DETERMINANT OF BANK PROFITABILITY: EVIDENCE FROM BANKING INDUSTRY IN ETHIOPIA

A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science on Accounting and Finance (MSC)

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Abstract

The instability of banking industry can cause the collapse of the whole economy in the given country. The method that used to test sustainability of banking sector is profitability. Profitability is the major determinant factors for stability and lending capacity of banking business in order to improve economic growth of the stated country. So, the purpose of the study was to investigate the impact of bank specific and macroeconomic determinant of banking industry in Ethiopia. To achieve this objective a secondary source of balanced panel data of 9 Commercial bank in Ethiopia that covers the period from 2008-2017 were used. Quantitative approach of research design was applied to fulfill the objective of the study. The paper uses OLS regression model, in order to investigate the impact of capital adequacy, liquidity risk, credit risk, bank size, fee and commission income, revenue diversification, cost income ratio, real GDP growth rate and political stability index as independent variable on major profitability indicator which is return on asset (ROA). The major outcomes of the study shows capital adequacy, bank size, fee and commission income, revenue diversification (other income over total income) and liquidity risk (loan to deposit ratio) have statistically significant positive relationship with bank's profitability. On the other hand, political stability index has positive impact on bank profitability, but statistically insignificant. Further, the results from the panel regression suggest that, credit risk (loan loss provisions to total loan) and cost income ratio have statistically significant negative impact on bank profitability. However, real GDP growth rate has insignificant negative impact on ROA. Finally bank managements were recommended to improve their capital base, efficiently manage their operating cost, expand fee service income, mobilize more deposit, expand bank branch should not put all eggs in one basket and improve their credit risk management.

Key Words*: Instability, profitability, Commercial Banks, OLS, Bank specific, Macroeconomic and Ethiopia.*

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Acronym and Abbreviation

BCBS- Basel Committee on Banking Supervision

BS-Bank Size

CAR- Capital Adequacy Ratio

CLRM-Classical Linear Regression Model

CR- Credit Risk

EU- European Union

FCI- Fee and Commission Income

GDP- Gross Domestic Product

GMM- Generalized method of moments

LLP- Loan Loss Provisions

LR-Liquidity Risk

NBE- National Bank of Ethiopia

NIM-Net Interest Margin

OECD-Organization for Economic Cooperation and Development

OLS-Ordinary Least Square

POS- Point of Sale

PSI- Political Stability Index

RD- Revenue Diversification

ROA- Return on Assets

ROAA-Return on Average Assets

ROAE-Return on Average Equity

ROE- Return on Equities

TLDR-Total loan Deposit Ratio

VIF-Variance inflation factor

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CHAPTER ONE

1. Introduction

1.1 Background of the study

Banking industry plays a key role in improving economic growth by mobilization and allocation of savings to investment products and operation of the payment system. Banking profitability is the major determinant factors for stability and lending capacity of banking industry. The stable banking industry energizes the economy and able to hold economic shock of the given country. As we now the banking sector was the major contributing factor in both great depression of the 1929-1939 as well as the 2008's economic recession. Therefore, the designation and analysis of the determinants of banks profitability have pulled by different academic researchers as well as bank management and financial service participants for different period.

Many researchers have been investigating the determinants of banks profitability in different countries. For instance research conducted by (Tomola,etal.,2013) on determinants of banks' profitability in Nigeria's by using panel data obtained from financial statement of 20 banks as results indicate that improved bank capital and interest income, as well as efficient expenses management and favorable economic condition, contribute to higher banks' performance and growth in Nigeria. Using, government policies in the banking system must encourage banks to regularly raise their capital and provide the enabling environment that will accelerate economic growth in the country. Bank management must efficiently manage their portfolios in order to protect the long run interest of profit-making. As the result of the study, Bank size, expenses management variables have a negative and significant effect on banks profitability as the measure of ROA. Hence, interstate rate, GDP has positive and statistically significant relationship with profitability (ROA). Many researchers around the world were given a due attention for studying the banking sector performance, but in Ethiopia they are not enough yet, for example by,Meshash(2016),Melaku(2016),Elshadey(2018) Amdemikael(2012),Dawit(2016) and Gemechu(2016),on determinant of profitability in Commercial Bank of Ethiopia by applying the variables credit risk, expanse management ,regulation, cost efficiency ,competition ,implicit interest payment and scale efficiency , Capital risk and asset size, liquidity risk, loans and

advances as bank specific variable; market concentration as industry –specific variable and economic growth, interest rate, inflation and foreign exchange rate as macroeconomic variable. So, the aim of this study was to examine the main determinants of banking industry in Ethiopia such as bank specific, and macro -economic variable by adding the new variable ,i.e. political stability index as determinants of profitability which is not touched by previous study. Therefore, this study was seeking to fill the gap by providing bank data about the internal and external factors that affect profitability by examining the untouched one and the existing in Ethiopia context by using balanced panel data of selected banks that have been operating at least for 10 years.

1.2. Background of Study Area

According to Mauri, 2014), Bank of Abyssinia was established in 1905 by Emperor Menelek II. The main obligation was engaged on issuing notes and providing commercial bank business service. However, after acceding Haile Sellassie, to the throne in 1930, cannot accept that the countries issuing bank was a foreign owned Share Company and agreed for nationalization. The change has implemented, however, in a soft way, providing an adequate repayment to shareholder and in agreement with the main foreign shareholder the national Bank of Egypt. The bank of Abyssinia want into liquidation and formed new institution, the bank of Ethiopia, was established in 1931.

The new bank, under full Government control, retained management, staff, premises and clients of the ceased financial institution. Italian occupation of the country, in 1936, brought the liquidation of the Bank of Ethiopia.

After 1974, the banking firm cannot move further because of the nationalization of private investments by the socialist regime that came into power leaving only three government banks; the National Bank of Ethiopia, the Commercial Bank of Ethiopia and agricultural and Industrial Development Bank (Mortgage Bank). This is reversed, when the socialist regime were overthrown in 1991. Subsequently, the licensing and supervision of banking firm Proclamation No. 84/1994 was issued in 1994, which led to the beginning of a new era for the growth of banking industry in Ethiopia. After the enactment of the proclamation private banking companies began to flourish, as result 12 private banks and one public owned commercial bank (excluding

two noncommercial public owned banks which was Development Bank and Construction and Business Bank) operating in Ethiopia.

Monetary and Banking proclamation, No.83/1994 and, the Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for investment in the banking sector. As result, after the proclamation the first private bank, Awash International Bank was established in 1994 by 486 shareholders, and by 1998 the authorized capital of Awash Bank reached Birr 50.0 million. Dashen Bank was established on September 20, 1995 as a share company with an authorized and subscribed capital of Birr 50.0 million. 131 shareholders with subscribed and authorized capital of 25.0 million and 50 million founded bank of Abysinia.

Wegagen Bank was established with an authorized capital of Birr 60.0 million started the operation in 1997. The fifth private bank is United Bank was established on 10th September, 1998 by 335 shareholders.

Nib International Bank was started operation on May 26, 1999 with an authorized capital of Birr 150.0 million and Cooperative Bank of Oromia was established on October 29,2004 with an authorized capital of Birr 22.0 million. Lion International Bank with an authorized capital of Birr 108 million started operation in October 02, 2006.Zemen Bank that started operation on June 17, 2008, with an authorized capital of Birr 87.0 million. The last bank to be established to date is Oromia International Bank that started operation on September 18, 2008 with an authorized capital of Birr 91 million.

As the end sept-2017, no of bank operating in Ethiopia remained at 18,out of this 16 were private banks, according to quarterly annual report of NBE in 2017/2018 report new branches opened and the total number of bank branches increases to 4461 and currently one branch gives service to 21651 people on average. From the total bank branch 34.4% were concentrated on Addis Ababa. The share of private bank was 67.5%, from the total bank branches in Ethiopia.

The total capital of the banking sector in Ethiopia was reached to 80.2 billion birrs, represents 72.8% annual growth. From the total capital the share of private Ethiopia banks accounted to 35.8%, and the remaining share is public bank, which is commercial bank and development bank of Ethiopia, stood at 64.2% and 9.6% respectively. Reserve money reached to 152 billion birrs in the first quarter of 2017/2018, this showing that a 24.5% growth over last year same period.

Table 1.1 List of public and private Bank in Ethiopia with their market share

Branch Network				
Public Bank	Region	Addis Ababa	Total	Share%
Commercial Bank of Ethiopia	1032	310	1342	30.1
Development Bank of Ethiopia	106	4	110	2.5
Total Public banks	1138	314	1452	32.5
Private Bank				
Awash Bank	186	161	347	7.8
Dashen Bank	208	134	342	7.7
Abyssinian Bank	139	128	267	6
Wegagen Bank	154	98	252	5.6
United Bank	114	109	223	5
Nib International Bank	94	113	207	4.6
Cooperative bank of Oromiya	241	59	300	6.7
Lion International Bank	125	54	179	4
Oromia International Bank	165	74	239	5.4
Zemen Bank	12	11	23	0.5
Buna International Bank	88	72	160	3.6
Berhan International Bank	97	87	184	4.1
Abay Bank	112	45	157	3.5
Addis International Bank	23	33	56	1.3
Debub Global Bank	19	19	38	0.9
Enant Bank S.C.	12	23	35	0.8
Total private banks	1789	1220	3009	67.5
Grand total banks	2927	1534	4461	100

Source: National Bank of Ethiopia quarterly Bulletin: First quarter 2017/2018

1.3 Statement of the problem

Now-a-days, banking sector is the backbone of modern business. Economic development of any country mainly depends upon on the banking system. A bank is a financial institution which deals with deposits and advances and other similar services. It collects money from those who want to save in the form of deposits, and it lends money to investors. It deals with deposits and advances and other related services like lending money to grow the economy of the country. Banks act as bridge between the people who save and people who want to borrow i.e., It receives money from those people who want to save as deposits, and it lends money to those who want to borrow it. The money you deposited in bank will not be worthless. It will grow by means of interest to your bank account they will earn interest in return for lending out the same money to borrowers. This would ensure smooth money circulation to develop our economy. (Praveen, 2011.p.25)

Macroeconomic and banking specific variables affect the probability and timing of bank failure, banking regulation and supervision should also consider the influence of macroeconomic developments on individual banks (i.e., assess the financial institution's exposure to systemic shocks) in order to make the banking system more robust to systemic shocks. (Arena, 2005.19)

Banks act as delegated monitors and ensure that firms use the resources allocated to them effectively. They are also play an important role in sharing of risk in the economy by diversifying and smooth fluctuations over time. These are positive aspects of the role's banks play.

However, the stable nature of the claims they issue can cause fragility in the financial sector. They can help spread crises if there is contagion and small shocks can have a large effect on the financial system and the economy. Banks play an important role in providing funds for firms and helping them and the economy to grow and   help overcome asymmetric information problems by forming long-lived relationships with firms. (Allen and Carletti, 2008.p.157)
Throughout the financial crisis many banks struggled to maintain adequate liquidity levels. Unprecedented levels of liquidity support were required from central banks in order to sustain

the financial system. Even with such extensive support several banks failed, were forced into mergers or required resolution.

These circumstances and events were preceded by several years of ample liquidity in the financial system, during which liquidity risk and its management did not receive the same level of scrutiny and priority as other risk areas. The crisis illustrated how quickly and severely liquidity risks can crystallize and certain sources of funding can evaporate. One should keep in mind that capital alone cannot prevent a crisis. We should also stay alert that these new rules do not sow the seeds for a new crisis. Risk management will play an important role to monitor these developments. In order to fulfill this role, they need to maintain sound capital ratios by keeping up their earnings. These earnings can only be generated by continuing to serve their clients (Brugging, 2013.p.32).

In December 2010, the Basel Committee on Banking Supervision (BCBS) published its reforms on capital and liquidity rules to address problems, which arose during the financial crisis. One of the main reasons the crisis became so severe was that the banking sectors of many countries had built up excessive on and off-balance sheet leverage. This was accompanied by the wearing down of quantity and quality of capital. Therefore, the banking system was unable to absorb the resulting losses (Achterberg and Heintz, 2012, p.5).

The NBE regulation in September 2011 was increased the minimum paid up capital required to establish a new bank from birr seventy-five million, under directive No. SBB/24/99, to five hundred million, and which was effective in restricting the entry of new banks into the market. The NBE further increased the minimum paid up capital to two billion birr and advised all private commercial banks to increase their paid-up capital to that amount by 2020. However, the regulatory body has set this capital requirement to prepare domestic banks against the potential international banks hoping to benefit from the opening of the financial sector in Ethiopia. Even though, few of the local banks will be expected to meet the target set by regulatory body.

Therefore, now days it's a great concern to investigate and follow up the performance of banking sector in Ethiopia, to enable them profitable and competitive. As per NBE (2009/10) annual report of banking sector performance have low contribution to Gross Domestic Product (GDP),

however the increasing contribution of the service sector to GDP is another indicator of low performance of banking sector from other sector. As per NBE quarterly bulletin in the first quarter of 2017/2018, money reserve reached birr 152.00 billion, from this the largest share is commercial bank of Ethiopia, which is up to 123.5% due to an increase in government deposit at commercial banks and total capital of the banking system is reached 80.2 billion. However, from this capital private bank accounted 35.8%, while the remaining shares is public bank. This reflect that banking industry in Ethiopia still low performance in terms of mobilizing time and saving deposits and competition.

