profitability, and the argument advanced for this is that ROE does not provide room for the banks' financing through borrowings of which ROA does. Aswell, Alkhatib and Harsheh (2012) argued that ROE offers fewer insights into bank profitability. Hence, the researcher of this study has limited the profitability measure to the one widely used namely, Return on Asset (ROA).

2.2 Empirical Review

Previous studies on commercial banks' profitability have been conducted by employing bank-specific variables, industry-specific variables and macroeconomic factors across the globe. According to Islam and Nishiyama (2016), bank-specific categories may be defined as microeconomic variables, which can be directly obtained from banks' financial statements. Meanwhile, the two remainders indicate the overall industry situation, regulatory and legal aspects.

Goddard et al. (2004), who investigated in the determinants of profitability in 665 banks over six major European nations from 1992 to 1998 by the method of dynamic panel model, found an evidence for positive relationship between CAR and profitability. Although this finding contradicts the risk - return expectation theory that is a highly capitalized bank provides signals of overcautious characteristics and indifference about potentially investment opportunities, it supports expected bankruptcy costs hypothesis and signaling theory.

Redmond and Bohnsack (2007) use ROE as a proxy of profitability and examined the effect of bank size measured by volume of assets. The study finds that the smaller the bank size, the more profitably banks operate. Whereas, Noman, Pervin, Chowdhury, and Banna (2015) considered the influence of credit risk on the profitability by using NPL, CAR as proxies of credit risk and ROA, ROE and NIM as profitability indicators, and find a negative correlation between NPL and profitability proxies. There were a lot of studies, which concluded that the relationship between liquidity risk and profitability is positive (Nguyen T. & Nguyen V., 2020). For instance, Molyneux and Thornton (1992) and Demirgüç-Kunt, Laeven, and Levine (2003) both argued that highly liquid banks with high amount of cash and government securities can receive relatively low interest income than the less liquid ones. Under competitive market for deposit, greater liquid tends to be negatively correlated with profitability. Regarding the effect of operational risk, most previous studies support the proposition that the more the operational risk, the worse the bank performance. Recently, the negative impact of operational risk on profitability was explored in the study of Muriithi and Muigai (2017).

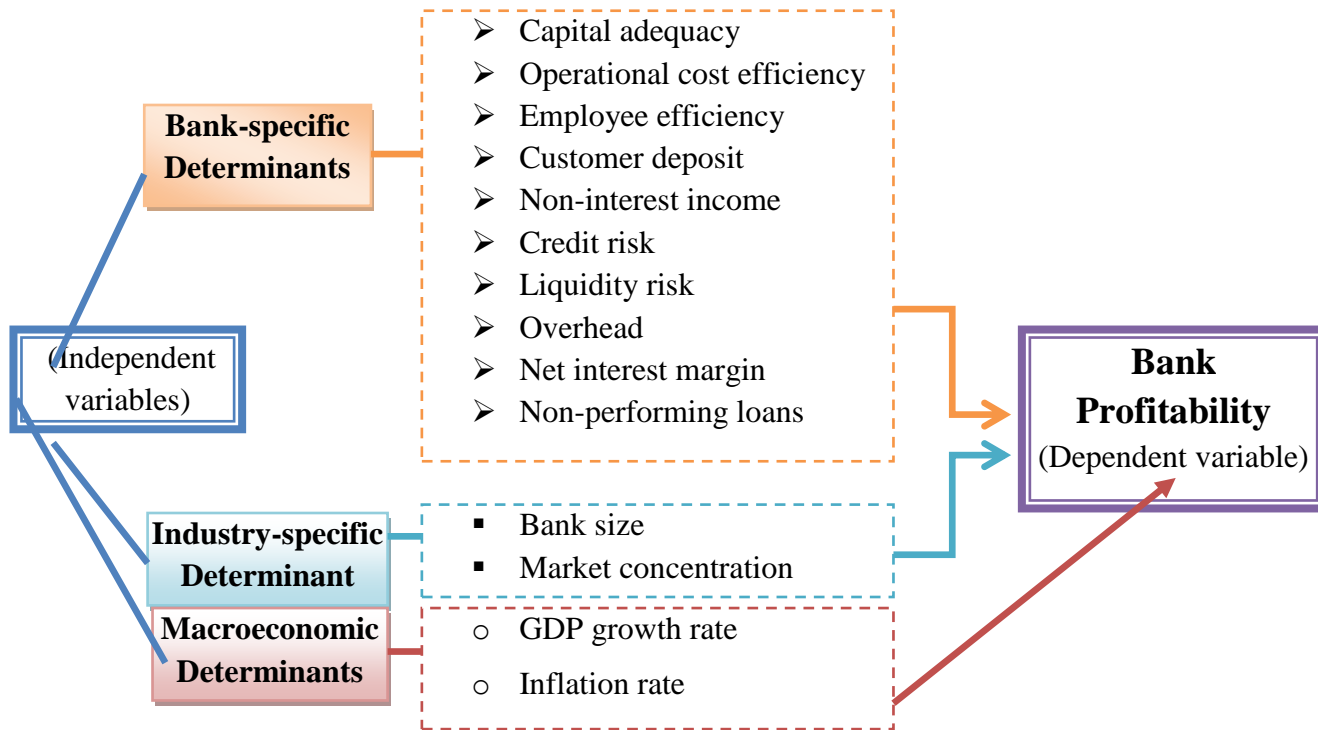
Berger (1995) was applied the structural models to analyze the profit-market structure relationship over 30 cross sectional banking data in 1980s. He stated that market concentration is negatively associated with profitability under the condition that other factors are controlled. However, a spurious relationship that the more industry is concentrated, the greater the profitability was emerged due to the association with other factors. As well, He proved that the factor was managerial efficiency, which can not only boost profitability, but also enlarge market share; thus, increased market concentration. Bourke (1989), Molyneux and Thornton (1992) argued that the increase in market concentration was caused by variation in competitive industry which resulting in monopolistic profits, rather than managerial efficiency.

