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BANK SPECIFIC, INDUSTRY SPECIFIC AND MACROECONOMIC DETERMINANTS OF BANK PROFITABILITY IN ETHIOPIA

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Abstract: *This study was done to analyze the internal (bank specific) and external (industry specific and macroeconomic specific) determinants of profitability in Ethiopian commercial banks. Profitability has been proxied by the return on equity and net interest margin. The data was secondary in nature and was analyzed using descriptive statistics and multiple regression models. The results showed that among the internal variables capital adequacy, management efficiency, earnings and liquidity ratios have affected return on equity significantly whereas the net interest margin was significantly affected only by capital adequacy and earnings ratios. The industry specific variable proxied by the industry growth rate was having significant impact on net interest margin. All the macroeconomic determinants were having positive but insignificant impact both on return on equity and net interest margin of the Ethiopian commercial banks during the study period (2005 to 2015).*

Key words: Bank specific, industry specific, macroeconomic specific, profitability, Ethiopia

1. INTRODUCTION

The economic literature pays a great deal of attention to the performance of banks, expressed in terms of competition, concentration, efficiency, productivity and profitability. The key reason is that banks are seen as special, given their pivotal role in providing credit to enterprises. Banks and other financial institutions are also regarded, particularly in the aforementioned phenomena, particularly, competition and efficiency, as difficult if not impossible to observe directly, since information on output prices (or credit rates) is rare and figures on the costs of banking products are unavailable. Due to increased pressure of globalization, deregulation, parallel competition from the non-banking financial institutions and volatile market dynamics, commercial banks constantly seek ways to remain profitable. Profitable banks can diversify their business, effectively can hedge against adverse effects and can reward its stakeholders in many ways. So, understanding and regularly updating

knowledge regarding the determinants of banking profitability is very important to the excellent bank management for the existence and stability of banking firm as a financial intermediary and an important contributor to the economic development of a country. (Islam, 2016)

2. LITERATURE REVIEW

2.1 Measurements of Profitability

Return on Equity (ROE)

The Return on Equity ratio is perhaps the most important of all the financial ratios to investors in the company. It measures the return on the money the investors have put into the company. This is the ratio potential investors look at when deciding whether or not to invest in the company.

Net Interest Margin (NIM)

Analysts focus on Net Interest Margin (NIM) ratio because small changes in a bank's lending margin can translate into large bottom line changes. The higher the ratio the cheaper the funding or the higher the margin the bank is obtaining. Net interest income is the difference between interest income and interest expense. It is the gross margin on a bank's lending and investment activities.

2.2 Determinants of Profitability

The major determinants (independent variables) of financial performance of commercial banks are bank specific variables like capital adequacy, asset quality, management efficiency, earnings and liquidity status which shall be proxied by selected ratios. The industry growth rate ratio is the popular indicators often used in representing industry specific factors in relation to performance. The macroeconomic variables used as independent variables are gross domestic product growth rate, average annual Inflation, average exchange rate and effective tax rate. (Ongore and Kusa (2013)

2.2.1 Bank Specific Variables

Capital Adequacy Ratio (CAR)

Capital adequacy has emerged as one of the major indicators of the financial health of a banking entity. It is measured as a ratio of bank's own capital (new equity, retained earnings, etc.) to its total assets (loans, investments in stock markets, guarantees, etc). Well

adherence to capital adequacy regime does play a vital role in minimizing the cascading effects of banking and financial sector crises.

Asset Quality Ratio (AQR)

Asset quality signifies the degree of financial strength of and risks in a bank's assets, mainly loans and investments. The maintenance of asset quality is a fundamental feature of banking. A broad evaluation of asset quality is one of the most important components in assessing the current situation and future viability of a bank. Under CAMEL Model of analysis, the asset quality ratios command significant recognition.

Management Efficiency Ratio (MER)

Management efficiency is another vital component of the CAMEL model that ensures the survival and growth of a bank. It is the management which sets vision and goals for the organization and ensures that it achieves them. In the process of achieving their goals, management takes certain crucial decisions depending on its risk perception. Hence, analysts and investors use this parameter to evaluate management efficiency as to assign premium to better managed banks and discount to poorly managed ones.

Earnings Ratio (EARN)

Earnings quality reflects quality of a bank's profitability and its ability to earn consistently. The two most important parameters that are reviewed during inspection to assess the earning performance of the bank are the net interest margin and the net margin.

Liquidity Ratios (LIQR)

For a bank, liquidity is a crucial aspect which represents its ability to meet its financial obligations. It is utmost important for a bank to maintain correct level of liquidity, which will otherwise lead to declined earnings. A high liquidity ratio indicates that the bank is more affluent. However, a bank needs to take care in hedging liquidity risk to ensure its own liquidity under all rational conditions. It is possible only when the percentage of funds ploughed in the investments with high returns is large.