Accordingly, this study will be contributing highly to enhance the performance of banks by providing a scientific analysis of determinants that will make all Ethiopian banks to be profitable. Profitability of banks varies from country to country and time to time due to the dynamic operating environment, the political condition of the country macro and micro economic factors.

In Ethiopia different studies have been examined the determinants of banks profitability. But in terms of sensitivity of banking sector, the study is few. Among this, Gemechu (2016), Amdemikeal (2012) and Tesfaye (2014), Examined the effect of bank-specific, industry-specific and macroeconomic determinants on banks' profitability in Ethiopia. They are failed to include a new variable political stability index. Another study by, Meshash (2016) on the determinants of NIM on Ethiopian banking industry.Net interest margin is the only proxies used to measure banks profitability.

Further study by, Elshaday (2018), Abdu (2018),Melaku (2016)and Dawit (2016 studied on the determinant of financial performance of private commercial bank in Ethiopia. They are excluded the state-owned commercial bank of Ethiopia, which is the largest bank in Ethiopia. The scope of study by Yohanis(2015) is limited on the impact of capital adequacy on profitability of commercial bank of Ethiopia. The finding and the other prior literatures by Mohamed K. and Mohamed A. (2014), (Anteun, et al.,2018), (Tomolaet al., 2013) and Kotlay and Veli(2018), and other shows that some variables are different from time to time in their extent of influence to affect the bank's profitability.

Moreover, besides filling these gaps, the study examined the effect of new determinants that were not studied in Ethiopia such as political stability index and also by including rarely study variables, like fee and commission income, cost income ratio and revenue diversification.

1.4 Objective of the study

1.4.1 General objective of the study

The main Objective of the study is to examine the determinants of commercial bank profitability in Ethiopia.

1.4.2 Specific objective of the study

The specific objective of the study was:

1) To examine the impact of capital adequacy, liquidity risk, credit risk, bank size, cost income ratio, fee and commission income and revenue diversification on banks profitability in Ethiopia banking industry

2) To explore the significance of bank-specific on profitability of Ethiopian banking industry

3) To investigate the impact of real GDP growth, and political stability index on banks profitability in Ethiopia banking industry

4) To evaluate the significance of macro-economic on profitability in Ethiopia banking industry

1.5   Research Hypothesis

The following hypothesis was developed to perform the objective of the study;

HP1: There is significant positive relationship between capital adequacy and profitability

HP2: There is significant positive relationship between liquidity risk and profitability

HP3: There is significant negative relationship between credit risk and profitability

HP4: There is significant positive relationship between bank size and profitability

HP5: There is significant positive relationship between fee and commission income and profitability

HP6: There is significant positive relationship between revenue diversification and profitability

HP7: There is significant negative relationship between cost income ratio and profitability

HP8: There is significant positive relationship between real GDP growth and profitability

HP9: There is significant positive relationship between political stability index and profitability

The above hypotheses were formulated based on theoretical justifications that collected for each variable.

1.6 Significant of the study

By identifying the determinants' of banks' profitability is very important for all stakeholders, such as owners, investors, debtors, creditors and depositors, the managers of banks, the regulators and the government for economic decision, to know the stability of banking industry, because failure in banking sector it affect the whole economy of the country. The studies also give direction to the debtors and the investors to make decision whether they should invest money in bank or invest to other.

1.7 Scope of the study

The scope of the study was bound to the selected sample commercial bank in Ethiopia within the study period starting from 2008 to 2017. The profitability of banks was expressed in terms of capital adequacy, liquidity risk, credit risk, bank size, fee and commission income, revenue diversification and cost income ratio as bank specific factor real GDP and, political stability index as macro -economic factor. Measuring profitability was delimited in to accounting measure to return on asset (ROA).

1.8 Organization of the paper

This study was organized into five chapters. Chapter one was contain introduction where background of the study, statement of the problem, objectives of the study, research hypothesis, scope and significance of the study presented. Chapter two is presented review of literature in which theories, empirical evidence. Chapter three was presented methodology of the study and it contains research design, sample population and participants, data collection instruments and variables, and data analysis procedures. Chapter four was presented results and discussion in which the obtained results were interpreted. Finally, Chapter five was presented the summary, conclusions, possible recommendations and limitation of the study.

Chapter Two

2. Literature Review

In this chapter literatures from different sources was collected both theoretical literatures and empirical literatures. The theoretical review which include definition and meaning of Bank, role and function of Bank, theory of the Banking firm and basic Banking, theory of profitability ,theory of liquidity risk, theory of credit risk, risk and return hypothesis, bankruptcy cost theory, economic scale hypothesis, portfolio and firm diversification theory and its impact on risk and return, macroeconomic and bank performance, measurement of profitability and empirical literature were gathered from outside Ethiopia and in Ethiopian context on determinant of bank profitability.

2. 1 Theoretical Review

2.1.1 Definition and Meaning of Bank

The bank is an institution which deals in money, collecting deposit from customers, honoring customer's withdrawing against such deposits on demand, collecting cheques for customers and lending or investing surplus deposits until they are required for repayment.

Banker is the ordinary course of business, honors cheques withdraw upon him by persons from, and for whom he took moneys from current accounts. Banking means the acceptance of deposit for the purpose of lending or investment, of deposits of money from the customer repayable on demand to the customer, and withdrawal by cheque, draft, and orders or others. (Sangale, et al., 2013, p.18)

Finance was a key for performing trade and commerce. Currently, banking industry acts as the backbone of modern business. The growth of any country mainly depends on the banking system. A bank is a financial institution which with accepts deposits and advances and other services. It took money from those who need to save in the form of deposits, and it lends money to those who need it. It deals with deposits and advances and other related services like lending money to increase the economy. Banks act as bridge between the public who save and person or investor who want to borrow i.e., It receives money from those people who want to save as deposits, and it lends money to those who want to borrow it. The money you deposited in bank will not be idle. It will grow by means of interest to your bank account they will earn interest in

return for lending out the same money to borrowers. This would ensure smooth money flow to develop our economy. (Praveen, 2011, p.25)

2.1.2 Role and Function of Banking

The performance of banks has multiple functions on economy. Therefore, the primary role of banks in the economy, such as the operation system, mobilizing deposit and allocate to investment. Allocating highest capital for economic use, while limiting the risk and cost involved, so banking industry has positive influence on economic performance.

Roland, (2011), Economic growth of country depends on the proper function of financial sector. Commercial banking is one of backbone of financial sector; it will be organized and efficient for the growth. No country can develop without setting up a sound system of banking sector. The saving culture is low in developing country because of deep rooted poverty. However the ability of savings the country will not be realized due to lack of adequate banking facilities in the country. To mobilize dormant savings and to make them available to the entrepreneurs for productive purposes, the growth of a sound system of commercial banking is important for an economic growth. In developing economy was characterized by the existence of many non-monetized sectors, particularly, in the remote areas of the country. The existence of non-monetized sector is slowdown in the economic growth of the country. The banks, by diversifying branches in remote areas, can influence the process of monetization in the economy. Commercial banks in developing countries generally hesitate in extending financial accommodation to such sectors as agriculture and small-scale industries, on account of the risks involved there in. Mostly extend credit to trade and commerce where the risk involved is far less. But, for the development of those countries, it is essential that the banks take risk in extending credit facilities to the priority sectors, such as agriculture and small-scale industries (Praveen, 2011, p.86)

2.1.3 Theory of the banking Firm & Basic Banking

Theory of banking firm is different from other firms. Theory of banking firm concentrated on making profit by selling liabilities with the set of characteristics particularly a combination of liquidity risk, size, and return and using the profit banks buy asset which are different characteristics through the process of asset transformation (S.Mishkin & Eakins, 2012,p.132).

Banks have different from any other commercial firm because of the peculiar characteristics they are possessed. The monetary mechanism makes them to engage deposits for onward investment. By taking part in the payments mechanism and by emphasizing the medium of exchange function of money, they are able to encourage the store of value functions. They are leverage from other business. The debt equity ratio for conventional commercial business will be in the order of 0.5 to 0.6. Banks, however, have debt obligation sometimes nine times greater than their equity. Because, guardians of the payment system, the central banks, think that commercial banks are special. This, therefore, accentuates that theory of the banking firm is distinct from the economic theory of the other firm. (S.Mishkin& Eakins, 2012, p.89)

2.2.1. Theory of Profitability

According to Aburime, (2008), profitability is the deference between revenue generated from the sales of good and all cost that used in production of output. The goal of bank is profit maximization, because their profit is concerned on the revenue generated and operational cost as per the above definition. In real world, profitability is measured in different ways, but the common one is breakeven analysis, ratio analysis and cost control. (Ibe, 2013, P.41) The goal of all commercial bank is to maximize their profitability. Tsomcos, (2003) stated that all company are take care to survival, before concentrating in profit maximization, this concept is connected to liquidity management and profitability. One company has expected to become more profitable by increasing revenue. Hence, they manage liquidity by using proper investment opportunities and properly use the available funds.

2.2.2. Theory of Liquidity risk

The stability of financial system, liquidity plays crucial rule. In 2008 financial crisis occurred, because of lack of liquidity. The incapability commercial bank meeting payments by using cash or cash equivalent means liquidity risk. This cause unexpected financial crisis or economic shock, and may result the bank is bankrupt (Aldo, 2015, p.5). As point out by Aldo (2015), the generation of liquidity risk is influenced by market risk, credit risk, and concentration. Loan to deposit ratio measure the ability of bank to fulfill their financial obligation by using the customer deposit. The lower loan to deposit ratio of bank is the higher liquidity. (Choudhry, et.al, 2011.P.247)

The other liquidity theory is commercial loan theory, which is commercial bank theory of meeting of their creditors, because the presence of time mismatch between the selling of goods and, collecting of receivables. In the next business cycle may meet the depositor problem of lack of money. At this time, commercial bank make short term loan to the creditors is supposed. (Ibe, 2013, P.4)

2.2.3. Theory of Credit risk

Credit risk is one the main driver of bank profitability. Bikker& Hu (2002) on investigate the cyclical pattern of profit, they found, credit risk exposure through loan and advance is greatly connected to the lower profitability. The higher credit risk had direct impact on profit as the amount of expected loan loss provision is deducted from their profit. As the quality of loan portfolio is decrease also reduce profit as loan loss actually incurred. Athanasoglou,(et.al, 2008), the higher level of loan provision has negative impact on profitability.

2.2.4. Risk return hypothesis

Olweny and shipho, (2011) stated that risk return hypothesis is explained capital adequacy and profitability had negative relationship. In order to increase profitability bank will increase their debt, but bank have decided to take a risk to achieve higher expected return. This theory argues that bank equity can be negative impact on profitability, because of the bank prefer higher debt rather than equity.

2.2.5. Bankruptcy Cost Theory

Bankruptcy cost theories suggest that capital adequacy and profitability have positive relationship. The unexpected increase of bankruptcy cost, because of environmental change, the bank will need more capital in order to reduce bankruptcy cost and financial distress (Mustapha.et.al, 2013.p.15). According to Modigliani and Miller (1958), there's no relationship between debt or equity financing and market value of bank. As well as, equity to asset ratio and profitability has no relationship, but with the assumptions of no taxes.

2.2.6. Economics of scale hypothesis

Economic of scale theory suggest that, when bank size increases, economic scale also increases this explain that, theirs is positive relationship between bank size and profitability, when scale of output increase, the average cost per unit is decrease. (Akhavein.et.ital, 1997), Bank size is used to report for current economies and diseconomies of scale in the marketplace.

2.2.6. Portfolio and firm diversification theory and its impact on risk and return

On the portfolio diversification and firm diversification is divided based on different studies portfolio asset diversifications and firm business activity diversification based up on the literature about portfolio and firm diversification and its impact on risk and return theory. As study by Markowitz (1952), study on the cyclical investment on portfolio literature. The selecting of investment assets for diversification, when investors are risk- adverse agents. The investor should allocate their entire asset in the high expected return. If the expected value of more than one asset is the same, then investing of more than one asset or combination of asset result the same effect on the return. But as suggest by Markowitz theory investor must diversify, this diversification can maximize the expected return of the investor. However, the increase share of non-interest income, it increases the risk, without increasing their profitability. Berger&Ofek (1995) stated that, firm activity diversification and profitability had negative relationship.

2.2.7 Macroeconomic and bank performances

The macroeconomic variables affect the probability and timing of bank failure, banking regulation and supervision should also take into account the influence of macroeconomic developments on individual banks (i.e., assess the financial institution's exposure to systemic shocks) in order to make the banking (financial) system more robust to systemic shocks.(Arena,2005.p.19)

The performances of banking sector affect by macroeconomic condition in different ways. The demand of bank credit is high in times of boom than recession. Hussen, (2014), he wrote on political stability, political instability is the presence of government collapse either because of conflicts or computation between various political parties. The economic growth and political stability are strongly interconnected. Investment and pace of economic development is reducing by the uncertainty of political environment.

2.2.8. Measurement of profitability

Bank stability and profitability is one of performance measurement of bank, which is stability is like risk exposure and profitability is related to the financial return of bank. As proposed by Boluman (1980), the risk and return theory, accounting ratio was used quantitively to measure profitability. The two well-known profitability measure of bank profitability is ROA and ROE.

Return on asset used to measure the profitability of banks. It calculated as a ratio of net income over total assets and return on equity is calculated as net income over total equity. As point out by Golin (2001), the ROA has emerged the key profitability measure of bank and has common measure of profitability of bank in many literatures.