Neely and Wheelock (1997) have used per capita income and suggested that economic growth or the growth rate of GDP exerts a strong positive effect on bank earnings. Demirguc-Kunt and Huizinga (2000), Athanasoglou, Brissimis and Deli (2005), and Bikker and Hu (2002) by supporting this idea attempted to identify the effect of economic growth (GDP) on bank profitability. All researchers agreed and concluded that positive and strong correlation existed between economic growth (GDP) and bank profitability.

2.3 Conceptual Framework of the study

From the literature review mentioned above, the researcher developed the following schematic representation of the conceptual frame work.

Figure 2.1 Conceptual Framework of the study



Source: Researcher’s construct (2021)

3. Research Methodology

3.1 Research Design

The primary aim of this study was to examine the determinants of commercial banks’ profitability in Ethiopia. To achieve this objective, explanatory research design with a quantitative approach was used. Explanatory research design was applied because of this study establishes a cause and effect relationship between profitability and the factors that determine the profitability of commercial banks in Ethiopia.

3.2 Study Population and Sampling Method

Target population is the population to which a researcher wants to generalize the results of the study (Mugenda, O. & Mugenda, A., 2003). Before the enactment of licensing and supervision of Banking Business Proclamation No. 84/1994, there was only commercial publicly owned bank (Commercial Bank of Ethiopia) and non- commercial publicly owned bank (Development Bank of Ethiopia). Immediately after the enactment of the proclamation, private banking companies began to flourish. As per the National Bank of Ethiopia’s Quarterly Bulletin of December 2015, 16 private commercial banks and 1 public owned commercial bank (CBE) have been operating in Ethiopia.

The target population of this study includes 9 commercial banks that have been in operation since 2015. The banks’ annual reports of the year ranging from 2016-2020 were considered. The researcher has used purposive sampling technique to select nine commercial banks that were in operation by December 2015 from the existing

Ethiopian banks. This implies, the study excludes the non-commercial public owned bank which is Development Bank of Ethiopia, commercial banks that were established after December 2015 and private commercial banks whose annual reports of the period ranging from 2016-2020 were difficult to access from the bank's website.

3.3 Source and Type of data

The study took a quantitative research approach by using secondary data that was gathered from the banks' published annual reports of their official website. Data about the bank specific variables of the study has driven from the annual reports of the selected nine commercial banks of Ethiopia. On the other hand, the industry specific and macroeconomic determinants of commercial banks' profitability data was obtained from National Bank of Ethiopia (NBE), which regulates the banking sector of the country, from Ministry of Finance and Economic Development (MoFED) and Central Statistical Agency (CSA), which regulates the macroeconomic issues of the country.

The study has used panel data covering a period of 5 years (2016 to 2020). Panel data involves the pooling of observations on a cross section of units over several time periods and provides results that are simply not detectable in pure cross sections or pure time series studies (Brooks, 2008).

Brooks (2008) states that panel data set have two major advantages. First, it can address a broader range of issue and tackle more complex problem than pure time series or pure cross-sectional data alone and by structuring the model in appropriate way, the researcher can remove the impact of certain forms of omitted variable bias in the regression result. Second, it is often examined how the relationships between variables change. Hence, by combining cross-sectional data and time series data, the researcher can increase the number of degree of freedom, and thus the power of test, by employing information on the dynamic behavior of a large number of entities at same time.

3.4 Data Analysis

In this study, quantitative data was gathered from the sample commercial bank's annual reports. After that, data was rearranged, edited and calculated to become complete data that is needed for this study. Next, the collected panel data was analyzed by using a linear regression analysis. The researcher has used a linear regression model to determine the relative importance of each independent variable in explaining the variation in the profitability of commercial banks. The model was conducted by ordinary listing square (OLS) method using SPSS Version 21 software package.