2.2.2 Industry Specific Variable

Industry Growth Rate (INDG)

Industry growth rate is a proxy for the industry specific variable which will have its own relationship with the performance of commercial banks and it is expected to have a positive and significant relationship.

2.2.3 Macroeconomic Specific Variable

Inflation (INFL)

We use the current inflation, increase of the Consumer Price Index (CPI) over the previous quarter, to proxy for the expected inflation. In the highly inflationary environment of Ethiopia, the study predicts this variable to be a significant determinant of financial performance. The effect of inflation on banks' financial performance depends on whether it is correctly anticipated by the bank. By making accurate inflation forecasts managers can increase the rates on loans faster than the operating costs allowing earning higher profits.

Gross Domestic Product (GDP)

We use the GDP growth rate to account for the growth of the Ethiopia's output. The study expects GDP growth to have a significant positive effect on the financial performance of banks. In line with the literature, we expect a strong positive correlation between the overall economic activity and the performance of the financial sector.

Tax Rate (TAXR)

Few authors have attempted to measure the impact of taxation on the performance of banks, and it is certainly something that could be the subject of further research. The result which is expected, namely a negative impact, is what are Kunt and Huizinga (1999). We can easily understand why: the tax is deducted from the result; it automatically assigns the ROA and ROE. However, a study by Albertazzi and Gambacorta (2009) finds a very low impact of taxation on performance. Indeed, the authors consider that it is very easy for banks to pass their taxes on other actors (depositors, borrowers, customers paying commissions).

Average Exchange Rate (AEXR)

Foreign exchange risk arises when a bank holds assets or liabilities in foreign currencies and impacts the earnings and capital of bank due to the fluctuations in the exchange rates. No one can predict what the exchange rate will be in the next period, it can move in either upward or downward direction regardless of what the estimates and predictions were. This uncertain movement poses a threat to the earnings and capital of bank, if such a movement is in undesired and unanticipated direction. (Hussain, 2011)

2.3 Financial sector in Ethiopia

In Ethiopia the major financial institutions operating are banks, insurance companies and micro-finance institutions. The number of banks operating in the country during 2014/15

reached 19. In terms of ownership, sixteen are private commercial banks, and the remaining three state-owned. During the fiscal year, 485 new branches were opened raising the total branch network in the country to 2693 from 2208 previous years. Despite the continuous increase in the capital base, the banking industry in Ethiopia is still very small compared to some big banks in Africa, depicting the ongoing effort needed to bring Ethiopian banks to the international level. (NBE, 2014/15)

2.4 Bank resources in Ethiopia

Total resources mobilized by the banking system in the form of deposit, loan collection and borrowing increased by 24.5 percent and reached Birr 138.7 billion at the end of 2014/15. Spurred by remarkable branch expansion, deposit liabilities of the banking system reached Birr 367.4 billion reflecting annual growth rate of 25.5 percent over last year. The total capital of the banking industry increased by 19.0 percent and reached Birr 31.5 billion by the end of June 2015 as a number of banks injected more capital. (NBE, 2015)

3. STATEMENT OF THE PROBLEM

There are a lot of studies related to the bank ownership structure, state owned or private owned, and relations of bank ownership structure with the profitability. Some other authors focus on identifying the determinant factors of financial performance. Different studies which has been on the determinants of bank performance has classified the determinant factors into three categories; internal factors (bank specific factors), industry specific factors and macroeconomic factors. In the Ethiopian case, studies which examined the financial sector, specifically the banking sector, are scanty. Kapur and Gualau (2008) and Tekeste (2013) have done their study to examine the relationship and determinants of performance and to analyze the Financial Performance Efficiency determinants of Ethiopian commercial banks respectively. All this studies among others conducted in this area focuses on analyzing the profitability and efficiency without considering all aspects like bank specific, industry specific and macroeconomic specific variables which determine the performance of banks.

Thus, the purpose of this study is to analyze the determinants of the profitability of commercial banks in Ethiopia by considering the bank specific, industry specific and the macroeconomic specific factors and taking ownership structure as moderating variable.

4. OBJECTIVES OF THE STUDY

4.1 General Objective

The main objective the study is to analyze bank specific, industry specific and macroeconomic determinants of profitability of commercial banks in Ethiopia.

4.2 Specific Objectives

- To analyze the internal factors (Bank Specific Variables) which determine the profitability of commercial banks in Ethiopia.
- To analyze the Industry Specific Variables which determine the profitability of commercial banks in Ethiopia.
- To analyze the external factors (Macroeconomic Specific Variables) which determine the profitability of commercial banks in Ethiopia

5. HYPOTHESES OF THE STUDY

Hypothesis 1:

- There is positive and significant relationship between Capital adequacy ratio and profitability of commercial banks in Ethiopia.

Hypothesis 2:

- There is negative and significant relationship between Asset quality ratio and profitability of commercial banks in Ethiopia.