Fentaw and Sharma;(2017), Tesfaye;(2014),and Samuel ;(2015) in Ethiopia, Obamuyi;(2013) in Nigeria and Kosmidou;(2008) in Greece they found ROA is best profitability measure than ROE, this due to the reason that ROE doesn't measure for banks financing through borrowing, but ROA is signals for banks financing through debt. However, the problem of ROA is does not covers off- balance sheet item. According to Revirad and Thomas, (1997) ROA is the best measure of bank profitability, because of ROA is not distorted by high equity multipliers and represent the ability of bank can generate on their portfolio of assets. Davydenko, (2011) Point out on the drawback of ROE, the bank with lower level of capital will generate a high ratio. These banks have high level of financial leverage which is undesirable and associated with high degree of risk. ROE is not an optimal measure of profitability since degree of capitalization is established by regulatory body.

2.4. Empirical literature review

This section gives a brief review of the previous studies made on the determinants of bank profitability from both developed and developing nations. Thus, empirical works done on the determinants of bank profitability have focused on bank specific and macro-economic variable.

2.4.1 Empirical literature review outside country

Mohamed k. and Mohamed A. (2014) studied the determinants of bank profitability in the Syrian banking sector by using unbalanced panel data technique over the of period 2004 to 2011 concludes that bank-specific determinants (liquidity risk, credit risk, bank size, and management efficiency) with the exception of bank capital, affect bank profitability significantly and the concentration ratio found to have no impact on bank profitability as the measure of ROE. The results found a positive and significant relationship between inflation rate and bank profitability measured by ROE. However, the study found a positive relationship between banks profitability and management efficiency, and it was statistically significant when ROAA was utilized.

(Antoun, et al., 2018) studied on determinants of financial performance of banks central and Easter Europe by unbalanced panel data covering the period from 2009-2014.Using fixed-effect regression model, they found that asset quality and earnings of banks are negatively affected by size, and positively affected by business mix and inflation. Capital adequacy and liquidity were found to be negatively affected by size and positively affected by bank concentration and economic growth. In addition, they conclude that banks that incur higher operating expenses increased their capital adequacy and liquidity. Regarding the impact of macroeconomic variables, inflation is seen to have a positive impact on asset quality and earnings, whereas higher economic growth leads to higher capital adequacy and liquidity.

As study by (Tomola et al., (2013) on determinants of banks' profitability in Nigeria's by using panel data obtained from financial statement of 20 banks as results indicate that improved bank capital and interest income, as well as efficient expenses management and favorable economic condition, contribute to higher banks' performance and growth in Nigeria. Using, government policies in the banking system must encourage banks to regularly raise their capital and provide the enabling environment that will accelerate economic growth in the country. Bank management must efficiently manage their portfolios in order to protect the long run interest of profit-making. As the result of the study, Bank size, expenses management variables have a negative and significant effect on banks profitability as the measure of ROA. Hence, interstate rate, GDP has positive and statistically significant relationship with profitability (ROA).

A study by Kutlay and Veli, (2018) on the Relationship between Bank Profitability and Micro Variables with Particular Emphasis of banking sector of Northern Cyprus, they found that equity, personnel expenses, non-performing loans and total deposits are negatively correlated with profitability, while total loans show a positive correlation with profitability.

(Sarwar, et al., 2018) Examined on internal and external determinants of bank profitability in case of commercial bank of Pakistan using a sample of 21 commercial bank from the period of 2006 up to 2015 and they found that bank size, capital adequacy ratio, liquidity, management quality, and asset management are found to be significant determinants of banks' profitability. In case of external factors, GDP and exchange rate are significant determinants of profitability,

whereas, the interest rate is significant at 10% level of significance. The banks need to improve the quality of assets in order to improve profitability. The fiscal policy of the country should be aligned with the need of the banking sector.

(Yiiksel, et al., 2018) Studied on determinants of bank profitability in 13 Post-Soviet countries using annual data between 1996-2016, they analyzed by using fixed effects panel regression and Generalized Method of Moments (GMM). They concluded that positive relationship between non-interest income and economic growth with profitability. This reflects that when non-interest income of the banks increases, such as credit card fees and commission, it affects the financial performance of the banks, positively, and contributes to bank profitability. The other economic growth positively influences bank profitability. This means the higher GDP comes with higher bank profitability for post-Soviet countries. Lastly, there is a negative relationship between loan-to-GDP ratio and profitability of the banks in post-Soviet countries. This means that when the ratio of total loans to GDP increases, it affects financial performance of the banks in a negative way. While considering this result, it is recommended that banks in post-Soviet countries should focus on ways to increase their non-interest income. Additionally, it is also significant for these banks to be careful and risk averse when lending to their customers.

A study by Samuel (2013) on liquidity risk and bank profitability in Ghana for the period spanning from 2002 to 2011, using the GLS regression found that bank size, non-deposit dependence and inflation have a positive and significant relationship with liquidity risk. Ownership has no significant relationship with liquidity. In turn this liquidity risk has positive relationship with bank profitability measured by both ROA and ROE.

A researched by munyambonern (2013), on determinants of commercial bank profitability in Sub-Saharan Africa for the period of 1999 to 2006. The analysis used on unbalanced panel of 216 commercial banks drawn from 42 countries. By applying a random effect regression model and he come up with a conclusion that capital adequacy, growth in bank deposit have positive influence on bank profitability on the other hand, growth in bank asset, operational efficiency ,bank liquidity ,GDP growth and inflation have negative effect on bank profitability. Profitability for SSA banks can only be achieved if banks managers and policy makers continue to pay particular attention to bank -specific as well as macro- economic factors that have influences on their profitability.

According to Lawrence (2011) the effect of capital adequacy, liquidity, bank size, inflation and GDP has significant to bank profitability. In addition, asset quality, operating expense, money supply and bank concentration were negatively significant to bank profitability. Apart from GDP, banking industry concentration and asset quality, all the determinants were consistent as the measure (ROE). On the other hand; capital adequacy was negatively significant to bank profitability in the case of ROE.

(Petria.et al. 2015) the determinants of banks profitability in EU 27 over the period of 2004 to 2011.We consider as proxy for banks profitability the return on average assets (ROAA) and the return on average equity (ROAE).According to conclusion from the external factors credit risk, loan to customer deposit ratio, and cost to income ratio, and from external factors market concentration and economic growth have significant influence on the profitability.

Sufian and Kamarudin, (2012) on determinants of profitability in the Bangladesh banking sectors over the period of 2000 to 2010 from sample of 31 commercial banks specific determinants such as capitalization, management quality and size of bank have positive and significant impact on bank performance. However, non –traditional activities have negative relationship with bank profitability and from macroeconomic indicators, GDP and market concentration, inflation have negative and significant impact on bank performance.

(Uchenna.et.al 2012) analyzed the bank-specific and macroeconomic characteristics of banking industry in Nigeria. The profitability measured by the return on assets (ROA) and return on equity (ROE) and net interest margin. By using 10-year data, we come up with conclusion that liquidity, inflation, GDP, bank size has negative relationship with net interest margin, but bank size has significant relationship with NIM. Additionally, asset composition, capital ratio has positive relationship with NIM.

2.4.2 Empirical literature review in Ethiopia

Gemechu (2016) Examined the effect of bank-specific, industry-specific and macroeconomic determinants on banks' profitability in Ethiopia, by using balanced panel data of eight Ethiopian commercial banks that covers the period of 2002 to 2012 uses ordinary least square (OLS) technique to see the impact of determinants on profitability of Ethiopian commercial banks and he come up with conclusion all bank specific determinants except credit risk and expense management have statistically significant and positive relationship with banks' profitability, such

as capital adequacy, loan and advance, efficiency and productivity and liquidity risk. On the other hand, variables like credit risk, expense management and regulation have a negative and statistically significant relationship with banks' profitability.

All macroeconomic determinants in this study like economic growth, interest rate spread, and exchange rate have statistically significant and positive relationship with banks' profitability. Study by Meshesha (2016) for the period covering from 1997 to 2014 on the determinants of NIM in the Ethiopian banking sector used unbalanced panel data. Analysis is carried by fixed effect model. The study result indicates that cost efficiency, competition, implicit interest payment and scale efficiency affect NIM positively and significantly. Liquidity risk, management efficiency, shows significant negative effect. However external determinants, inflation and gross domestic product have no significant effect. Credit risk, interest rate risk, capitalization/capital risk/ reserve requirement and ownership have insignificant effect on NIM of commercial banks in Ethiopia.

According to Elshaday, (2018) banks size is the determining factor that boosts the financial performance because; it can help them achieve economies of scale. Loan loss provision and nonperforming loans are the factors that negatively affect the performance of private commercial banks in Ethiopia. The larger the leverage position of the bank, the higher their ability of lends and their performance will be enhanced. In addition, capitalized banks could extend more loans and advances to their customers and could generate more income than poorly capitalized banks. Lastly operational cost inefficiency reduces return on assets and hence banks are expected to work on minimizing their avoidable costs.

Melaku,(2016) investigate determinants of banks profitability in Ethiopia private sector by using audited financial statements of six private commercial banks for the period of 2004 to 2011 as the measure of return on asset (ROA).He conclude that bank specific determinants were very important in explaining profitability than external variables. The Asset size, capitalization, labor productivity, liquidity and non -interest income was positively and significantly related to bank's profitability, while credit risk and overhead efficiency have a negative impact on profitability of bank specific drivers.

As researched by Abdu (2018) on determinants of the financial performance of private commercial bank by taking a sample of 6 private commercial bank in Ethiopia by using audited financial report from the period of 2011-2017 using ROA and NIM as measure of profitability.

Finally, he come up with the conclusion of capital adequacy, management efficiency and size of banks have positive and statistically significant effect on financial performance of private commercial banks of Ethiopia. Additionally, liquidity management has negatively significant impact on financial performance of the banks (ROE). Finally, the study also depicted that asset quality was not statistically significant determinant of sound financial performance of private commercial banks in Ethiopia. Therefore, due attention should be given in ensuring adequate capital, optimum liquidity, efficient expense management system and adequate size of assets by commercial banks for better performance and profitability in their own area of business.

As researched by Tesfaye (2014) on determinant of bank performance by considering bank specific and external variables on selected banks' profitability for the 1990 to 2012 periods by using accounting measure of Return on Assets (ROA) to represent Banks' performance. He concluded that, High performance is related to the ability of banks to control their credit risk, diversify their income sources by incorporating non-traditional banking services and control their overhead expenses. In addition, bank's capital and liquidity status are not significant to affect the performance of banks. On the other hand, from macro-economic variable such as real GDP growth rates have no significant impact on banks' profitability. However, inflation rate have significant driver the performance of commercial banks of Ethiopia.

Rao and Lakew (2012) was carried out to study to the key determinant of profitability of commercial banks operating in Ethiopia using unbalanced panel data set of banks over the period 1999/00 to 2008/09. The internal and external factor actors to the banks are regressed against the ROAA of the commercial banks. The study finds that ROAA was positively correlated with Capital adequacy (equity to asset ratio), diversification (non-interest income to total income) and bank size (log of total assets bank size) .However, the loan loss reserve to total loans is also found to have negative impact on profitability though it is statistically insignificant as well as Liquidity and operational efficiency are among the internal factors that negatively affect the profitability of the banks.

Amdemikael (2012) pointed out that banks capital strength, operational efficiency, non- interest income, bank size, level of non-performing loan, and GDP growth rate are significant key drivers of profitability of commercial banks in Ethiopia, so focusing and reengineering the institutions alongside these indicators could enhance the profitability of commercial banks in Ethiopia.

As research by Dawit (2016) on determinants of commercial banks financial performance in Ethiopia by using panel data of seven sample commercial banks covering the period from 2000 to 2014. He concluded that capital adequacy, asset quality, earning ability, liquidity management and foreign exchange rate have significant impact on ROE with a negative a relationship and also bank size have significant and positive impact on ROA. On the other hand, capital adequacy, earning ability and bank size have significant and positive impact on NIM. However, asset quality, liquidity management and foreign exchange rate have no significant relationship with NIM.

The Liquidity requirement in Ethiopian bank as per the directive no. SBB/44/2008,a liquid assets in addition to what has been provided for under 16(2) of Proclamation No. 84/1994, include deposits held in Organization for Economic Cooperation and Development (OECD) member countries' currencies and payable by banks of OECD countries and in such other currencies as may be approved by the National Bank of Ethiopia as well as securities issued by OECD countries denominated in currencies of such countries with tenures as indicated under article 16 (2)(b) of Licensing and Supervision of Banking Business Proclamation No. 84/1994 and the total requirement for any licensed bank shall maintain liquid assets of not less than 25% (twenty five percent) of its total current liabilities and a Specific Requirements for the purpose of meeting the liquidity requirement, each bank shall maintain: at least twenty percent (20%) of the current liabilities in the form of primary reserve assets; and five percent (5%) of the current liabilities in the form of secondary reserve assets.

The legal reserve for Ethiopian bank as per the directive no. SBB/4/95 issued by the National Bank of Ethiopia pursuant to the authority vested in it by Article 41 of the Monetary and Banking Proclamation No. 83/1994 and by article 13(4) of the Licensing and Supervision of Banking Business Proclamation No. 84/1994, Every bank shall transfer annually 25% of its annual net profit to its Legal Reserve.

Account until such account equals its capital, When the legal reserve account equals the capital of the bank, the amount to be transferred to the legal reserve account shall be 10% (ten percent) of the annual net profit.