According to Brooks (2008), ordinary least square (OLS) or linear least square is a method to estimate the slope and intercept in a linear regression model. This study will use an ordinary least square (OLS) regression to estimate the linear equation. The rational for choosing OLS is that, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators. In addition, as noted in Petra (2007), OLS outperforms the other estimation methods when the following holds; the cross section is small and the time dimension is short. Therefore, as far as both the above facts hold true in this study (the cross section is 9 commercial banks and the time period is 5 years), it is rational to use OLS.

3.5 Model specification

Model specification is refers to the determination of which independent variables should be included in or excluded from a regression equation. In general, the specification of a regression model should be based primarily on theoretical considerations rather than empirical or methodological ones. A multiple regression

model is, in fact, a theoretical statement about the causal relationship between one or more independent variables and a dependent variable (Allen, 1997).

Model specification is the first and most critical stage of regression analysis; followed by estimation of parameters and interpretation of those parameters. The estimates of parameters of a model and the interpretation of them depend on the correct specification of the model (Allen, 1997). Regression analysis is also valuable for quantifying the impact of various simultaneous influences upon a single dependent variable. Further, because of omitted variables bias with simple regression, multiple regressions are often essential even when the researcher is only interested in the effects of one of the independent variables.

According to Brooks (2008), the general multivariate regression model with K independent variables can be written as follows:-

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \varepsilon_i \quad (i = 1, 2, 3, \dots, n)$$

Where, Y_i is the i^{th} observation of the dependent variable, $X_{1i} \dots X_{ki}$ are the i^{th} observation of the independent variables, β_0, \dots, β_k are the regression coefficients, ε_i is the i^{th} observation of the stochastic error term, and n is the number of observations.

Specifically, the researcher has used the above model to determine bank profitability through regression analysis with the help of one profitability indicator namely return on assets (ROA) defined as net profit before tax divided by total assets together with the independent variables which include capital adequacy, operational cost efficiency, employee efficiency, customer deposit, non-interest income, credit risk, liquidity risk, overhead, net interest margin, non-performing loans, bank size, market concentration, GDP growth rate and inflation rate.

Therefore, the determinants of the commercial banks' profitability can be modeled as follow:-

$$\text{ROA} = \beta_0 + \beta_1 \text{CA}_{i,t} + \beta_2 \text{OCE}_{i,t} + \beta_3 \text{EE}_{i,t} + \beta_4 \text{CD}_{i,t} + \beta_5 \text{NII}_{i,t} + \beta_6 \text{CR}_{i,t} + \beta_7 \text{LR}_{i,t} + \beta_8 \text{OH}_{i,t} + \beta_9 \text{NIM}_{i,t} + \beta_{10} \text{NPL}_{i,t} + \beta_{11} \text{BA}_{i,t} + \beta_{12} \text{MC}_{i,t} + \beta_{13} \text{GDPGR}_{i,t} + \beta_{14} \text{IR}_{i,t} + \varepsilon$$

Where:-

ROA – Return on Assets

CA – Capital Adequacy

OCE – Operational cost efficiency

EE – Employee Efficiency

CD – Customer Deposit

NII – Non- Interest Income

CR – Credit Risk

LR – Liquidity Risk

OH – Overhead

NIM – Net-Interest Margin

NPL – Non-Performing Loans

BS – Bank Size

MC – Market Concentration

GDPGR – GDP Growth Rate

IR – Inflation Rate

B_0 = Constant term

$\beta_1, 2, 3$ are parameters to be estimated;

ε = is the error component for the bank at time t assumed to have mean zero $E[\varepsilon_{it}] = 0$

i = cross-sectional dimension

t = time-series dimension (the index of time period),

= 1 – 5;

= the year from 2016 up to 2020.

3.6 Operationalization of study variables

Table 3.1: Definition, notation, and expected sign of explanatory variables

	Variables	Notation	Measure	Expected sign
Dependent Variable	Return on Assets	ROA	$\frac{\text{Net Profit before tax}}{\text{Total Assets}}$	
Independent Variables	Capital Adequacy	CA	Total Equity / Total Assets	+
	Operational cost efficiency	OCE	$\frac{\text{Operating expenses}}{\text{Operating income}}$	+
	Employee Efficiency	EE	Staff salaries / Total assets	+
	Customer Deposit	CD	Total deposit / total asset	+
	Non- Interest Income	NII	Noninterest income / total asset	+
	Credit Risk	CR	$\frac{\text{Loan – Loss Provision}}{\text{Total Loans}}$	-
	Liquidity Risk	LR	Liquid asset / total asset	-
	Overhead	OH	Total overhead costs / Total assets	-
	Net-Interest Margin	NIM	Net interest income / Total assets	+
	Non-Performing Loans	NPL	NPL / Total gross loans	-
	Bank Size	BS	Natural Logarithm of Total Assets	+
	Market Concentration	MC	Herfindahl-Hirschman index (HHI) $= \frac{\text{Bank's Total Assets}}{\text{Total Assets of all banks in the study}}$	+
	GDP Growth Rate	GDPGR	GDP growth rate (%)	+
Inflation Rate	IR	Inflation rate (%)	+	