Hypothesis 3:

- There is positive and significant relationship between Management efficiency ratio and profitability of commercial banks in Ethiopia.

Hypothesis 4:

- There is positive and significant relationship between Earnings ratio and profitability of commercial banks in Ethiopia.

Hypothesis 5:

- There is positive and significant relationship between Liquidity ratio and profitability of commercial banks in Ethiopia.

Hypothesis 6:

- There is positive and significant relationship between Industry growth rate and profitability of commercial banks in Ethiopia.

Hypothesis 7:

- There is positive and significant relationship between Inflation rate and profitability of commercial banks in Ethiopia.

Hypothesis 8:

- There is positive and significant relationship between GDP growth rate and profitability of commercial banks in Ethiopia.

Hypothesis 9:

- There is negative and significant relationship between Tax rate and profitability of commercial banks in Ethiopia.

Hypothesis 10:

- There is negative and significant relationship between Average exchange and profitability of commercial banks in Ethiopia.

6. RESEARCH METHOD

The research design of this research can be considered as both hypothesis testing type because it will test the different hypotheses formulated and it can also be of descriptive type of research design since it describes the position of the commercial banks under study. It has shown the correlation between the dependent and independent variables considered in the study.

6.1 Data Type

The secondary data for this study has been collected from the audited annual financial statements of the commercial banks in Ethiopia as well as from the different reports and publications of the National Bank of Ethiopia, Ministry of Finance and Economic Development and the Central Statistical Authority (CSA). The financial statements that were used include the balance sheet, income statement and the cash flow statement of the commercial banks for the year 2005 to 2015. Furthermore, literature from various books, journals, news papers, magazines, and various web sites were used.

6.2 Econometric Model Specification

As it is clearly indicated in the previous sections, panel data regression model was adopted for this study. Panel data was generated using both time series and cross-sectional data from the audited financial statements of the banks. It was also ideally used because it helps

in the identification of effects that cannot be easily pointed out using purely cross- section or time series data, and other important features.

Econometric Model:

$\pi_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 AQR_{it} + \beta_3 MER_{it} + \beta_4 EARN_{it} + \beta_5 LIQR_{it} + \beta_6 INDG_{it} + \beta_7 GDP_{it} + \beta_8 INFL_{it} + \beta_9 TAXR_{it} + \beta_{10} AEXR_{it} + \varepsilon_{it}$

Where,

π_{it} = performance of bank i at time t as expressed by Return on Equity (ROE) and Net Interest Margin (NIM)

β_0 = intercept

β_1 - β_{10} = Coefficients of Parameters

CAR_{it} = Capital Adequacy Ratio of Bank i at time t

AQR_{it} = Asset Quality Ratio of Bank i at time t

MER_{it} = Management Efficiency Ratio of Bank i at time t

$EARN_{it}$ = Earnings ratio of Bank i at time t

$LIQR_{it}$ = Liquidity Ratio of Bank i at time t

$INDG_{it}$ = Industry Growth Rate at time t

GDP_{it} = Gross Domestic Product at time t

$INFL_{it}$ = Average Annual Inflation Rate at time t

$TAXR_{it}$ = Effective Tax Rate of bank i at time t

$AEXR_{it}$ = Average Exchange Rate at time t

ε_{it} = Error term where i is cross sectional and t time identifier

7. RESULTS AND DISCUSSION

7.1 Results of Descriptive Statistics

The descriptive statistics for the dependent and independent variables are presented below. The dependent variable is bank profitability measured by two alternative measures return on equity (ROE) and net interest margin (NIM). The independent variables were classified in to three; the bank specific, industry specific and macroeconomic specific factors. Table 1 presents the descriptive statistics for all the variables considered in the model. It shows the characteristics of the variables used by revealing the statistical mean, standard deviation, minimum and maximum values.

Table 1 Descriptive Statistics for the Dependent and Independent Variables

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
ROE	99	0.2455	0.1227	-0.0343	0.7015
NIM	99	0.0442	0.0127	0.0120	0.0833
CAR	99	0.1320	0.0955	0.0420	0.8680
AQR	99	0.0426	0.0422	0.0000	0.2130
MER	99	2.0521	1.7817	-1.1480	12.3060
EARN	99	0.0450	0.0141	0.0020	0.0670
LIQR	99	0.3375	0.1257	0.1280	0.9380
INDG	99	6.7936	7.5723	-0.2800	21.7800
INFL	99	16.2273	10.8128	2.8000	36.4000
GDP	99	10.7455	1.0378	8.7000	12.6000
TAXR	99	0.2640	0.0612	0.0000	0.3610
AEXR	99	13.5909	4.4430	8.7000	20.1000

Source: Financial statement of the commercial banks and Own Computation through Stata 12