Capital adequacy ratio for Ethiopian bank as per the Directive No.MFI/16/2002, capital adequacy Ratios a measure of an institution's capacity to absorb loan losses and still have adequate fund to maintain regular financial services. The rule of the thumb is that capital should be commensurate with the volume and risk involved in business and adequate to absorb losses related to defaults in loan portfolio and other operational losses. The capital adequacy ratio requirement for Ethiopian banks is 8%.

2.5. Conclusion and knowledge Gap

As per the above literature in Ethiopia different scholar has examined on the determinant of banks profitability and it is possible to see the research gap. So, as study by Gemechu(2016),Rao and,Lakow(2012),Meshasha(2016),Melaku(2016),Tesfaye(2014),Amdemikael(2012),Dawit(2016),Elshadey(2018),Abdu(2018),on determinants of banks profitability in Ethiopia, But they have failing to consider a new a determinants of banks profitability , which is political stability index as macroeconomic variable and study also included rarely study of bank specific variable such as, cost income ratio, revenue diversification, fee and commission income. Because of this variable has significant impact on banks profitability. In Ethiopia banking industry plays crucial rule to facilitate smooth follow of funds in the economy, because they haven't a stock market in Ethiopia. Besides, the growth of banking industry in Ethiopia in terms of number of commercial bank, total asset, Capital and number of branch outreach in remote area and different in performance within the industry and the political instability in Ethiopia in recent years, so its necessitate further examination of determinants of banks profitability in Ethiopia Banking industry.

2.5.1. Conceptual Framework

Different empirical evidence suggests that bank specific, and macroeconomic variable are the major determinant factors that affect banking sector profitability. In this study bank specific and macro- economic variable was used, such as capital adequacy, liquidity risk, credit risk, bank size, fee and commission, Revenue diversification, cost income ratio, real GDP, and political stability index only for the study purpose.

Explanatory variable

Bank-Specific Variable
- ✓ **capital adequacy**
- ✓ **Liquidity Risk**
- ✓ **Credit Risk**
- ✓ **Bank Size**
- ✓ **Fee and Commission income**
- ✓ **Revenue diversification**
- ✓ **Cost to Income ratio**

Dependent variable

Bank Profitability Indicator
- ✓ **ROA**

Marco-Economic Variable
- ✓ **Real GDP**
- ✓ **Political stability index**
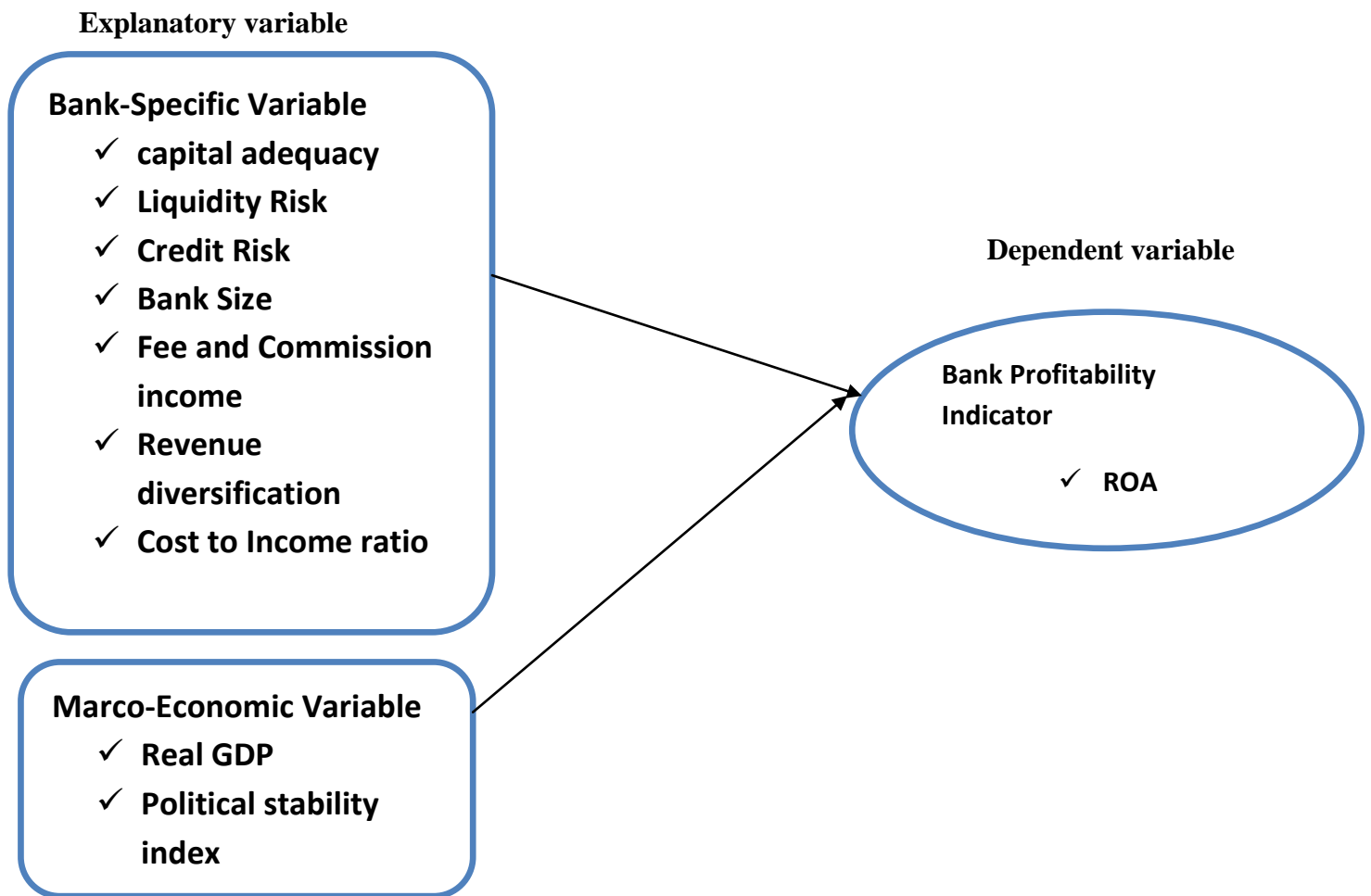
Source: Researcher self-conceptualization

CHAPTER THREE

3. Research Design and Methodology

To attain the stated objectives of the study, which is to investigate the determinant of profitability in Ethiopia banking sector, the study was employed quantitative method of research design. The next section provides detail of the methods was used to engage the study.

3.1 Research Design

As mentioned above**,** the main objective of the study is to examine the determinants of banks' profitability in Ethiopia banking sector. In order to accomplish the research objective as well as to test hypothesis, the study was used quantitative research design by applying secondary source of balanced panel data to examine the relationship among the variable. The study was conducted in different banks between 2008 and 2017. Quantative research design is a method for testing theories by investigating the relationship among variables(Creswell, 2009).It is usually used to examine the cause and effect relationship among variables Panel data usually give the researcher many data points, increasing the degree of freedom and reducing the co linearity among explanatory variables- hence improving the efficiency of econometric estimates. More importantly, panel data   allow a researcher to analyze several important economic questions that cannot be addressed using cross-sectional or time –series data sets. (Haiso, 2003.p.157)

3.2 Data source

In order to achieve the research objective, the study used secondary of source data. Secondary source of data for bank specific variables was collected from audited financial statements and annual report of bank. Regarding the macroeconomic variable, the data was collected from national bank of Ethiopia and from website of world Bank.

Secondary data means data that are already available i.e., they refer to the data which have already been collected and analyzed by someone else. Secondary data may either be published data or unpublished data. The already available data should be used by the researcher only when he finds them reliable, suitable and adequate (Kothari, 2004.p.125).

3.3 Sampling design

A complete enumeration of all items in the 'population' is known as a census inquiry. It can be presumed that in such an inquiry, when all items are covered, no element of chance is left, and highest accuracy is obtained. But in practice this may not be true. Even the slightest element of bias in such an inquiry will get larger and larger as the number of observation increases. (Kothari, 2004.p.135)

As NBE 2017/18 reports, currently 18 banks operate in Ethiopia. From 18 banks 16 were private and 2 publics. However, because of lack of 10 years data, that is required for the analysis purpose. The bank which started their operation after 2007 is excluded from this study. For this study purposefully selected 9 commercial banks of Ethiopia. Therefore, non- probability purposive sampling technique is appropriate to fulfill the required data.

3.4. Method of data analysis and presentation

After necessary data was collected from secondary sources, the data was analyzed and presented using descriptive statistics, correlations and multiple linear regressions. Mean values and standard deviations was used to analyze the general trend of the data from 2008 up to 2017 based on the selected nine commercial bank of Ethiopia and correlation matrix was used to investigate the relationship between the dependent variable and explanatory variable. A multiple linear regression model was used to determine the relative importance of each independent variable in influencing profitability.

3.5. Model specification

The study also compared the fixed effect with random effect by using Housman test.

As result of Housman test, the probability value (Prob>chi2=0.1454), which is greater than 0.05, so random effect is appropriate. Finally random effect was compared from OLS by using Breusch and pagan Lagrangian multiplier test, as result of LM test the probability (Prob>Chi2=1.00) was greater than 0.05, so the appropriate model of this study was OLS regression model. OLS is used to estimate the linear regression and minimize the sum of the squared error, which is the difference between observed and predicted value.

Generally, the equation that account for individual explanatory variables was specified as a follow:

$Yit = α + Σ βXit + εit$--1

Where,Yit is the profitability of bank i, at time t,with i=1----9,t=1-----10, $α$, represents the intercept, $β$ represents the regression coefficients for the explanatory variables, X is the explanatory variable and $εit$, is the error term.

The ROA model was adopted for the analysis is written as a follow:

$OAi,t = α + β1(CAR)i,t + β2(LR)i,t + β3(CR)i,t + β4(FCI)i,t + β5(RD)i,t + β6(BS)i,t + β7(CIR)i,t + β8(RGDP)i,t + β9(PSI)i,t + εit$………..2

Where; ROA it- Return on asset of Bank i (i=1----9) and year t (t=1----10); CAR- Capital adequacy Ratio; LR- Liquidity Risk; CR-Credit risk; BS- Bank Size; FCI- Fee and Commission income; RD- Revenue diversification ;CIR-Cost Income Ratio; RGDP- Real GDP growth rate ;PSI-Political stability index ;$ε$-The error term;t- Time;i-Individual bank

3.6. Variable selection and measurement

In this study the determinants of banks profitability are divided as bank specific and macro-economic variable. Bank specific is variable that internal influenced by bank's management decision and policy objectives and macro-economic is the external determinants that reflect the economic condition.

3.6.1 Dependent variable

Return on Asset

Generally, ROA, ROE and NIM are considered as measure of profitability. The choice for proxy to profitability is different according to the objective of the study. Most of studies used (ROA) as measure of profitability. Therefore, study was examined the determinants of banks profitability in Ethiopia banking sector by using return on asset (ROA) as a dependent variable.

ROA, which is defined as net income divided by total asset, reflect how well bank managers are using the banks real investment resource to generate profit. It measures a firm's profitability in using assets to generate net income independent of how those assets are financed (that is, with debt versus equity).

The ROA formula is as follows: ROA=Net Income/ Total Assets

3.6.2 Independent variable

3.6.2.1 Bank specific determinants of banks profitability

1. Capital adequacy

As study by Aljbiri (2015), the relationship between capital adequacy and profitability is very strong, meaning that well- capitalized banks experience higher return. The capital adequacy ratio has not statistically significant impact on share holders' return. The capital adequacy may reduce the risks of the bank, but in the same time, the shareholders do not benefit from the leverage effect (petria, caprarus and Ihnatov, 2015).The capital adequacy ratio (CAR) measured as a total equity from the total assets (total equity/total assets).As study by Gemechu(2016),positive relationship between banks capital and profitability and has statically significant for Ethiopian commercial banks profitability and well capitalized Ethiopian banks face lower costs of going bankrupt, which reduces their costs of funding or that they have lower needs for external funding which results in higher profitability. Capital adequacy has positive effect on bank profitability as a measure of ROA and ROE and NIM has negative on capital adequacy (Yonas, 2015). Tesfaye ;(2014) capital adequacy has not significant positive impact on bank profitability in Ethiopia. Therefore, in this study the researcher expect that capital adequacy ratio and bank profitability will have positive significant relationship.

2. Liquidity risk

The liquidity risk is measured as the ratio of loans to customer deposits. If these ratios increase, bank use less deposits to grant loans or grant more loans without increasing the deposits, then bank performance deteriorates (petria,capraru and Ihnatov, 2015).However, banks transfer the higher customer deposit into loan, the bank gain higher interest income , thus the higher loan to deposit ratio the more profitable. Banks has to maintain proper liquidity to meet short term obligations on time and also to ensure adequate amount to be invested for long term to generate profit in future (Marker and Hardeep, 2018).

Liquidity risk is positive and statistically significant. This means investing in short-term, less risky securities like government bonds leads to increased profitability(Gemechu, 2016).As study by(Abdu,2018) liquidity management or loan deposit ratio have significant negative

relationship with bank profitability(ROE), but loan to deposit ratio insignificant positive impact on ROA. Therefore, it is expected that liquidity risk and bank profitability will have significant positive relationship. Liquidity risk is measured as total loan over total customer deposit in this study.

