

Addis Ababa University College of Business and Economics Department of Accounting and Finance

The Effect of Bank Size on Profitability of Commercial Banks in Ethiopia

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Masters of Science in Accounting and Finance

Prepared by Behailu Abebe
Advisor: Tekalign Nega (PhD)

Addis Ababa Ethiopia
June, 2019

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented or submitted partially or in full by any other person for a degree in any other university, and that all sources of materials used for the purpose of this thesis have been duly acknowledged.

Declared by:

Name: Behailu Abebe Yimer

Sign----------

Date ----------

Confirmed by Advisor:

Name: Tekalign Nega (PhD)

Sign ----------

Date----------

Addis Ababa University
College of Business and Economics
Department of Accounting and Finance

This is to certify that the thesis prepared by Behailu Abebe , entitled: " The Effect of Bank Size on Profitability of Commercial Banks in Ethiopia " and submitted in partial fulfillment of the requirements for the Degree of Masters of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Advisor Tekalign Nega (PhD) Signature _____ Date _____

Examiner_____ Signature _____ Date _____

Examiner_____ Signature _____ Date _____

ABSTRACT

The objective of the conducted study was to assess the Effect of Size on Ethiopian commercial banks Profitability. Data collected from seventeen commercial banks of Ethiopia was included in the descriptive data analysis. The economic data analysis was made on the data collected from fifteen commercial banks of Ethiopia. Quantitative data in the structure of balanced panel data was used in the analysis. Secondary data was collected for the years 2013 to 2018 and used as an input to the research work .Ethiopian banks were categorized into small, medium and large based on the total asset they had possessed. The dependent variable was identified to be profit, and was represented by ROE as proxy. The independent variable was identified to be bank size, which was represented by the proxy total Asset. A significant profit difference between different size groups was found by the analysis. Correlation and regression analysis were used to assess the relationship between variables. The analysis revealed that there exist a positive and significant relationship between the dependent and independent variables. Size measured by total asset was found to be a predictor of profitability. Decision makers were recommended to give priority to incorporate a plan of expansion in their strategy.

KEY WORDS: profitability, commercial banks, bank size, Return on equity

.

ACKNOWLEDGEMENTS

I want to thank several people who helped in preparing this proposal. I am indebted to my colleagues in the banking industry which provide me with valuable information used in this proposal. They also must have my appreciation for their mentoring throughout the preparation of this proposal.

I want to extend my sincere thanks to Tekalign Nega (PhD) for his professional guidance and support in preparation of this proposal.

My greatest appreciation goes to my wife and children for their tolerance during the preparation of this proposal. I want to extend my special gratitude for my mother Yeshi Wursie for her special encouragement and support.

Behailu Abebe

June, 2019

Table of Contents page

ABSTRACT iii
ACKNOWLEDGEMENTS iv
Acronyms & Abbreviation viii
CHAPTER ONE 1
Introduction 1
1.1 Background of the study 1
1.2 Statement of the problem 3
1.3 Objective of the study 4
1.3.1 Specific objective 4
1.4 Research Questions 4
1.5 Significance of the study 4
1.6 Scope of the study 5
1.7 Organization of the research 6
Chapter Two 7
Literature review 7
2.1 Theoretical Background 7
2.1.1 Bank Economies of scale 7
2.1.2 Bank Performance 8
2.1.2.1 Bank profitability 9
2.1.3 Bank Performance Determinants 10
2.1.3.1 Bank Size 11
2.2 Empirical literature review 13
2.2.1 Commercial Banks in Ethiopia 13
2.2.2 Bank performance and determinants Studies in Ethiopia 15
2.2.3Bank performance and determinants Studies in other countries 16
2.3 Knowledge gap 18
2.4Conceptual frame work 19
Chapter Three 21
Methodology 21
3.1 Research Approach 21
3.1.1 Research methods 21