Source: Researcher's construct (2021)

4. Results and discussions

Here, a linear regression analysis was undertaken in order to identify and examine the determinants of the commercial banks' profitability. As previously explained, a linear regression model was employed to estimate the effects of hypothesized independent variables on the profitability of commercial banks. The model was used

to fulfill the specific objectives of the study i.e., to investigate the effects of bank-specific variables, industry-specific variables and macroeconomic variables on the profitability of commercial banks.

4.2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.928 ^a	.861	.796	.009330276	1.652

a. Predictors: (Constant), IR, GDPGR, OCE, EE, NPL, BS, CD, CA, NII, CR, MC, NIM, LR, OH

b. Dependent Variable: ROA

Source: Linear regression model output, 2021

Table 4.2 provides the *R* and *R*² values. The *R* value represents the simple correlation and is .928 (the "R" Column), which indicates a high degree of correlation between capital adequacy, operational cost efficiency, employee efficiency, customer deposit, non-interest income, credit risk, liquidity risk, overhead, net interest margin, non-performing loans, bank size, market concentration, GDP growth rate and inflation rate on one hand and the profitability of commercial banks on the other hand. The *R*² value (the "R Square" column) indicates how much of the total variation in the dependent variable, profitability is explained by independent variables (capital adequacy, operational cost efficiency, employee efficiency, customer deposit, non-interest income, credit risk, liquidity risk, overhead, net interest margin, non-performing loans, bank size, market concentration, GDP growth rate and inflation rate.). The explanatory power of this regression model which is measured by adjusted R-square is high (79.6%). This indicates that from the determinants of commercial banks' profitability, 79.6% were already included in this regression model and the remaining 20.4% were not included in the study.

The following table is the ANOVA table, which reports how well the regression equation fits the data (i.e., predicts the dependent variable).

Table 4.3 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.016	14	.001	13.235	.000 ^b
	Residual	.003	30	.000		
	Total	.019	44			

a. Dependent Variable: ROA

b. Predictors: (Constant), IR, GDPGR, OCE, EE, NPL, BS, CD, CA, NII, CR, MC, NIM, LR, OH

Source: Linear regression model output, 2021

Table 4.3 indicates that the regression model predicts the dependent variable significantly well. Looking at the "Regression" row and go to the "Sig." column, the study indicates the statistical significance of the regression model that was run. Here, Sig. or p value of 0.000, which is less than 0.05, and shows that, overall, the regression model statistically significantly predicts the outcome variable (it is a good fit for the data). As well, the table implies the value of F-statistics, which is 13.235 with Sig. (p-value) of 0.0000, which is also used to measure the overall significance of the regression model. Since the p-value is 0.0000 which is sufficiently low, it implies that the model is well fitted at 1 percent level of significance and the regression output has economical meaning for the profitability of the selected commercial banks in Ethiopia.

The Coefficients table provides the necessary information to predict the profitability from capital adequacy, operational cost efficiency, employee efficiency, labor productivity, customer deposit, non-interest income, credit risk, liquidity risk, overhead, net interest margin, non-performing loans, bank size, market concentration, GDP growth rate and inflation rate. Similarly, it displays figures used to determine whether the independent variables of the study contribute statistically significantly to the model (by looking at the "Sig." column).

Besides, the values in the "B" column under the "Unstandardized Coefficients" column are used as shown below:

Table 4.4 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.076	.040		1.879	.070
CA	.822	.223	-.380	3.695	.001*
OCE	-.077	.023	-.283	-3.289	.003*
EE	.005	.002	.260	2.723	.011**
NII	.210	.174	.212	1.207	.237
CD	.001	.001	.166	1.192	.243
CR	-.025	.012	-.500	-2.105	.044**
LR	-.021	.003	-2.006	-8.345	.000*
OH	-.048	.020	-.682	-2.444	.021**
NIM	.007	.004	.378	1.678	.104
NPL	-.004	.001	-.323	-3.246	.003*
BS	1.396E-013	.000	.365	1.908	.066***
MC	.003	.001	.307	2.293	.029**
GDPGR	-.027	.113	-.018	-.235	.816
IR	-.008	.003	-.876	-2.759	.010**

a. Dependent Variable: ROA

*, ** and *** symbolizes significance level at 1%, 5% and 10% respectively.