3. Credit risk

As study by (Mohammed k and Mohammed A, 2014), found that negative and significant relationship between credit risk and bank profitability. The higher credit risk results in lower profit. The largest value comparing to other variables indicating that credit risks has the biggest impact on bank profitability. Credit risk (LLP) is significant inverse relationship with profitability (Melaku, 2016). Credit risk is measure as the ratio of loan loss provision to gross loans. Credit risk has negative and strong significant impact on bank profitability. This implies that an increase in the ratio of non- performing loans to gross loans, certainly lead to a decrease in profitability of Ethiopian commercial banks (Gemechu, 2016). Credit risk has significant impact on bank profitability (Million, et al., 2015). Therefore, in this study loan loss provision over total loan will be used as measure of credit risk and the researcher expect credit risk and bank profitability will have significant negative relationship.

4. Bank size

Profitability depends on the size of banks. Total asset of bank can be considered to measure its size. Through increasing its total assets, a bank can attain more competitive advantages that can help it to earn more profit. Bank size is measure as the log of total asset (padder, 2012). Bank size appears to negatively correlate with profitability. Large banks capacity to provide efficient banking services should be the area that needs to be focused on.

In addition, the currently observed aggressive move to open branches should be taken care of so as to reduce the negative impact on their performance due to cost increase (Tesfaye, 2014).Bank size of Ethiopian commercial bank, has positive and highly significant factors of profitability (Belayneh, 2011).Therefore, it expected that bank size have significant positive relation with bank profitability is measured by log of total asset.

5. Fee and Commission income

Fee income represents the largest part of non-interest income earned by banks, it remains a major challenge for bank management to set and maintain an appropriate fee policy. The share of fee income is highly dependent on the bank business strategy as well as on market conditions .Fee and commission income is measure the ratio of fee and commission income over total income (FCI/TI) (Karolina and Petr, 2018).As study by (Karolina and Matoj, 2014) the higher equity to asset ratio is also connected with higher relative share of fees to total income. Cooperative banks facing higher competition tend to exhibit lower shares of fee and commission income which can be attributed to the fact that they mostly concentrate on deposit taking and loan providing and with increased competition those fees tend to decreases .The bigger the market share a bank controlled, the greater its power to raise fees and commissions and smaller banks were less likely to charge higher fees than larger, more powerful banks. Therefore, the researcher expected that fee and commission income have significant positive relationship with bank profitability.

6. Revenue diversification

Revenue diversification was measured by bank other income over total income. According (Nisar.et.ital, 2018), on the impact of revenue diversification on Bank profitability and stability in south Asian countries. They are found that other noninterest income has positive impact on bank profitability. Bank can benefit from revenue diversification, if they diversify into specific type of non- interest income generating activities. Tesfaye (2017) on determinant of commercial bank in Ethiopia, he found that, the performance of bank increase by diversifying their income source by in cooperating non – traditional banking services and control their overhead expenses. So, it is expected that revenue diversification has significant positive impact on bank profitability.

7. Cost Income Ratio

As study by (Yao.et.ital,2018), on profitability determinants on Pakistan bank, cost income ratio measure operating efficiency of bank as proxy of operating expenses over gross income. Finally, they are discovered cost income ratio has significant negative impact on profitability of Pakistan bank. According to (Mohammud, et.ital. 2016), Cost income ratio is measure of operating efficiency of bank. It is the ratio of operating expense over operating income, have significant

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negative relationships with bank profitability. Cost income ratio is one of financial measure especially important in measuring and valuing of company. It indicates the cost of the company in relation to its income. As study by (Aref, 2013) on capital adequacy, cost income ratio and the performance of Saudi banks by using a sample of nine Saudi banks, he found that bank efficiency as measured by the cost-income ratio is negatively related to bank profitability. Operational cost inefficiency has significant negative relation with ROA of private commercial bank in Ethiopia. The financial performances of banks decrease when the amount of their expense increases (Elshaday, 2018). Therefore, the researcher has expected cost income ratio have significant negative relationship with bank profitability.

3.6.2.2. Macro-economic Determinants of Bank Profitability
8. Real GDP Growth rate

GDP growth is expected to have a significant positive relation on bank profitability. It is numerous factors related to demand and supply for banks deposits and loans. Annual real GDP growth rate is a measure of total economic activity and it is adjusted for inflation (Simiyu, 2015). Real GDP growth has significant factor of profitability. The current real economic growth of the country makes commercial banks to more profitable (Belayneh, 2011). Ethiopians banks profitability has positively related to the GDP growth through the impact of the economic cycle on the demand for credit by households and firms (Gemechu, 2016). As expected, economic activity is an important macroeconomic determinant of income statement items. Increasing GDP creates initiatives to borrow and invest more in the economy leading to higher net interest income. On the other hand, increasing economic activity requires banks to meet higher demand for transactions and loan portfolio maintenance, i.e. banks must raise operating expenses (Narusevicius, 2016). (Eissa.et.ital, 2018) on bank specific and macroeconomics determinants of profitability of Indian commercial banks, they are suggesting that, real GDP growth rate has significant negative impact on bank profitability. The researcher expected on this study real GDP will have significant positive relationship with bank profitability.

9. Political stability index

According to (Yahya.et.al, 2017), on the impact of political instability, macroeconomic and bank specific factors on the profitability of Islamic of Yemen Banks. They found that, political instability has positive and significant impact on Yemen banks profitability using rank of political instability. The political stability has significant positive impact on bank profitability (Alireza.et.ital, 2013). As study by (Sanhsoy.et.al, (2017), on the effect of political risk on the profitability of Turkey Bank, They are concluded that; political risk has significant negative impact on the profitability of Turkey bank. For this study the researcher expected political stability and bank profitability will have significant positive relationship.

Table 3.1 Summary of variables and their expected Sign

Variables	Measurement	Notation	Expected sign	Literature
Dependent variable				
Profitability	Net income/Total Assets	ROA	NA	
Explanatory variables				
Capital Adequacy Ratio	Equity/Total asset	CAR	Positive	Gemechu(2016)& Elshady(2018)
Liquidity Risk	total loan/total deposit	LR	Positive	Abdu(2018)& Marker&Hardeep(2018)
Credit risk	Loan loss provision/total loan	CR	negative	Melaku(2016)& Elshady(2018)
Bank Size	Log of total asset	BS	Positive	Padder(2012)& Belayneh(2011)
Fee and Commission income	Fee and commission income/total income	FCI	Positive	(Karolina & Petr,2018)
Revenue diversification	other interest income over total income	RD	Positive	Tesfaye(2017) &(Nisar.et.ital,2018)
Cost to Income Ratio	Operating Expenses Over Gross Income	CIR	negative	(Yao,et.ital,2018)
Real GDP	Real GDP Growth rate	RGDP	Positive	Gemechu(2016)
Political stability index	Political stability index	PSI	Positive	(Alireza.et.ital, 2013)

CHAPTER FOUR

4. Data analysis and interpretation

Under this section, present the result and discussion of determinant of bank profitability in Ethiopia based on the selected balanced panel data of nine Commercial Bank of Ethiopia starting from, 2008 up to 2017.

For this study nine independent variables such as, capital adequacy ratio, liquidity risk, credit risk, fee and commission income, revenue diversification, cost income ratio, bank size, political stability index and real GDP growth rate where regressed against return on asset.

The result of descriptive statistics, the correlation matrix and regression analysis of the selected variable also reported. The panel data was diagnosed to check for the presence of normality, heteroskedasticity,multicollinearity problem and autocorrelation. For panel data analysis Stata 14.0 of data analysis tools were used.

4.1. Descriptive statistics

In this subsection the descriptive statistics of dependent and independent variables for the selected sample commercial bank of Ethiopia were presented in table 4.1.

The observation of each variable was ninety, which is panel of ten years and with cross section of nine banks. The table also shows the mean, standard deviation, maximum and minimum value of dependent variable (ROA) and explanatory variables (CAR, LR, CR, FCI, BS, RD, CIR, RGDP, PSI) from the year 2008-2017 was presented as a follow:

Table 4.1; summary statistics

```
. sum ROA CAR CR BS FCI RD LR CIR RGDP PSI
```

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	90	.0294566	.0095044	-.0019735	.0495407
CAR	90	.1300699	.042212	.0445756	.2978677
CR	90	.0266334	.0185024	.00242	.0982726
BS	90	7.003429	.5946371	5.321167	8.536704
FCI	90	.1891502	.0796504	0	.4447375
RD	90	.1999938	.1018265	.0080545	.3896994
LR	90	.5944696	.1083607	.208266	.8911699
CIR	90	.3604107	.1235624	.1246144	.8022619
RGDP	90	9.816657	1.193489	7.7	11.4
PSI	90	-1.568111	.1161546	-1.73	-1.34

Source: Researcher own computation from financial statement

The mean of return on asset (net income over total assets) of banks was 2.94 percent; this means the selected commercial bank of Ethiopia in last ten years from 2008 up to 2017 was making profit of 0.0294 cents on average per unit of one-birr investment on assets. The maximum of profit was 4.95 percent and the minimum loss was 0.00197 cents per unit of investment on assets. The minimum loss of return on asset on this study is the inclusion of newly established bank, which means, they have high startup cost. The standard deviation of ROA was 0.95 percent, which indicates there is high profitability variation between commercial bank of Ethiopia within the study period.

Capital adequacy ratio was used as proxy of equity to total asset to measure the capital risks of bank; on average ratio of capital per total asset is 13 percent. This means Ethiopia commercial bank on average from the total asset 13 percent was financed by owner's equity, but the reaming 87 percent is financed by debt. The higher debt financing is not surprising because banking business is more focused on mobilize deposit from customer. The maximum amount of 29.78 percent is covered by capital while the minimum is 4.45perecent. The mean value 13 percent capital adequacy greater than capital requirement of 8 percent, set by NBE based on Basel II recommendation

Liquidity risk measure a ratio of total loan and advance to total deposit. On average 59.4 percent, this implies that on average from the sum of money mobilized thorough deposit 59.4 percent

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goes to total loan and advance. The maximum loan per customer deposit is 89.11 percent. The minimum is 20.8 percent. There is high variation between banks in total loan and advance per customer deposit, which is 10.8 percent. The lower amount of loan to customer deposit the bank can result losses and the higher loan per customer deposit shows the ability of bank managers use the customer deposit to gain higher interest income.

Credit risk was measured by loan loss provision over total loan. The mean value of for the credit risk is 2.66 percent; this indicates on average from the total loan 2.66 percent goes to loan loss provision. The maximum loan loss provision over total loan was 9.8 percent, while the minimum value is 0.24 percent. The standard deviation was 1.85 percent, which means theirs is high variation of loan loss provision over total loan between the selected banks.

 Fee and commission income is measured by the ratio of fee and commission income over total income. The mean is 18.91 percent on average from the total income gained from fee and commission income in Ethiopia commercial bank. The maximum44.47 percent and minimum was zero percent. In the standard deviation is high with 7.9 percent, with means theirs is high variation between the selected commercial bank in Ethiopia.

Bank size measured as log of total assets of each bank. The mean value of total asset of Ethiopian commercial bank was 7. The standard deviation is 59.46 percent, these shows, higher total asset variation between the selected samples. The maximum and minimum value takes 8.5 and 5.32 respectively.

Ratio of other income per total income is proxy of revenue diversification. The mean value for the bank other income per total income 19.99 percent, which indicates from total income 19.99 percent goes to other income and the maximum and minimum value takes 38.96 and 0.8 percent respectively. On the other hand, the highest standard deviation was recorded other income to total income ratio which was 10.18 percent and shows the existence high variations among the banks in the sample under the study period. The higher other incomes over total income ratio indicate revenue diversified streams and cross-selling capabilities and higher foreign exchange gain.

On the other hand, cost income ratio measures the operating efficiency of banks, which is a proxy of operating expenses to gross income. On average 36.04 percent from their gross income

goes to operating expenses. This means the higher bank non-interest expense the lower of profitability. The standard deviation was 12.35 percent; this shows the existence of high variation of cost income ratio among banks in the sample under the study period. The maximum and minimum of cost income ratio is 80.22 percent and 12.46 percent respectively. The maximum of cost income ratio indicate newly established commercial bank of Ethiopia has high startup cost to operate the day activity of banking service.

On the macroeconomic variable, the average growth rate of real GDP was 9.81 percent for the last ten years from 2008 to 2017. The maximum and minimum real economic growth was 11.4 percent and 7.7 percent respectively. The standard deviation was 1.2 percent. It means that real GPD growth rate in Ethiopia during the study period was high variation.

Political stability index during the period of this study undertaken, -1.56 on averages, the maximum political stability index was -1.34 and the minimum is -1.73. The standard deviation was 11.61 percent. Theirs high variation of political stability index in Ethiopia during the study period.

4.2. Assumption tests of the classical linear regression model

Those assumptions were required to show the estimation technique, ordinary least square (OLS), had number of desirable properties, and also so that hypothesis test regarding the coefficient estimates could validly conducted(Brooks,2008,PP.129).In order to provide more insights into the importance of the internal and external variable bank determinant of whether this set of variables makes a significant contribution in explaining the variation in the dependent variable, for the purpose of this study, the panel data is checked diagnosed test of classical linear regression to assure the model specification are fit the CLRM, and also so that hypothesis tests regarding the coefficients estimates could validly be conducted.