As it is depicted in Table 1, the average return on equity of the banks is 0.245 with a great variation of 0.122 standard deviation, the maximum value for the return on equity is 0.701 while the minimum value is -0.034. On average all the banks generate a profit of 25 cents from each birr investment on equity. A profit of 70 cents from each birr investment will be the highest profit and the least return on equity will be loss of 3 cents. The average value of the net interest margin is 0.044 which implies the average profit of the banks with a standard deviation of 0.013. The maximum and minimum net interest margin values are 0.083 and 0.012 respectively. On the other hand, capital adequacy ratio amounts to 13.2 on average, varies between 4.2 and 86.8, asset quality amounts 4.3 on average with minimum and maximum value of 0 and 21.3 respectively. Management efficiency ratio has an average value of 2.05 and 12.31 and -1.15 maximum and minimum value respectively. With regard to earnings ratio and liquidity ratio, the average values are 4.45 and 33.75 respectively. While industry growth on the other hand amounts to 6.79 on average ranging between 21.78 to -0.28 of maximum and minimum value. The inflation stands at 16.23 on average, with minimum and maximum values ranging at 2.8 and 36.4. The gross domestic product averages 10.75 with minimum and maximum values of 8.7 and 12.6 respectively. While the mean for tax rate is 0.26, ranging between 0.36 of maximum and 0 of minimum value, with

standard deviation of 0.06 and finally the average exchange rate has an average of 13.59 with a standard deviation of 4.44 and 8.7 of minimum value and the maximum value is 20.1.

7.2 Results and Discussion of the Regression Analysis

Table 2 Regression Results for ROE

Variables	Observation	Coefficient	Robust Std. Err.	Z	P-value
C	99	0.5233643	0.0854236	6.13	0.000
car	99	-0.5877574	0.1703838	-3.45	0.001
aqr	99	-0.2910664	0.3288443	-0.89	0.376
mer	99	-0.0294095	0.0051496	-5.71	0.000
earn	99	-3.0131920	0.9134903	-3.30	0.001
liqr	99	-0.2410928	0.1011299	-2.38	0.017
gdp	99	0.0006408	0.0041345	0.15	0.877
infl	99	0.0008773	0.0004581	1.92	0.055
taxr	99	0.2258815	0.1606087	1.41	0.160
indg	99	0.0006232	0.0003930	1.59	0.113
aexr	99	0.0003196	0.0013205	0.24	0.809

Source: Financial statement of the commercial banks and Own Computation through Stata 12

(Dependent Variable: ROE**, Explanatory Variable:** car, aqr, mer, earn, liqr, gdp, infl, taxr, indg, aexr and z-values indicate coefficients at statistical significant level of 1%, 5% and 10 %.)

7.2.1 Discussion of the Regression Results for ROE

Bank Specific Variables: As we have seen in the model, the bank specific variables used in this study are five namely, capital adequacy ratio (CAR), asset quality ratio (AQR), management efficiency ratio (MER), earnings ratio (EARN) and liquidity ratio (LIQR).

Capital Adequacy Ratio

According to Table 2 above the capital adequacy ratio is negatively related with return on equity with a coefficient estimate of -0.5877574. Holding other factors constant, a 100 percent increase in the capital adequacy ratio of the bank reduces return on equity by 58.8 percent and the P-value of CAR (i.e. 0.001) reveals that it is statistically significant at 1 percent level of significance. This is because an increment in the capital adequacy ratio of the bank implies an increment in the total equity, as the capital adequacy ratio is the ratio of total equity to total asset, and this in turn will reduce the return on equity of the bank since the return on equity of the bank is the ratio of net profit to total equity. This result is against

the first hypothesis of the study which was stated as; there is positive and significant relationship between capital adequacy ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result is consistent with the study by Jha and Hui (2012), Hoffmann (2011), Modigliani and Miller (1958), Ongore and Kusa (2013) in Kenyan commercial banks that has got negative relationship between capital adequacy and return on asset.

Asset Quality Ratio

According to Table 2 above the asset quality ratio is negatively related with return on equity with a coefficient estimate of -0.2910664. Holding other factors constant, a 100 percent increase in the asset quality of the bank reduces return on equity by 29.1 percent but the P-value of the AQR (i.e. 0.376) reveals that it is statistically insignificant. This is because as the asset quality ratio of the bank increases, it implies an increment in the non performing loan of the bank, which in turn reduces the net profit of the bank that can be generated from the total loan in the form of interest income. The lower the interest income implies the lower will be the net profit of the bank which in turn implies the lower will be the return on equity; as the return on equity of the bank is the proportion of net profit to total equity. This result is in contrast with the second hypothesis of the study which was stated as; there is negative and significant relationship between asset quality ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result is consistent with the study by Ongore and Kusa (2013), Bourke (1989), Miller and Noulas (1997) and Acaravci and Calim (2013).