Source: Linear regression model output, 2021

Sig. determine whether the association between independent variable and depend variable is statistically significant by comparing the p-value (sometimes called the prob-value) of independent variable with the chosen significance level. The association is statistically significant and null hypothesis is rejected when the p-value (value listed in the column called “Sig.”) is smaller than or equals to the specified significant level like .05 or .01 or 0.1. Whereas, when p-value listed in the sig. column is greater than the specified significance level, the association between the independent variable and dependent variable is statistically insignificant.

Table 4.4 shows that the coefficients capital adequacy, employee efficiency, bank size and market concentration against return on asset were positive. That is .822, .005, 1.396 and .003 respectively. This indicates that there was a direct or positive relationship between the above mentioned independent variables and ROA. Thus, increasing the values of those explanatory variables will cause an enhancement in the profitability of commercial banks. On the other hand, the remaining independent variables (operational cost efficiency, credit risk, liquidity risk, overhead, non-performing loans and inflation rate) have a negative relationship with the profitability of commercial banks. This implies that the increase of those variables will cause a decrease in ROA.

Even if non-interest income, customer deposit and net-interest margin had a positive correlation with p-values of .237, .243 and .104, their relationships are statistically insignificant at 10% level of significance. GDP growth rate had a negative and statistically insignificant impact on the profitability of commercial banks as its p-value of .816 is greater than 10% level of significance.

4.2 Elaboration on Significant Explanatory Variables

Table 4.5 Hypotheses and results of significant independent variables

Independent Variables	Notation	Expected Sign /Hypothesis	Result from linear regression model
Capital Adequacy	CA	+	+ with β of .822
Operational Cost Efficiency	OCE	-	- with β of -.077
Employee Efficiency	EE	+	+ with β of .005
Bank Size	BS	+	+ with β of 1.39
Liquidity Risk	LR	-	- with β of -0.21
Market Concentration	MC	+	+ with β of .003
Credit Risk	CR	-	- with β of -.025
Overhead	OH	-	- with β of -.048
Non-Performing Loans	NPL	-	- with β of -.004
Inflation Rate	IR	-	- with β of -.008

Source: Researcher's construct (2021)

- 1) **Capital Adequacy (CA):** It was hypothesized that capital adequacy has a positive and significant effect on the profitability of commercial banks. The result from linear regression model in the above table 4.4 and table 4.5 indicates positive sign for this variable (β of .822), which implies a positive association between capital adequacy and profitability of commercial banks. This shows that holding other explanatory variables remains constant; an increase in capital adequacy of commercial banks will result in increased profitability. This is similar with the research hypothesis, as a bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, hence achieving higher profitability. As well, it indicates the ability of commercial bank to absorb losses and handle risk exposure with shareholders. As the Sig. statistic or p-value in some other statistical application (0.001) is smaller than the chosen significance level (0.01 or 1 percent), the positive association between capital adequacy and commercial banks' profitability is statistically significant. This finding is similar with the study finding of Demirgüç- Kunt and Huizinga (1999), who show that the most profitable banks are better capitalized.
- 2) **Operational Cost Efficiency (OCE):** It was expected that operational cost efficiency has a negative and significant effect on the profitability of commercial banks. According to the model output in the above table 4.4 and table 4.5, the coefficient of OCE, which provides information on the efficiency of commercial banks regarding operating expenses relative to operating income, was negative and statistically significant at 5% significance level (p-value of 0.003) which is in line with a researcher expectation and makes the variable a one determinant of the commercial banks' profitability in Ethiopia. This implies that decreasing commercial banks' operating costs would certainly increase the banks' profitability. This finding is in line with the study finding of Sufian & Chong (2008).
- 3) **Employee Efficiency (EE):** It was hypothesized that employee efficiency has a positive and significant effect on the profitability of commercial banks. The result from the above regression model also indicates a positive and statistically significant at 5% significance level with p-value of 0.011. This is one of the reasons behind why banks target high levels of employee efficiency growth through different strategies such

as keeping the employee or labor force steady, reducing the total number of employees, ensuring higher quality of newly hired employees and increasing the overall output through increased investment in fixed assets which incorporate new technology. This positive association of employee efficiency and bank profitability is consistent with the former works of Athanasoglou et al. (2008).