4.2.1 Multicollinearity

As noted by Brooks (2008) when using OLS estimation the explanatory variables are not correlated with one another. Therefore, the problem of multicollinearity occurs when the explanatory variables are very highly correlated with each other. So in this study, the correlation analysis was conducted to show relationship between explanatory variables. Multicollinearity means that existence of perfect or exact linear relationship among all explanatory variable. When there is high correlation between the predictors variable the regression coefficient is unreliable

and unstable, but small degree of correlation between the explanatory variable will not loss the accuracy, otherwise it's difficult to tell which of them influence the dependent variable. As study by Guajarati (2004) and Kennedy (2008), occur multicollinearity problem when the correlation matrixes is greater than 0.75 and 0.8 respectively. The other statistical tools to know correlation between the independents variable is variance inflation factor (VIF), as stated by Guajarati (2004), if the VIF is below 10 there's no multicollinearity problem.

Therefore, in this study the variance inflation factors of all variable are below 10 and the highest correlation matrixes is between bank size and capital adequacy ratio this is not series correlation as per the above discussion, so it is concluded that there is no multicollinearity problem on this study.

Table.4.2. Correlation Matrix between the Independent Variables

```
. corr CAR CR BS FCI RD LR CIR RGDP PSI
(obs=90)
```

	CAR	CR	BS	FCI	RD	LR	CIR	RGDP	PSI
CAR	1.0000								
CR	-0.2262	1.0000							
BS	-0.6397	0.0213	1.0000						
FCI	-0.0125	-0.0510	-0.0179	1.0000					
RD	0.0515	0.1691	-0.1584	-0.4984	1.0000				
LR	0.3503	0.0942	-0.4528	-0.0624	-0.1713	1.0000			
CIR	0.4163	-0.0813	-0.4851	-0.1392	-0.2917	0.4427	1.0000		
RGDP	0.0474	0.1440	-0.1153	-0.0340	0.2013	-0.0661	-0.1046	1.0000	
PSI	-0.0451	-0.2570	0.1825	0.3098	-0.0985	-0.2233	-0.2430	0.0009	1.0000

Source: Researcher own computation based on the financial statements

4.2.2. Correlation Analysis.

A correlation is a single number that shows the degree of relationship between the variables. The correlation analysis indicate that at what extent the explanatory variable is influenced by profitability (ROA).With our bank specific and external variable, Cost income ratio, fee and commission income(FCI), bank size(BS), Revenue diversification(RD), and political stability index(PSI) are relatively, highly impact on ROA as indicated in table 4.3 below. Fee and commission income were the most positively correlated variable with ROA. This shows that, as the bank fee and commissions income increases, the profitability of bank also increases and cost income ratio is strongly negative correlated with ROA, which means, the profitability of bank and cost income ratio has inverse relationship. On the other hand, the ratio of total loan to total

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deposit to total deposit (LR) and credit risk seems to be inversely correlated with the ROA. Also bank size, revenue diversifications, and political stability index positively correlated with profitability.

Table 4.3. Correlation Matrix and their Significance Level of Correlation for Dependent Variable and Independent Variables

```
corr ROA CAR CR BS FCI RD LR CIR RGDP PSI
(obs=90)
```

	ROA	CAR	CR	BS	FCI	RD	LR	CIR	RGDP	PSI
ROA	1.0000									
CAR	-0.0301	1.0000								
CR	-0.0551	-0.2262	1.0000							
BS	0.1710	-0.6397	0.0213	1.0000						
FCI	0.3549	-0.0125	-0.0510	-0.0179	1.0000					
RD	0.2491	0.0515	0.1691	-0.1584	-0.4984	1.0000				
LR	-0.1119	0.3503	0.0942	-0.4528	-0.0624	-0.1713	1.0000			
CIR	-0.7477	0.4163	-0.0813	-0.4851	-0.1392	-0.2917	0.4427	1.0000		
RGDP	0.0387	0.0474	0.1440	-0.1153	-0.0340	0.2013	-0.0661	-0.1046	1.0000	
PSI	0.2927	-0.0451	-0.2570	0.1825	0.3098	-0.0985	-0.2233	-0.2430	0.0009	1.0000

Source: Researcher own computation based on the financial statements

4.2.3. Normality Test

Recall that the normality assumption ($ut \sim N(0, \sigma2)$) is required in order to conduct single or joint hypothesis tests about the model parameters. If error terms are not normal, then the standard errors of OLS estimates is not reliable, which means, the confidence interval would be too wide or narrow. The histogram of residual is simple graphic device that used to test the normality assumption. If the graph shaped normal distribution curve on the histogram, it is possible to conclude the error or residual are normally distributed. (Gujirat, 2004, p.150)

In this study used both graphical (histogram of residual) and non-graphical (Shapiro-Wilk) of normality test was used to check the error normality distributed.

The test hypothesis is; H0: Error term is normally distributed.

Decision Rule: Reject H0 if P value of Shapiro-wilk tests less than significant level 0.05. Otherwise, do not reject the null hypothesis.

Table 4.4 Normality test of residuals

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
residual	90	0.97776	1.683	1.148	0.12558

Source: Researcher own computation from financial statement

Therefore, the probability of Shapiro wilk test is 12.55%, which is greater than decision rule of significant level 0.05, so we are confidant to accept the null hypothesis and concluded that error terms is normally distributed.

Graph 4.1. Histogram for normality test
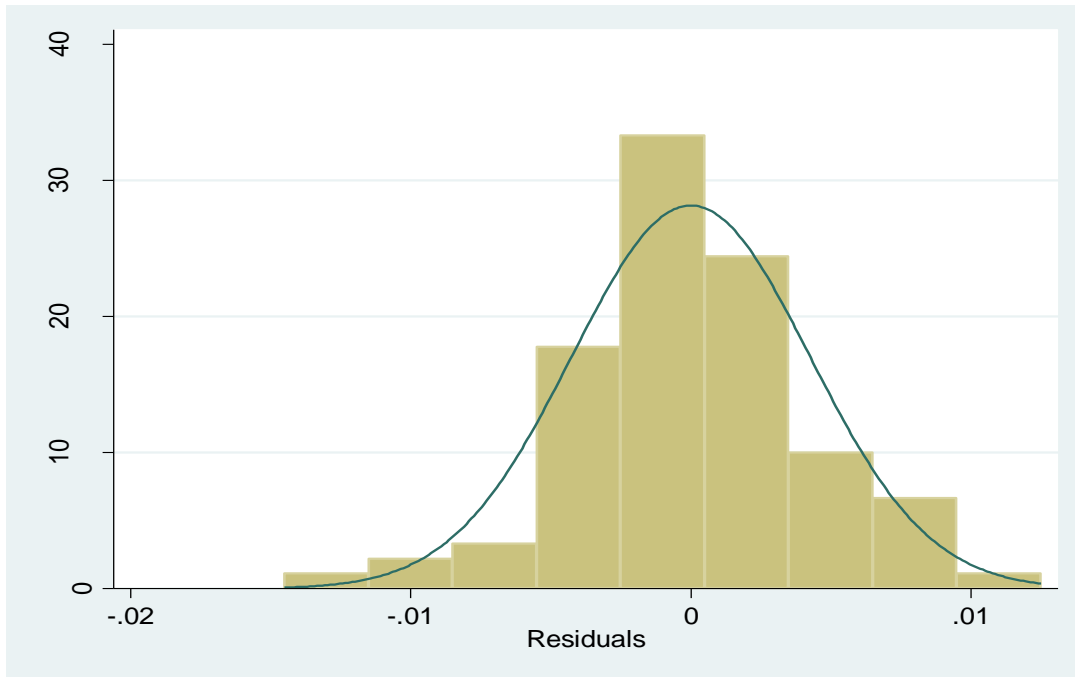
The other graphical test of normality is histogram of residual, the bell-shaped black line on the histogram represents the normal curve. As presented on the graph 4.1. Shows how the data for fitted value are normal. So, theirs is no series outliers who have significant differences from the standard normal curve. Therefore, the residual is normal distributed and does not potential problem on specific model.

4.2.4 Test for Homoscedasticity (var (ut) = σ2 <∞)

The homoscedasticity assumption said that an error is constant, if the errors do not have a constant variance their heteroscedastic problem. Hence, the presence of heteroscedasticity problem, the standard errors could be wrong and hence any inferences made could be misleading (Brooks, 2008, p.132).

Hence, it is important to fix the error is not constant. To test the presence of heteroskedasticity problem the Breusch-pagan test was employed. As shown below the probability of chi2 is 0.0692 which is greater than the decision point of 0.05. Therefore, it indicates there's no heteroskedasticity problem on the error terms.

Table 4.6 homoscedasticity Test

```
. qui reg ROA CAR CR BS FCI RD LR CIR RGDP PSI

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of ROA

        chi2(1)      =      3.30
        Prob > chi2  =    0.0692
```

Soucre:own computation from stata

4.2.5. Test of Autocorrelation

Assuming all other assumptions is satisfied, but the condition of autocorrelation is not satisfied, under the condition of autocorrelation, the OLS estimator is still unbiased and is not BLUE any more.

The disturbance terms are that the covariance between the error terms of panel data is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are 'autocorrelated 'or that they are 'serially correlated'. A test of this assumption is therefore required, (Brooks, 2008, p.139).

According to Drucker (2003), serial correlation in linear panel-data models biases the standard errors and causes the results to be less efficient, so a new test for serial correlation was derived by Wooldridge (2002) is attractive and provides simulation results showing that the test has good

size and power properties in reasonably sized samples. To test the presence of serial correlation Wooldridge test for autocorrelation is applied.

H0: no first-order autocorrelation

Decision Rule: accept H0 if P value of serial correlation Wooldridge test is greater than significant level 0.05. Otherwise, reject H0

Table 4.7. Test of autocorrelation

```
. xtserial ROA CAR CR BS FCI RD LR CIR RGDP PSI

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      8) =    0.706
          Prob > F =    0.4252
```

Source: Researcher own competed from financial statement

Therefore, the null hypothesis of no serial correlation is strongly accepted, means that there is no serial correlation in the model.

4.3. Model specification Tests

4.3.1. Fixed effect versus Random effect

To analyze the internal and external determinants of commercial banks profitability in Ethiopia panel regression method was employed. As analysis by Hsiao (, 2009) Panel data more accurate inference of model parameters and contain more degrees of freedom. Panel has greater capacity for capturing the complexity of human behavior than a single cross-section or time series data. Many researcher face challenging of which model is appropriate, fixed effect or random effect, but it depend on the assumptions of the correlation between the individual or cross-specific, the error component and X's regressors. It assumed that, if the error and the X's regressors are not uncorrelated, random effect is feasible. While the error and the X's regressors are correlated fixed effect is appropriate (Gujirat, 2004, pp.372)

In order to choose between the fixed and random, the Hausman specification test was used. As indicated by the Hausman test result the probability value of the test shows 0.1454 which is greater than decision rule of 0.05 , so that random effect model is appropriate.

Accordingly, for this research, the LM test was used to choose the random effect from OLS, to use the appropriate model to meet the objective of the study.

Table 4.8.Hausman Specification Test

```
                ── Coefficients ──
              (b)           (B)           (b-B)        sqrt(diag(V_b-V_B))
              fe            re            Difference         S.E.

     CAR     .0189504      .0535625      -.0346121        .0141317
      CR    -.0649773     -.0583034      -.0066739        .0078867
      BS     .0046468      .0022283       .0024184        .0006212
     FCI     .0333183      .0499957      -.0166774        .0013113
      RD     .0260891      .0307461       -.004657        .0037932
      LR      .023491      .0266847      -.0031937        .0008417
     CIR    -.0728166     -.0589202      -.0138964        .0035575
    RGDP    -.0001595     -.0004156       .0002561             .
     PSI     -.000197      .0027255      -.0029226             .


                    b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

              chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                     =         13.40
          Prob>chi2 =        0.1454
          (V_b-V_B is not positive definite)
```

Source: Researcher own computation from financial statement

4.3.2 Random effect versos Ordinary least square

The OLS is a linear regression without fixed and random effects. OLS model assumes the constant intercept and the slopes regardless of group or time period. The OLS regression model is efficient and consistent parameters estimates, if the individual effect ui (cross-section or time specific effects does not exist *(ui=0)*.

Therefore, Breusch and pagan Lagrangian multiplier test used to choice random effect from ordinary least square (OLS), Therefore, the null hypothesis in the LM test is that variances across entities is zero. This is no significant difference across units (i.e. no panel effect).This is, no evidence of significant differences across banks, the probability (prob>Chibor2) is greater than decision criteria 0.05, therefore OLS regression model is appropriate.