Management Efficiency Ratio

According to Table 2 above the management efficiency ratio is negatively related with return on equity with a coefficient estimate of -0.0294095. Holding other factors constant, a 100 percent increase in the management efficiency ratio of the bank, measured by total income to profit before tax, reduces return on equity by 2.94 percent and the P-value of the MER (i.e. 0.000) reveals that it is statistically significant at 1 percent level of significance. This is because as the management efficiency ratio of the bank increases, it implies an increment in the total income of the bank, which in turn increases the tax rate and this reduces the net profit of the bank that can be generated. The lower the net profit of the bank implies the lower will be the return on equity, as the return on equity of the bank is

the proportion of net profit to total equity. This result is against the third hypothesis of the study which was stated as; there is positive and significant relationship between management efficiency ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

Earnings Ratio

According to Table 2 above the earnings ratio is negatively related with return on equity with a coefficient estimate of -3.013192. Holding other factors constant, a 100 percent increase in the earnings ratio of the bank, measured by interest income to total asset, reduces return on equity by 301 percent and the P-value of the EARN (i.e. 0.001) reveals that it is statistically significant at 1 level of significance. This is because as the earnings ratio increases, it implies an increment in the interest income of the bank which is the direct reflection of an increment in the loans and advances granted to customers; the higher the loan implies the proportion of the bank's capital will be lower. This result is an opposite to the fourth hypothesis of the study which was stated as; there is positive and significant relationship between earnings ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

Liquidity Ratio

According to Table 2 above the liquidity ratio is negatively related with return on equity with a coefficient estimate of -0.2410928. Holding other factors constant, a 100 percent increase in the liquidity ratio of the bank, measured by total loan to total deposit, reduces return on equity by 24.1 percent and the P-value of the LIQR (i.e. 0.017) reveals that it is statistically significant at 5 percent of significance. This is because as the liquidity ratio of the bank increase, obviously the total loan will be increasing; which in turn implies a continuous decline in the capital of the bank. This result is against the fifth hypothesis of the study which was stated as; there is positive and significant relationship between liquidity ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result is consistent with the result of Ali et.al (2009) who has done his study in the Internal Determinants of Profitability in Turkish Banking Sector stating as liquidity negatively affects profitability, increase in liquidity, that is, increase in the amount of liquid assets reduces bank's liquidity risk. Banks reduce credit interest margins, and so profitability decreases. Another point about liquidity is that liquidity-profitability relationship of banks may be

seasonal. Molyneux et.al, (1992), has also found a weak inverse relationship of liquidity with profitability stating that liquidity holdings (particularly those imposed by the authorities) represent a cost to the bank.

Industry Specific Variable: the industry specific ratio used in this study is the industry growth rate (INDG)

Industry Growth Rate

According to Table 2 above the industry growth rate is positively related to the return on equity with a coefficient estimate of 0.0006232. Holding other factors constant, a 100 percent increase in the industry growth rate, measured by total asset of the banks to the gross domestic product, increases return on equity by 0.062 percent but the P-value of the INDG (i.e. 0.113) reveals that it is statistically significant at 10 percent level of significance. This is because as the industry growth rate increases, there will be an opportunity to the bank to have additional investment; and this implies that the bank's ability to generate profit from each birr investment on the capital of the bank will be progressive. This result is in line with the sixth hypothesis of the study which was stated as; there is positive and significant relationship between industry growth rate and profitability of commercial banks in Ethiopia. Hence, we accept this hypothesis. This result corroborates with Owoputi et.al (2014), who has got positive but insignificant relationship between banking industry growth and banks profitability.

Macroeconomic Specific Variables: as we have seen in the model which is used in this study, the macroeconomic variables considered are four namely average inflation (INFL), gross domestic product (GDP), tax rate (TAXR) and average exchange rate (AEXR).

Inflation

According to Table 2 above inflation is positively related with return on equity with a coefficient estimate of 0.0008773. Holding other factors constant, a 100 percent increase in the inflation rate, measured by annual average inflation, increases return on equity by 0.088 percent and the P-value of the INFL (i.e. 0.055) reveals that it is statistically significant at 10 percent level of significance. This implies that the commercial banks in Ethiopia are capable of estimating the inflation rate before it has been actually occurring; thereby adjusting their performance proactively. This result is in line with the seventh hypothesis of the study which was stated as; there is positive and significant relationship between

inflation rate and profitability of commercial banks in Ethiopia. Hence, we accept this hypothesis. This result is consistent with Jamal et.al (2012) and Madishetti et.al (2013) who have done their study in Tanzania.