- 4) **Bank Size (BS):** The researcher has hypothesized that bank size has a positive and significant effect on the profitability of commercial banks. The result in the table 4.4 and table 4.5 (p-value of .066, which is less than 0.10 or 10% significance level) shows that the bank size has a positive and statistically significant effect on the commercial banks' profitability. The larger the size of the bank, the more the profitability of the bank. Bank size is used to capture potential economies or diseconomies of scale in the banking sector. The positive coefficient of bank size indicates that commercial banks' in this study were utilized their assets in economies of scale. Larger commercial banks can obtain lower unit cost and higher profits through economies of scale. This suggests that bank size encourages economies of scale, which will reduce the cost of gathering and processing information and thereby makes larger banks more profitable. In other words, the result implies that larger banks enjoy the higher profit than smaller banks because they are take advantage of the benefit of economies of scale. The finding of this study is similar with the findings of Smirlock (1985) and Damena (2011).
- 5) **Liquidity Risk (LR):** The researcher's expectation was a negative and significant relationship between liquidity risk and commercial banks' profitability. The regression result of this study implies that the relationship between liquidity risk and ROA is negative and significant at 1% significance level (p-value of .000). The variable, liquid assets to total assets ratio was used as a proxy for liquidity in the model. The result directs that the liquidity variable has a significantly negative influence on the commercial banks' profitability. That is high figure for this variable means a low profit of banks. As high figures for this variable represent a low liquidity, higher liquidity is associated with lower profitability. The result is in line with the findings of Molyneux et al., (1992) and Guru et al. (1999) who concluded in their study that liquidity negatively correlates with profitability. This finding implies that investing in short-term, less risky securities like government treasury bills leads to increased profitability of commercial banks.
- 6) **Market concentration (MC):** It was hypothesized that market concentration has a positive and significant effect on the profitability of commercial banks. As per the regression model result, market concentration, which is measured by the Herfindahal -Hirschman index (HHI), has a positive and statistically significant impact on the profitability of commercial banks (as the p-value of .029 is less than 0.05 or 5% significance level). This implies that banks that efficiently manage their inputs and have a greater resources or assets have a better diversification and more profitable. Hence, this positive correlation between market concentration and profitability reflects a greater efficiency of large commercial banks.
- 7) **Credit risk (CR):** The researcher's expectation was a negative and significant relationship between credit risk and commercial banks' profitability. The regression result of this study indicates a negative coefficient (-.025) and statistically significant effect on profitability of commercial banks in Ethiopia at 5 % significance level (as a p-value of .044 is less than 0.05). This implies that commercial banks would increase profitability by improving the screening and monitoring of credit risk, which involves forecasting of future risk levels.
- 8) **Overhead (OH):** The Overhead cost is one of the bank-specific factors hypothesized by the researcher to have a negative impact on the profitability of commercial banks. Table 4.4 of this study provides the evidence to accept this research hypothesis as expected. Since β of -.048, and p-value of this variable (.021) is less than 0.05 or 5% significance level, OH affects the profitability of commercial banks negatively and

significantly at 5% level of significance. This negative association of overhead and profitability is in line with the study of Naceur (2003).

9) Non-Performing Loans (NPL): Another significant bank-specific variable of Ethiopian commercial banks' profitability is non-performing loan, which is measured by the ratio of nonperforming loan to total gross loans and advances. This variable was hypothesized to have a negative relationship on the profitability. Like the hypothesis, the regression model result stated in the above table 4.4 (β of $-.004$, and p-value of $.003$, which is less than 0.01), indicates a negative and significant impact of non-performing loans on the commercial banks' profitability. This finding implies that the asset quality of banks, which is measured by the ratio of nonperforming loans to total gross loans, was a key driver of the profitability of commercial banks in Ethiopia. As well, it suggests that the increased exposure to the quality of asset is obviously associated with decreased firm's profitability.

10) Inflation Rate (IR): The research hypothesis regarding this variable is that inflation rate has a negative and significant effect on the profitability of commercial banks. The result of the study's linear regression model (p-value of $.010$, which is less than 0.05 or 0.05% significance level) indicates that the inflation rate has a negative and statistically significant effect on the commercial banks' profitability. Inflation measures the overall percentage increase in Consumer Price Index for all goods and services. It affects the real value of costs and revenues. Negative relationship between inflation and the profitability of banks entails that commercial banks that were included in the study could not adjust their prices like interest rate on loans and deposits as per the inflation rate during the year period ranging from 2016 to 2020. Hence, the commercial banks need to adjust their prices to the levels inflation rates. The finding of this study is consistent with the study findings of Kosmidou (2007), who found a negative relationship between inflation rate and bank profits.

5. Conclusions

Profitability is always an important criterion to measure the performance of commercial banks.

The objective of this study was to examine the bank-specific factors, industry-specific factors and macroeconomic factors that determine the profitability of commercial banks in Ethiopia. The profitability of commercial banks were measured by ROA, using the data obtained from the financial statements of selected nine commercial banks for the year 2016 to 2020 and macro-economic data (GDP growth rate and inflation rate), which has been obtained from CSA. According to the outputs of a linear regression model performed by SPSS version 21 in the above table 4.4 and table 4.5, capital adequacy, employee efficiency, bank size and market concentration are positively related with the profitability of Commercial banks. This implies increasing the values of those independent variables will cause an improvement in the profitability of commercial banks. On the other hand, operational cost efficiency, credit risk, liquidity risk, overhead, non-performing loans and inflation rate are determined to have a negative relationship with the profitability of commercial banks. That is the increase of those variables will cause a decrease in ROA. Irrespective of their positive association, non-interest income, customer deposit and net-interest margin, they are statistically insignificant. GDP growth rate had a negative and statistically insignificant impact on the profitability of commercial banks as its p-value of $.816$ is greater than 10% level of significance. Therefore, except research hypothesis 4, 5, 9 and 13, all of the research hypotheses are accepted.