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Table.4.9 Breusch and pagan Lagrangian multiplier test for random effect

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ROA[Bank,t] = Xb + u[Bank] + e[Bank,t]

        Estimated results:
                              Var        sd = sqrt(Var)
                    ROA     .0000903          .0095044
                      e      .000015          .0038769
                      u            0                 0

        Test:   Var(u) = 0
                          chibar2(01) =      0.00
                        Prob > chibar2 =    1.0000
```

Source: Researcher own computation from financial statement

4.3.2. Ordinary Least Square regression

The general objective of these study is determinants of bank profitability in Ethiopia in order to achieve the study panel data of ten years from selected nine commercial banks of Ethiopia was used.

Before running the regressions, the data sets were checked under certain assumption of classical linear regression model (CLRM). Like, test of Normality, multicollinearity, heteroscedasticity, and autocorrelation was done to make the OLS model is BLUE. Additionally, model specification tests have been made to satisfy the assumptions and to undertake reliable estimations. Overall, the tests have been in line with the CLRM. OLS regression is type of linear regression to estimate the unknown parameters.

OLS regression model is consistent, when the regressors were exogenous and the error is homescedastic as well as serially uncorrelated. In addition the errors are normally distributed. Therefore, to satisfy the objective of the study OLS regression model was employed.

Table 4.10.Ordinary Least Square regression

```
. regress ROA CAR CR BS FCI RD LR CIR RGDP PSI

      Source |       SS           df       MS          Number of obs   =        90
-------------+----------------------------------       F(9, 80)        =     35.57
       Model |  .006432452         9   .000714717      Prob > F        =    0.0000
    Residual |  .001607292        80   .000020091      R-squared       =    0.8001
-------------+----------------------------------       Adj R-squared   =    0.7776
       Total |  .008039743        89   .000090334      Root MSE        =    .00448