Gross Domestic Product

According to Table 2 above gross domestic product is positively related with return on equity with a coefficient estimate of 0.0006408. Holding other factors constant, a 100 percent increase in the gross domestic product, measured by annual gross domestic product growth rate, increases return on equity by 0.06 percent but the P-value of the GDP (i.e. 0.877) reveals that it is statistically insignificant. This result is against the eighth hypothesis of the study which was stated as; there is positive and significant relationship between GDP growth rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result is consistent with Ali et.al (2011), Jamal et.al (2012), Owoputi et.al (2014), Duraj and Moci (2014), Madishetti et.al (2013) and Abdus Samad (2015); who has conducted a study on Bangladesh banking profitability who has got the sign for macroeconomic factor, GDP, positive but statistically insignificant factor.

Tax Rate

According to Table 2 above tax rate is positively related with return on equity with a coefficient estimate of 0.2258815. Holding other factors constant, a 100 percent increase in the tax rate of the banks, measured by annual tax rate, increases return on equity by 22.59 percent but the P-value of the TAXR (i.e. 0.160) reveals that it is statistically insignificant. This result is against the ninth hypothesis of the study which was stated as; there is negative and significant relationship between tax rate and financial and operating performance of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

Average Exchange Rate

According to Table 2 above average exchange rate is positively related with return on equity with a coefficient estimate of 0.0003196. Holding other factors constant, a 100 percent increase in the average exchange rate, measured by annual average exchange rate, increases return on equity by 0.032 percent but the P-value of the AEXR (i.e. 0.809) reveals that it is statistically insignificant. This result in opposition with the tenth hypothesis of the study which was stated as; there is negative and significant relationship between average

exchange rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

Table 3 Regression Results for NIM

Variables	Observation	Coefficient	Robust Std. Err.	Z	P-value
C	99	0.0024657	0.0258952	0.10	0.924
car	99	0.0884520	0.0170355	5.19	0.000
aqr	99	0.0413555	0.0270013	1.53	0.126
mer	99	0.0004839	0.0006105	0.79	0.428
earn	99	0.5407653	0.0832801	6.49	0.000
liqr	99	0.0025720	0.0111218	0.23	0.817
gdp	99	-0.0005761	0.0014709	-0.39	0.695
infl	99	0.0001236	0.0000860	1.44	0.151
taxr	99	0.0286790	0.0217990	1.32	0.188
indg	99	-0.0002407	0.0001174	-2.05	0.040
aexr	99	0.0000232	0.0003572	0.06	0.948

Source: Financial statement of the commercial banks and Own Computation through Stata 12

(Dependent Variable: NIM**, Explanatory Variable:** car, aqr, mer, earn, liqr, gdp, infl, taxr, indg, aexr and z-values indicate coefficients at statistical significant level of 1%, 5% and 10 %.)

7.2.2 Discussion of Regression Results for NIM

Bank Specific Variables: As we have seen in the model, the bank specific variables used in this study are five namely, capital adequacy ratio (CAR), asset quality ratio (AQR), management efficiency ratio (MER), earnings ratio (EARN) and liquidity ratio (LIQR).

Capital Adequacy Ratio

According to Table 3 above the capital adequacy ratio is positively related with net interest margin with a coefficient estimate of 0.0884520. Holding other factors constant, a 100 percent increase in the capital adequacy ratio of the bank increases net interest margin by 8.85 percent and the P-value of CAR (i.e. 0.000) reveals that it is statistically significant at 1 percent level of significance. This is because an increment in the capital adequacy ratio of the bank implies an increment in the total asset, as the capital adequacy ratio is the ratio of total equity to total asset; the higher the total asset implies the higher will be the interest income generated from the interest bearing assets, and this in turn will increase the net interest margin of the bank. This result is aligned with the first hypothesis of the study

which was stated as; there is positive and significant relationship between capital adequacy ratio and profitability of commercial banks in Ethiopia. Hence, we accept this hypothesis. This result is consistent with Alp et al (1997), Acaravci and Calim (2013), Athanasoglou, (2006) and Munyambonera Ezra Francis (2013); who has conducted his research in Sub Saharan Africa who has got positive and significant with expected signs of the variable representing capital adequacy (equity to total assets). Ali et.al (2009) has also got the same result with this study stating that capital adequacy affects the profitability of Turkish banks positively. As the variable regarding capital adequacy in the model is "the ratio of shareholders' equity to total assets", it can be concluded that banks financed by relatively high amounts of equity, that is, banks with relatively low leverage ratios tend to be more profitable.

Asset Quality Ratio

According to Table 3 above the asset quality ratio is positively related with net interest margin with a coefficient estimate of 0.0413555. Holding other factors constant, a 100 percent increase in the asset quality of the bank increases the net interest margin by 4.14 percent but the P-value of the AQR (i.e. 0.126) reveals that it is statistically insignificant. This is because as the asset quality ratio of the bank increases, it implies an increment in the total loan of the bank, which in turn increases the interest income of the bank that can be generated from the total loan. The higher the interest income implies the higher will be the net interest margin of the bank. This result negates with the second hypothesis of the study which was stated as; there is positive and significant relationship between asset quality ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

Management Efficiency Ratio

According to Table 3 above the management efficiency ratio is positively related with the net interest margin with a coefficient estimate of 0.0004839. Holding other factors constant, a 100 percent increase in the management efficiency ratio of the bank, measured by total income to profit before tax, increases the net interest margin by 0.048 percent but the P-value of the MER (i.e. 0.428) reveals that it is statistically insignificant. This is because as the management efficiency ratio of the bank increases, it implies an increment in the total income of the bank. Since the total income of the bank is the sum of its interest and

noninterest income, the higher the total income means the higher the interest income and this in turn implies the higher will be the net interest margin.