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REFERENCES

- i Abebaw, K. and Kapur, D. (2011). *What drives the performance of commercial banks in Ethiopia?* *Journal of Research in Commerce and Management*, 2(7), pp. 38-43.
- ii Abebe, T. (2014). *Determinants of Financial Performance: An Empirical Study on Ethiopian Commercial Banks. Unpublished MBA Project. Jimma University, Ethiopia*, 238 – 252
- iii Athanasoglou, p.p., Brissimis, S.N. & Delis, M.D. (2008). *Bank specific, industry specific & macroeconomic determinants of bank profitability. Journal of International Financial Markets, Institutions & Money* 18(2), 121-136
- iv Athanasoglou PP, Delis MD, Staikouras CK (2006). *Determinants of Bank Profitability in the South Eastern European Region. Munich Personal RePEc Archive. Retrieved from <http://mpa.ub.uni-muenchen.de/10274/>*
- v Ahmed, H.I. 2003, *Trend in the profitability of banks in Nigeria before and during interest rate deregulation: A comparative analysis, NDIC Quarterly*, 13, September.
- vi Alkhatib, A. And Harsheh, M. 2012. *Financial performance of Palestine commercial banks, International Journal of Business and Social Science*, 3: 175–184.
- vii Allen, M. P. (1997). *Understanding regression analysis [Electronic version]. New York: Plenum Press.*
- viii Akinola, G.O 2008, *Effect of globalization on market structure, conduct and performance in Nigerian banking, Department of Management and Accounting Journal.*
- ix Banwo S 1997, *The Funds flow Statement: Towards Enhanced Utility. 1997 ICAN News, July/September*, pp 23-29
- x Belayneh, H. (2011). *'Determinants of Commercial Banks Profitability of Ethiopian Commercial banks; MSC thesis, School of Business & Public Administration, Addis Ababa University.*
- xi Bentum, W. (2012). *The Determinants of Profitability of the Commercial Banks in Ghana during the Recent Years of Global Financial Crisis. Master Thesis, Aarhus University*
- xii Berger, A. (1995a). *The Profit–Structure Relationship in Banking: Tests of Market Power and Efficient Structure Hypotheses". Journal of Money, Credit and Banking*, 27(2), 404–431.
- xiii Bikker ,J., & Hu , H . (2002). *Cyclical patterns in profits, provisioning & lending of banks & Procyclicality of the new basel capital requirements. BNL Quarterly Review* 221, 143-175
- xiv Binh Thi Thanh DAO, D. P. (2020). *Determinants of Profitability in Commercial Banks in Vietnam, Malaysia. Journal of Asian Finance, Economics and Business* Vol 7 No 4, 133- 143.
- xv Bourke, P. (1989). *Concentration and Other Determinants of Bank Profitability in Europe, North America, and Australia. Journal of Banking and Finance*, 13(1), 65–79.
- xvi Brooks, C. (2008), *Introductory Econometrics for Finance, 2nd edition, Cambridge University Press, pp. 88 - 258.*
- xvii Creswell J. W 2009, *Research design: Qualitative and quantitative approaches, 3rd ed, Sage Publications, London UK.*
- xviii Damena, HB (2011). *Determinants of Commercial banks profitability: an empirical study on Ethiopian Commercial banks "MSC project paper, Addis Ababa University*
- xix Demirguc-Kunt, A, & Huizinga, H. (1999). *Determinants of profitability: some international evidence World Bank Economic Review* 13,379-408
- xx Demirgüç-Kunt, A., Laeven, L., & Levine, R. (2003). *The Impact of Bank Regulations, Concentration, and Institutions on Bank Margins (Policy Research Working Paper No. 3030). Retrieved from the World*