-------------+----------------------------------------------------------------------
         ROA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------------
         CAR |    .0535625    .015539     3.45   0.001     .022639     .0844861
          CR |   -.0583034   .0289633    -2.01   0.047    -.1159421   -.0006647
          BS |    .0022283   .0013157     1.69   0.094     -.00039     .0048466
         FCI |    .0499957   .0084542     5.91   0.000     .0331714      .06682
          RD |    .0307461   .0073087     4.21   0.000     .0162013    .0452909
          LR |    .0266847   .0054848     4.87   0.000     .0157696    .0375998
         CIR |   -.0589202   .0057042   -10.33   0.000    -.0702719   -.0475685
        RGDP |   -.0004156    .000416    -1.00   0.321    -.0012434    .0004122
         PSI |    .0027255   .0046483     0.59   0.559    -.0065249     .011976
       _cons |     .006557   .0171769     0.38   0.704    -.027626     .0407401
-------------+----------------------------------------------------------------------
```

Source: Researcher own computation from financial statement

4.3.4 Discussion of the result

In order to identify the factors that can determine banks profitability in Ethiopian the underlines model was provided as follows:

ROA = β0 + (β1) CAR + (β2) LR + (β3) CR+ (β4) FCI+ (β5) RD+ (β6) BS+ (β7) CIR+ (β8) RGDP+ (β9) PSI+ e……………………………………………….....1

From the above tables, the researcher found the following estimated regression;

ROA = (0.0065) +0.053CAR) + 0.026(LR) – 0.058(CR) + 0.049(FCI) +0.03(RD) + 0.0022(BS) - (0.058) CIR -0.0004(RGDP) + 0.0027(PSI) + e………………..….2

(0.017)(0.0153)(0.0548)(0.0289)(0.0084)(0.0073)(0.0013)(0.0057)(0.0004)(0.0046)

From the above regression result, the R-squared and adjusted R-square was 80% and 77.76% respectively. This shows that 77.76 percent of the variations in the ROA of the commercial bank of Ethiopia are explained by the independent variables included in the study.

The reaming 22.24% was explained by other factors which are not included in the model. In addition, the probability of F (0.0000) proves that the null hypothesis that all of the slope parameters are jointly zero is rejected; indicating that the slopes are significantly different than zero and strong statistical significance of the specified model this enhanced its reliability and validity.

The regression result shows that; Capital adequacy ratio, bank size, revenue diversification, fee and commission income over total income and liquidity risk had statistically significant positive impact on ROA. However, credit risk and cost income ratio had statistically negative impact on bank profitability as a proxy of ROA. In addition, from external variable political stability index had positive insignificant influence on ROA. However, real GDP growth rate had insignificant negative impact on profitability commercial bank of Ethiopia within the study period between 2008 and 2017.The output also shows that the coefficient of capital adequacy ratio, bank size, fee and commission income and revenue diversification and liquid risk against ROA were positive with the coefficients of 0.053, 0.002, 0.049, 0.0307 and 0.026 respectively. This shows that, ROA, and the aforementioned five independent variables have direct relationship. As result increase those variables will lead to increase return on asset as well as the coefficient of cost income ratio and credit risk had negative impact on bank profitability with the coefficient of -0.058 and -0.0589 respectively. This clearly describe that there is inverse relationship between the two explanatory and ROA. On the other hand, the macroeconomic variable such as real economic growth has inverse relationship with ROA of commercial bank of Ethiopia with the coefficient of -0.00004 and political stability index had positive impact on the profitability of commercial bank in Ethiopia within the study period; the coefficient is 0.0027.

1. Capital Adequacy

The ratio of capital to total asset measure as proxy of capital adequacy, the positive bet value of 0.053, which means, other things remain constant one birr increase in capital to total asset ratio, the profitability of commercial bank in Ethiopia increase by 0.053 cents and statistically significant positive impact at 1% significance level(p-value=0.001). These indicate that, the efficiency of banks to handle capital risk and the ability to control losses and well capitalized banks experience higher returns.

This finding is the same as with the result with (Gemechu, 2016; Yonas, 2015; Melaku, 2016; Dawit, 2016 and Abdu, 2018) they are argued that capital adequacy has significant positive and impact on bank profitability. According to bankruptcy theory capital adequacy and profitability have positive relationship. However, the result was contradicted with, Tesfaye, (2014) stated that, the capital status of bank is not significant positive impact on the profitability of commercial bank in Ethiopia, but because of some uncontrollable variable and difference in time period, his result is not shows the current status of commercial bank in Ethiopia. The unexpected increase of bankruptcy cost, because of environmental change, the bank will need more capital in order to reduce bankruptcy cost and financial distress, but risk return theory suggest that capital adequacy and profitability has negative relationship.

2. Liquidity risk

Liquidity risk measure as ratio total loan and advance to total customer deposit, as expected liquidity risk had positive and statistically significant impact on bank profitability and the result show that, the positive beta coefficient of 0.026 and significant at 1% with the significance level (p-value =0.000). This means, other things remain constant total loan and advance per customer deposit ratio increase by one birr, the ROA of commercial bank of Ethiopia also increase by 0.026 cents, this implies the higher loan to deposit ratio the more profitable. The finding is in line with, Melaku;(2016) and Abdu (2018) on determinant of bank profitability in Ethiopia, they concluded that loan to deposit ratio has positive impact on bank profitability. According to (Marker and Hardeeep, 2018), they are argued on loan to deposit ratio has positive relationship with bank profitability

3. Credit risk

Loan loss provision per total loan and advance is considered as proxy of credit risk. It has negative bet value of 0.0.0583 and as result of regression output show that, it has statistically significant at 5% significance level (p-value=0.047) and has negative impact on profitability of commercial bank of Ethiopia. This means, it describes that one Birr given as a loan loss provision from a total loan and advance has the effect of Birr 0.0583 on bank's profitability in Ethiopia.

The result was supported by, Melaku (2016), on determinant of bank profitability in Ethiopia private sector and Elshady, (2018), on determinant of financial performance in Ethiopia private bank. According to Mohammed K and Mohammed A. (2014) and (Million, et.ital, 2015), they are found that credit risk has significant negative impact on bank profitability.

4. Bank Size

Bank size was measured by log of total assets, the coefficient of bank size is positive 0.0022 and statistically significant at 10% significant level (p-value=0.094), this indicate that when the log of total assets increase by 1 unit, other things remain unchanged the ROA of commercial bank of Ethiopia is increase by 0.22 percent. Because of the advantage of economies of scale, the larger bank in Ethiopia higher profitability than the smaller bank. The findings of Yalmselam, (2018), on factor affecting bank profitability in Ethiopia and, Abdu (2018), on determinants of the financial performance of private commercial Banks in Ethiopia support this result. Also similar with economic scale hypothesis, bank size is positive relationship with profitability. As scale of bank increase the cost per unit of bank decrease. The result also similar with Tesfaye, (2014) and Belayneh, (2011), they are found that bank size has significant positive impact on profitability of commercial bank in Ethiopia.

5. Fee and Commission Income

As regression result of fee and commission income over total income has statistically strong significant positive impact on the profitability of commercial bank in Ethiopia at 1% significant level (p-value=0.000). Accordingly, keeping other factors constant one-birr increase on ratio of fee and commission income over total income, the ROA of Ethiopian commercial Bank is increase by 0.049 cents. The result also supported by (Yiiksel et.ital.,2018), studied on post-soviet countries, they are found that bank non – interest income increase, as credit card fee and commission income increase and affect bank performances positively. Also other study suggested by (Antoun, et.ital, 2018) studied on determinant of commercial bank central and Easter Europe, business mix of bank has positively impact on profitability.

6. Revenue Diversification

Revenue diversification was measured by ratio of other income over total income, which is one of the key drivers of bank profitability. The positive beta coefficients of revenue diversification are 0.0307 and its strong significant positive impact on ROA of commercial bank of Ethiopia at 1% significant level (p-value =0.000). As result of beta coefficient of 0.0307, which indicate that, other factors remain unchanged as one-birr increase on ratio other income over total income; the ROA of commercial bank of Ethiopia is increase by 0.0307 cents. The profitability of commercial bank of Ethiopia increases, when other income increases. Ethiopia commercial banks are more profitable, if diversifies their business activities to sustainably longer life business environment. The higher level of revenue diversification and higher level of efficiency this lead to banks more profitable. The empirical finding is consistent with, Rao and Lakow, (2012) on determinant of commercial bank of Ethiopia. According to Sinha and Sharma (2015) concluded that diversification has significant positive impact on profitability of Indian Banks. As Markowitz theory suggests diversification can maximize the expected return of investors.

7. Cost Income ratio

On the other hand, cost income ratio measure operating efficiency of banks as proxies by operating expense over gross income. The negative beta coefficient of 0.0589 indicate, other things remain constant as one birr increase on ratio of operating expenses over gross income(CIR), the ROA of commercial bank of Ethiopia is decrease by 0.0589 cents and strongly significant negative impact on profitability of commercial bank of Ethiopia at 1% significance level(p-value=0.000). The higher cost income ratio of Ethiopian commercial banks shows that inefficiency of operational cost management, which is adversely affect profitability. This discovery uniform with (Yao.et.ital, 2018), on profitability determinant in Pakistan bank, they are found cost income ratio has significant negative impact on bank profitability. Accordingly, Ariful and Rana, (2017), on determinants of bank profitability on Bengladesh, and Elshady, (2018) on determinant of financial performance on private bank of Ethiopia, they found that cost income ratio has significant negative impact on bank performance.

8. Real GDP Growth Rate

The real GDP growth rate had statistically insignificant negative impact on the profitability of commercial Bank of Ethiopia. The negative Beta coefficient value of 0.0004, this indicate that, keeping other factors remain constant one unit increase in the real economic growth of Ethiopia, will contribute 0.0004 unit decreases on ROA of commercial bank of Ethiopia. When the real economic growth of country increases, many borrowers ask banks to finance their project. Consequently, banks want more loans to satisfy the increasing demand of loan; this causes the bank less liquidity and depositor will withdraw their saving to finance other investment area. As result, bank losses net interest income. Therefore, GDP growth has negative impact on bank profitability, the outcome similar with (Madhi, 2017). Additionally, high economic growth in the given country improves the business environment and lowers bank entry barriers. As reason, increase computation reducing bank profitability, (Tan.et.ital, 2012). They are support this finding. This outcome is in line with Gemechu and Okoth,(2013) on determinant of financial performances of commercial bank of Kenya and(Eissa,et.ital,2018)on bank-specific and macro-economic determinants of profitability of Indian commercial banks, they are assert real GDP growth has negative impact on bank profitability. However, the result was contradicted with, Tesfaye (2014) on determinant of bank profitability in Ethiopia. According to Gemechu (2016), Amdemikael (2012) and Belayneh (2011), they are arguing on real GDP growth rate positive impact on the performances of commercial bank of Ethiopia.

9. Political stability

Political stability is considered as proxy of political stability index, which is collected from data base of World Bank. It has statistically insignificant positive impact on the ROA of commercial bank of Ethiopia. The regression result of beta value is 0.0027, which indicate one unit increase in political stability index, contribute 0.0027 units increase on profitability of commercial bank of Ethiopia. This implies, favorable political environments of the country create easy to do banking business and political stability is required for banking industry to sustain their existence in more efficient way. It has direct influence on bank profitability.

Hence, it included, government stability, non-corruption perception, stability of regulation and non-restriction on capital flows have direct impact on investment as well as stable country have better access to foreign resource and to international business. As result, political stability in a given country has positive influence on bank performance (Alireza.et.ital, 2013) support this result. This result argues with (Yahya, et.ital, 2017) on impact of political instability, macroeconomic and bank specific factors on the profitability of Islamic bank on Yemen context. They argued that, political stability has significant positive impact on profitability of Yemen Bank.

4.3.5. Hypothesis Test

HP1: There is significant positive relationship between capital adequacy ratio and profitability of commercial bank of Ethiopia.

As result of regression capital adequacy ratio has significant positive impact on the ROA of commercial bank of Ethiopia. Therefore, we accept the null hypothesis and concluded that, the capital status of commercial bank of Ethiopia has significant positive impact on their profitability.

HP2: There is significant positive relationship between liquidity risk and profitability of commercial bank of Ethiopia.
The regression output indicate liquidity risk had statistically significant positive impact on the profitability of commercial bank of Ethiopia, so the author accept the null hypothesis and concluded that liquidity risk is significant positive relationship with the return on asset of commercial bank of Ethiopia.

HP3: There is significant negative relationship between credit risk and profitability of commercial bank of Ethiopia.

By considering the regression result credit risk has significant negative impact on bank profitability, as result the researcher accept the null hypothesis and concluded that credit risk has statistically significant negative relationship with return on asset of commercial bank of Ethiopia.

HP4: There is significant positive relationship between bank size and profitability.

By referring the regression result bank size had statistically significant positive impact on the profitability of commercial bank of Ethiopia, because of this the author is accept the null hypothesis and concluded that bank size and return on asset of commercial bank of Ethiopia has significant positive relationship.

HP5: There is significant positive relationship between fee and commission income and profitability.

Fee and commission income have statistically significant positive impact on profitability of commercial bank of Ethiopia, hence, we are evident to accept the null hypothesis and concluded that bank fee and commission income had statistically significant positive relationship with return on asset.

HP6: There is significant positive relationship between revenue diversification and profitability.

Revenue diversification shows strong statistically significant positive impact on the profitability of commercial bank of Ethiopia. As result, we are confidant to accept the null hypothesis and concluded that revenue diversification has significant positive relationship with ROA.

HP7: There is significant negative relationship between cost income ratio and bank profitability.

Cost to income ratio has significant negative impact on profitability of commercial bank of Ethiopia as per regression result. Accordingly, we are confident to accept the null hypothesis and concluded that cost income ratio has significant negative relationship with profitability of commercial bank of Ethiopia.

HP8: There is significant positive relationship between real GDP and profitability.

Real GDP growth rate has insignificant negative relationship with ROA. Depending on thesis result we are confidant to reject the null hypothesis and concluded that real GDP growth rate had insignificant negative relationship with the profitability of commercial bank of Ethiopia.

HP9*: There is significant positive relationship between political stability index and profitability.* Political satiability index has insignificant positive influence on profitability of commercial bank of Ethiopia. As result we are confidant to reject the null hypothesis and concluded that political stability index has insignificant positive impact on the profitability of commercial bank of Ethiopia.

Table 4.11 Hypothesized and Observed sign of the explanatory variables

Explanatory Variables	Measurement	Hypothesized sign	Observed Sign
Capital Adequacy Ratio(CAR)	Equity/Total asset	Positive	Positive
Liquidity Risk(LR)	total loan/total deposit	Positive	Positive
Credit risk(CR)	Loan loss provision/total loan	negative	negative
Bank Size(BS)	Log of total asset	positive	positive
Fee and Commission income(FCI)	Fee and commission income/total income	positive	positive
Revenue diversification (RD)	other interest income over total income	Positive	Positive
Cost to Income Ratio(CIR)	Operating Expenses Over Gross Income	Positive	Positive
Real GDP (RGDP)	Real GDP Growth rate	Positive	negative
Political stability index(PSI)	Political stability index	positive	positive

Source: Researcher own computation from regression result

> *Note: Real GDP growth rate and political stability index insignificant impact on the performance of commercial bank of Ethiopia and all bank specific variable significant impact on ROA.*

Chapter Five

5. Summary and Conclusion

5.1 Summary

Generally, it is argued that, unstable of banking sector is pre request to financial and economic shock of the given country. In order to continue the economic growth and financial stability, it is important to assess the variables that determine the performance of commercial bank in Ethiopia. Therefore, the study is specified an empirical framework to analyze the impact of bank specific and macroeconomic determinant of commercial bank of Ethiopia during the last 10 years. Therefore, secondary source of data was used covering from 2008 up to 2017 to fulfill the general objective of the study. The study also used quantitative research design. The data was analyzed and presented using descriptive statistic, correlation and multiple linear regressions. The author was used Hausman test to choose fixed effect from random effect and used LM test to choose random effect from OLS. As result of LM test OLS model is appropriate. The panel data is checked diagnosed test of classical linear regression to the model specification is fit the CLRM and regressed the explanatory variable against return on assets by using ordinary least square regression model. The following was the conclusion and possible recommendation based on the finding of the study.

5.2. Conclusion

As result of OLS regression, bank specific and macroeconomic determinant are more important and strongly explain the profitability of commercial bank of Ethiopia (adjusted R-squares 77.76%). The overall regression result of the study indicates that, capital adequacy ratio, bank size, fee and commission income, revenue diversification (other income over total income); liquidity risk (loan to deposit ratio) has significant positive effect on return on asset. Whereas credit risk (loan loss provision over total loan) and cost income ratio (operating expense over gross income) has significant negative impact on return on asset. On the other hand, macroeconomic determinant such as real GDP growth rate has insignificant negative relationship with profitability of commercial bank of Ethiopia and political stability index has insignificant positive impact on ROA.

Major finding of this study is included rarely study of cost income ratio, fee and commission income and revenue diversification, and found that fee and commission income is significant positive effect on return on asset. Fee and commission income is additional non-interest income of commercial bank, because commercial bank regularly engaged on interest income. Fee and commission income of commercial bank is collected without incurring additional cost than loan. Therefore, fee and commission income strongly determine the profitability of commercial bank of Ethiopia.

Another important finding of the study is revenue diversification, which is the ratio of other income over total income. Revenue diversification has significant positive effect on the profitability of commercial bank of Ethiopia and in line with portfolio and firm diversification theory. Revenue diversification is likely to reduce the risk of bank. Because non- interest income is not subject to risk factor than traditional interest income. So, revenue diversification has significant effect on bank profitability.

Another key outcome of this study is cost income ratio, cost income ratio measure operating efficiency of banks and proxy with operating expenses over gross income. Cost income ratio has significant negative impact on the profitability of commercial bank of Ethiopia. The higher operating cost reduces the profitability of commercial bank of Ethiopia.

Other determinant like bank size measured as log of total asset have significant positive impact on bank profitability. Large bank is more profitable than small bank, because of economic scale, which means cost per unit of bank, is decrease. Therefore, bank size increases, the profitability of bank also increases.

Also, liquidity risk of commercial bank has significant positive effect on profitability, as liquidity risk proxy's ratio of total loan to deposit. Because of loan to deposit ratio indicate the ability of bank converting customer deposit into loan. When banks change the customer deposit in to loan, banks earned high interest income as result the profitability of bank increase; this shows positive impact on bank profitability.

The relationship between loan loss provisions over total loan implies that as ratio of loan loss provisions over total loan increases, the profitability of commercial bank of Ethiopia was decreases. Because of loan loss provisions is deducted from total income and shows poorly performing loan.

As regression of ROA shows that, capital adequacy ratio (CAR) has positive relationship with the profitability of commercial bank of Ethiopia and it is statistically significant. The outcome was same as with bankruptcy cost theory. The higher capital position of commercial bank of Ethiopia follows their business opportunities effectively and has more time to control the unexpected losses. The excess capital of banks lower cost of bankruptcy, which means, lower need of external financing to control Ethiopian bank going to bankruptcy, this result profitability.

Finally, about macroeconomic determinant indicates, real GDP growth rate has insignificant negative impact on performance of commercial bank of Ethiopia and political stability has positive influence on ROA, but statistically insignificant influence on the performance of commercial bank in Ethiopia.

5.3. Recommendation

Based on the above finding the researcher forward possible recommendation.
- ✓ Ethiopia bank should improve equity investment (strengthening the capital base of banks) to enhance profitability.
- ✓ Fee income is the main source of revenue, they should increase those by using technologically advanced service like ATM, POS, and international money transfer and introduce international card (master card, union pay).
- ✓ It is recommendable should improve non-interest income service like, interest free banking, western union and money Gram to increase share of commission income.
- ✓ It is recommended for commercial bank Ethiopia to diversify their revenue into other payment-based service through mobile phone by negotiating with company who offered this service.

✓ It is advisable bank managers should not put all eggs in one basket in order to reduce financial risk.

✓ The high level of loan provisions of commercial bank should exist because of poorly performing loan. Hence, to improve the performance, the bank should introduce strong credit risk management can easily identified bankable borrowers and monitor the performance of loan granted. Additionally, the regulatory body should support credit risk management of the bank.

✓ It is advisable Ethiopia commercial bank to expand bank size in order to gain economic scale.

✓ Ethiopian commercial bank should focus on maximization and efficient utilization of deposit mobilization.

✓ Ethiopia bank should evaluate their efficiency ratio in order to maintain operating expenses at acceptable margin.

5.4. Limitation of the study and suggestion for further researchers

On this study all commercial bank is not considered. Only 9, commercial bank was selected as a sample to assess the effect of the chosen variable. Furtherer researcher must include industry specific variable such as market share, industry concentration, banking industry growth and other macroeconomic variable, such as inflation, exchange rate, interest rate, and unemployment rate may lead to better result than this study.

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Appendix

Summary of variables

`. sum ROA CAR CR BS FCI RD LR CIR RGDP PSI`

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	90	.0294566	.0095044	-.0019735	.0495407
CAR	90	.1300699	.042212	.0445756	.2978677
CR	90	.0266334	.0185024	.00242	.0982726
BS	90	7.003429	.5946371	5.321167	8.536704
FCI	90	.1891502	.0796504	0	.4447375
RD	90	.1999938	.1018265	.0080545	.3896994
LR	90	.5944696	.1083607	.208266	.8911699
CIR	90	.3604107	.1235624	.1246144	.8022619
RGDP	90	9.816657	1.193489	7.7	11.4
PSI	90	-1.568111	.1161546	-1.73	-1.34

OLS Regression

`. regress ROA CAR CR BS FCI RD LR CIR RGDP PSI`

Source	SS	df	MS			
Model	.006432452	9	.000714717			
Residual	.001607292	80	.000020091			
Total	.008039743	89	.000090334			

Number of obs = 90
F(9, 80) = 35.57
Prob > F = 0.0000
R-squared = 0.8001
Adj R-squared = 0.7776
Root MSE = .00448

ROA	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
CAR	.0535625	.015539	3.45	0.001	.022639	.0844861
CR	-.0583034	.0289633	-2.01	0.047	-.1159421	-.0006647
BS	.0022283	.0013157	1.69	0.094	-.00039	.0048466
FCI	.0499957	.0084542	5.91	0.000	.0331714	.06682
RD	.0307461	.0073087	4.21	0.000	.0162013	.0452909
LR	.0266847	.0054848	4.87	0.000	.0157696	.0375998
CIR	-.0589202	.0057042	-10.33	0.000	-.0702719	-.0475685
RGDP	-.0004156	.000416	-1.00	0.321	-.0012434	.0004122
PSI	.0027255	.0046483	0.59	0.559	-.0065249	.011976
_cons	.006557	.0171769	0.38	0.704	-.027626	.0407401

Histogram test for normality
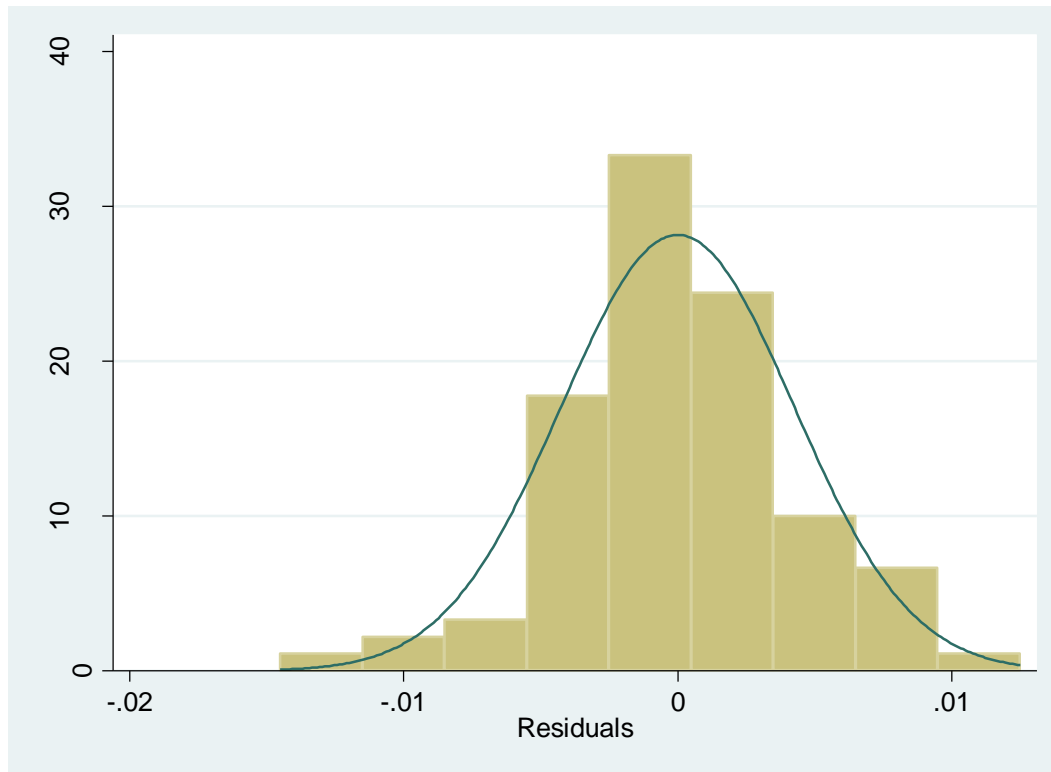

```
. qui reg ROA CAR CR BS FCI RD LR CIR RGDP PSI

. vif
```

Variable	VIF	1/VIF
BS	2.71	0.368812
RD	2.45	0.407578
CIR	2.20	0.454415
FCI	2.01	0.497850
CAR	1.91	0.524684
LR	1.56	0.639072
PSI	1.29	0.774369
CR	1.27	0.786072
RGDP	1.09	0.915860
Mean VIF	1.83	