This result is against the third hypothesis of the study which was stated as; there is positive and significant relationship between management efficiency ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result negates with the result of Ongore and Kusa (2013) who have got negative relationship between bank profitability and management efficiency in Kenyan commercial banks.

Earnings Ratio

According to Table 3 above the earnings ratio is positively related with the net interest margin with a coefficient estimate of 0.5407653. Holding other factors constant, a 100 percent increase in the earnings ratio of the bank, measured by interest income to total asset, maximizes the net interest margin by 54.1 percent and the P-value of the EARN (i.e. 0.000) reveals that it is statistically significant at 1 percent level of significance. This is because as the earnings ratio of the bank increases, it implies an increment in the interest income of the bank that can be generated from the total loan. The higher the interest income implies the higher will be the net interest margin of the bank. This result is in line with the fourth hypothesis of the study which was stated as; there is positive and significant relationship between earnings ratio and profitability of commercial banks in Ethiopia. Hence, we accept this hypothesis.

Liquidity Ratio

According to Table 3 above the liquidity ratio is positively related with the net interest margin with a coefficient estimate of 0.0025720. Holding other factors constant, a 100 percent increase in the liquidity ratio of the bank, measured by total loan to total deposit, increases the net interest margin by 0.26 percent but the P-value of the LIQR (i.e. 0.817) reveals that it is statistically insignificant. This is because as the liquidity ratio of the bank increases, it implies an increment in the total loan of the bank, which in turn implies an increment in the interest income of the bank that can be generated from the total loan in the form of interest income. The higher the interest income implies the higher will be the net interest margin of the bank. This result is in opposition with the fifth hypothesis of the study which was stated as; there is positive and significant relationship between liquidity ratio and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

This result is consistent with Duraj and Moci (n.d.), Athanasoglou, (2006), found positive but insignificant relationship between liquidity and profitability in the Banks of South Eastern European (SSE) Region, They explained that the SEE banking system still lacks the resources to meet the liquidity standards of the developed banking systems, maintaining an illiquid position to prevent failures.

Industry Specific Variable: the industry specific ratio used in this study is the industry growth rate (INDG)

Industry Growth Rate

According to Table 3 above the industry growth rate is negatively related to the net interest margin with a coefficient estimate of -0.0002407. Holding other factors constant, a 100 percent increase in the industry growth rate, measured by total asset of the banks to the gross domestic product, decreases the net interest margin by 0.024 percent and the P-value of the INDG (i.e. 0.040) reveals that it is statistically significant at 5 percent level of significant. This result is against the sixth hypothesis of the study which was stated as; there is positive and significant relationship between industry growth rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result contradicts with Owoputi et.al (2014), who has got positive but insignificant relationship between banking industry growth and profitability.

Macroeconomic Specific Variables: as we have seen in the model we have used in this study, the macroeconomic variables considered are four namely average inflation (INFL), gross domestic product (GDP), tax rate (TAXR) and average exchange rate (AEXR).

Inflation

According to Table 3 above inflation is positively related with net interest margin with a coefficient estimate of 0.0001236. Holding other factors constant, a 100 percent increase in the inflation rate, measured by annual average inflation, increases net interest margin by 0.012 percent but the P-value of the INFL (i.e. 0.151) reveals that it is statistically insignificant. This implies that the commercial banks in Ethiopia are capable of estimating the inflation rate before it has been actually occurring; thereby adjusting their performance proactively. This result contradicts with the seventh hypothesis of the study which was stated as; there is positive and significant relationship between inflation rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result

(being positive although statistically insignificant) is consistent with Davydenko (2010), Owoputi et.al (2014) and Athanasoglou, et.al (2006); who have stated in their study as inflation positively and significantly affects profitability. They said that, with inflation, in SSE regions bank income increases more than bank costs, which may be viewed as the result of the failure of bank customers (comparative to bank managers) to forecast future inflation.