- Bank website:<http://documents.worldbank.org/curated/en/405981468739488058/The-impact-of-bank-regulations-concentration-and-institutions-on-bank-margins>.
- xxi Goddard, J., Molyneux, P., & Wilson, J. O. S. (2004). *The Profitability of European Banks: A Cross-Sectional and Dynamic Panel Analysis*. *The Manchester School*, 72(3), 363–381. <https://doi.org/10.1111/j.1467-9957.2004.00397.x>.
- xxii Guru B.K. Staunton J. and Balashanmugam B. 1999, *Determinants of Commercial Bank Profitability in Malaysia*, Sydney, Australia, 16-17 December.
- xxiii Haque A, Tariq A (2012). *Efficiency of banks in Pakistan: A non-parametric approach*. *Business and Economic Research*2
- xxiv Islam, M., & Nishiyama, S. (2016). *The Determinants of Bank Profitability: Dynamic Panel Evidence from South Asian Countries*. *Journal of Applied Finance & Banking*, 6(3), 1-6.
- xxv Kalluci, I. 2011. *Analysis of the Albanian banking system in a risk performance framework*. In: *Proceeding of 3rd annual south-eastern economic research workshop*. Bank of Greece and bank of Albania.
- xxvi Kosmidou K. 2008, *The determinants of Bank's Profits in Greece during the period of EU financial integration*, Emerald Group Publishing Limited, *Managerial Finance*, Vol. 34 No. 3, p: 146-159
- xxvii Kumbirai, M. And Webb, R. 2010. *A financial analysis ratio of commercial bank performance in South Africa*, *African Review of Economics and Finance*, 2: 30–53.
- xxviii Mohana and Berhanu (2008), *Determinants of profitably of commercial banks in a Developing country: evidence from Ethiopia: International Journal of Accounting and Financial Management Research (IJAFMR) ISSN 2249-6882 Vol. 2 Issue 3 Sep 2012 1-20*
- xxix Molyneux, P., & Thornton, J. (1992). *Determinants of European bank profitability: A Note*. *Journal of Banking and Finance*, 16, 1173–1178.
- xxx Mugenda, O. M & Mugenda, A. G. (2003), *Research Methods: Quantitative and Qualitative Approaches*, Nairobi: Acts Press.
- xxxi Muriithi, J., & Muigai, R. (2017). *Quantitative analysis of Operational Risk and Profitability of Kenyan Commercial Banks using Cost Income Ratio*. *IOSR Journal of Economics and Finance*, 8(3), 76-83.
- xxxii NBE 2014/15, "Annual report", National Bank of Ethiopia, Addis Ababa, Ethiopia.
- xxxiii Neely, M., & Wheelock, D. (1997). *Why does bank performance vary across states? Federal Reserve Bank of St. Louis Review*, 27-38
- xxxiv Nguyen, T. N. L., & Nguyen, V. C. (2020). *The Determinants of Profitability in Listed Enterprises: A Study from Vietnamese Stock Exchange*. *Journal of Asian Finance, Economics and Business*, 7(1), 47-58. <https://doi.org/10.13106/jafeb.2020.vol7.no1.47>
- xxxv Noman, A., Pervin, S., Chowdhury, M., & Banna, H. (2015). *The Effect of Credit Risk on the Banking Profitability: A Case on Bangladesh*. *Global Journal of Management and Business Research*, 15(3). Retrieved from https://globaljournals.org/GJMBR_Volume15/5-The-Effect-of-Credit-Risk.pdf.
- xxxvi Ongore, V. O. & Kusa, G. B. (2013). *Determinants of Financial Performance of Commercial Banks in Kenya*. *International Journal of Economics and Financial Issues*, 3(1), 237-252
- xxxvii Petra T. & 2007. *Panel data: fixed effects random effects dynamic panel data models*, New York, Cambridge University Press.
- xxxviii Philip, K. (1989). "Concentration and Other Determinants of Bank Profitability in Europe, North America and Australia", *Journal of Banking and Finance*, No. 13, pp. 65-67.
- xxxix Ramlall, I. (2009). *Determinants of Capital Structure among NonQuoted Mauritian Firms under Specificity of Leverage: Looking for a Modified Pecking 88 Order Theory*. *International Research Journal of Finance and Economics*, 31, 83-92.
- xl Redmond, J., & Bohnsack, L. (2007). *Bank size and profitability: one nation, one bank*. *International Journal of Business Research*, 8(1), 162-172.

- xli Sabo, B. 2007, *An Assessment of the Determinants of the Nigerian Banking Industry Profitability: Using Panel Evidence from Nigerian Commercial Bank*, *The information manager* Vol. 7 (2) 2007.
- xlii Sawe, S. C. (2011). *Determinants of Commercial Banks Profitability in Kenya*. Unpublished MA (Econ.)Project.University of Nairobi
- xliii Semu S Z (2010), *Impact of reducing loan by Ethiopian banks on their own performance* “MBL Thesis University of South Africa
- xliv Smirlock, M 1985, *Evidence of the relationship between Concentration and Profitability in Banking*. *Journal of Money, Credit and Banking* 17(1): pp69-83
- xlvi Sufian, F & Chong, R R 2008, *Determinant of bank profitability in a developing economy: Stigler, A. 1964, A Theory of Oligopoly*”, *Journal of Political Economy*, Vol.72, pp. 44-61.