Gross Domestic Product

According to Table 3 above gross domestic product is negatively related with the net interest margin with a coefficient estimate of -0.0005761. Holding other factors constant, a 100 percent increase in the gross domestic product, measured by annual real gross domestic product growth rate, reduces the net interest margin by 0.058 percent but the P-value of the GDP (i.e. 0.695) reveals that it is statistically insignificant. This result is against the eight hypothesis of the study which was stated as; there is positive and significant relationship between GDP growth rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. This result is consistent with Acaravci and Calim (2013), Munyambonera Ezra Francis (2013), Naceur et al (2003) and Panayiotis et al., (2005) cited in Munyambonera stated that there are several reasons why the effect of growth in GDP to bank profitability could be negative or positive. Firstly, bank credit could decrease during economic down swings, since such periods are normally associated with increased risk and vice-versa. In absence of this variable however; it is also observed that this variable could be partly captured by bank-specific variables.

Tax Rate

According to Table 3 above tax rate is positively related with the net interest margin with a coefficient estimate of 0.0286790. Holding other factors constant, a 100 percent increase in the tax rate of the banks, measured by annual tax rate, increases net interest margin by 2.87 percent but the P-value of the TAXR (i.e. 0.188) reveals that it is statistically insignificant. This result is against the ninth hypothesis of the study which was stated as; there is negative and significant relationship between tax rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected.

Average Exchange Rate

According to Table 3 above average exchange rate is positively related with the net interest margin with a coefficient estimate of 0.0000232. Holding other factors constant, a 100

percent increase in the average exchange rate, measured by annual average exchange rate, increases net interest margin by 0.002 percent and the P-value of the AEXR (i.e. 0.948) reveals that it is statistically insignificant. This result reverses with the tenth hypothesis of the study which was stated as; there is negative and significant relationship between average exchange rate and profitability of commercial banks in Ethiopia. Hence, the hypothesis is rejected. The result is consistent with the study by Maigua and Mouni (2016), Osaugwu (2014) and Davydenko (2010) who has done his study in Ukraine banks and stated that the exchange rate has a positive significant effect on income which could be explained by the ability of banks managers to anticipate exchange rate fluctuations. This could result in gains on foreign exchange transactions.

Table 4 Summary of Hypothesis Testing

Hypotheses	Result	
	ROE	NIM
Hypothesis 1: There is positive and significance relationship between Capital adequacy ratio and profitability of commercial banks in Ethiopia.	Rejected	Accepted
Hypothesis 2: There is negative and significance relationship between Asset quality ratio and profitability of commercial banks in Ethiopia.	Rejected	Rejected
Hypothesis 3: There is positive and significance relationship between Management efficiency ratio and profitability of commercial banks in Ethiopia.	Rejected	Rejected
Hypothesis 4: There is positive and significance relationship between Earnings ratio and profitability of commercial banks in Ethiopia.	Rejected	Accepted
Hypothesis 5: There is positive and significance relationship between Liquidity ratio and profitability of commercial banks in Ethiopia.	Rejected	Rejected
Hypothesis 6: There is positive and significance relationship between Industry growth rate and profitability of commercial banks in Ethiopia.	Accepted	Rejected
Hypothesis 7: There is positive and significance relationship between Inflation rate and profitability of commercial banks in Ethiopia.	Accepted	Rejected
Hypothesis 8: There is positive and significance relationship between GDP growth rate and profitability of commercial banks in Ethiopia.	Rejected	Rejected
Hypothesis 9: There is negative and significance relationship between Tax rate and profitability of commercial banks in Ethiopia.	Rejected	Rejected

Hypothesis 10: There is negative and significance relationship between Average exchange and profitability of commercial banks in Ethiopia.	Rejected	Rejected

Conclusion

- From the bank specific variables (internal factors) capital adequacy, asset quality, management efficiency, earnings and liquidity ratio were negatively related with the return on equity; implying an inverse relationship which needs managements due concern since it is against the hypothesized expectations during the study period.
- On the other hand, the internal factors; capital adequacy and earnings ratio were having statistically significance impact on net interest margin but asset quality, management efficiency and liquidity ratio were inversely related with net interest margin of the banks during the study. This implies that the Ethiopian commercial banks should give due concern for the internal determinants of profitability in order to grow, survive and being profitable.
- From the external variables (industry and macroeconomic factors) inflation and gross industry growth rate were having statistically significant relationship with the return on equity whereas gross domestic product, tax rate and average exchange rate were statistically insignificant. All the external variables (both industry and macroeconomic specific) were having a statistically insignificant relationship with the net interest margin of Ethiopian commercial banks during the study period.

Suggestion

- Financial performance analysis is useful tool to know the financial health of any company. This is done by either analyzing the past financial performance trend of the company or comparing its performance to the performance of other similar companies. To compare one company's performance to the performance of the other, a standard bench mark is needed, but there is no a settled standard against which comparison can be made in Ethiopia. Therefore, the concerned party, National Bank of Ethiopia, has to take this responsibility and should settle a bench mark that can be used as a standard.
- Even though there are a number of important determinant variables which have significant influence on the financial and operating performance of any company

such as political affairs, management philosophy, organizational culture etc, they were not considered in this study. Therefore, future research works should be done by considering all these determinant variables.

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