3.1.2Research design 22
3.2 The Choice Regression Model 22
3.3 Explanation of the Model 23
3.3.1 Regression model 23
3.3.2 Model of the research 24
3.4 Choice of Dependent and Independent variables for the Model 25
3.4.1Dummy variable 25
3.4.1.1Independent Dummy variable-Multiple categorical variable 26
3.5 Data Type and Source of Data 26
3.6 Population of the study 27
3.7 Method of Data Analysis 27
3.7.1 Literature driven hypothesis 27
3.7.2 Analytical activities 27
3.7 Limitations 28
Chapter Four 29
ANALYSIS AND DISCUSSION OF RESULTS 29
4.1 Descriptive Data Analysis 29
4.1.1 Total asset of banks 29
4.1.2 Total capital of banks 31
4.1.3 Net income of banks 32
4.1.4 ROE of commercial banks 33
4.2. Econometric analysis 36
4.2.1Classical linear regression model (CLRM) Assumption tests 36
4.2.1.1Bartlett's Homogeneity test 36
4.2.1.2Test for absence of Autocorrelation Assumption 36
4.2.1.3Test for Normality 37
4.2.1.4Test for Multicollinearity 37
4.2.2 Mean comparison t test 37
4.2.3 One way ANOVA 39
4.2.4 Correlation 40
4.2.5 Regression Model 41
CHAPTER FIVE 44

Conclusion and Recommendation 44
5.1 Summery 44
5.2 Conclusion 46
5.2. Recommendation 47
Recommendation for Future study 47
REFERENCES 48
Appendix 51
Appendix I: Test for Normality 51
Appendix II: Housman Test 52
Appendix III: Breusch-Godfrey Serial Correlation Test 53
Appendix -IVRaw Data 53

List of Figures

Figure 1 Conceptual frame work for effect of bank size on profitability 20
Figure 2 Total Asset of commercial banks 30
Figure 3 Total capital of banks 31
Figure 4 Net income trend for Ethiopian commercial banks 32
Figure 5 yearly average ROE trend for Ethiopian commercial banks 33
Figure 6 Histogram ROE,kdensity 51

List of Tables

Table 1 variable description 25
Table 2 Average equity and ROE of large, medium and small group of banks 34
Table 3 descriptive statistics of variables 35
Table 4 mean comparison for large and medium 38
Table 5 mean comparison for large and small 38
Table 6 mean comparison for medium and small 38
Table 7 One way ANOVA 40
Table 8 Correlation between roe and total asset 40
Table 9 Model Regress ROE to Large and Medium 41
Table 10 Model Regress ROE to Large and Small 42
Table 11 Model Regress Roe to Medium and Small 43

ACRONYMS & ABBREVIATION

ANOVA	Analysis of variance
NBE	National Bank of Ethiopia
NIM	Net Interest Margin
ROA	Return on Asset
ROAA	Return on Average Assets
ROE	Return on Equity
STATA	General-purpose statistical software package

CHAPTER ONE

Introduction

1.1 Background of the study

Banks are entities that go between lenders and borrowers .In the absence of them it will not be possible to make savings of lenders accessible to borrowers. Significant number of work force is supported by these entities. They play a role of allocating Resources to the most efficient uses (Faure AP.2015). Banks strive to earn profit as any other profit seeking establishments (Babasaheb ,Salve& Mulani,2013). Their income will be generated from interest on lending and other service charges. Their costs come from interest payment on deposits and other running costs. The none existence or lack of success of banks will have a harsh adverse effect on economics system .Depositors and shareholders will suffer loss from this lack of success (Faure AP. 2015).Thus the performance of banks is a focal point of interest.

Performance can be described as the ability to create sustainable profitability. In getting reasonable returns for investors and making bank activities to continue profitability is vital. Banking institutions became more complex. Despite this increasing complexity earnings, efficiency, risk-taking and leverage remained as the important drivers of performance. The ability of generating revenue and profit from assets shows the efficiency of banks. Based on the interest of stakeholders need there are many measures used to determine the performance of a bank (European Central Bank, 2010). From those measures of bank performance Return on equity (ROE) was used in this study. The other focus of this research is Bank size. As Jan& Stefan, (2017) there is a need to know what constitutes a large bank. Policy makers are interested financial stability risk and importance. Customers are more interested in a size which may influence variety and geographical coverage of services. There are many indicators of bank size. All have their own strengths and limitations. Total asset is one indicator of bank size. The amounts are taken from financial statements of the banks. It can be easily found from all banks.

Having characteristics of comparability is another advantage of using total asset as indicator. It has a straightforward definition. In this research Total asset was used as an indicator of bank size.

Sehrish, Faiza & Khalid (2011) conducted a research to examine factors affecting profitability. They found strong evidence for the existence of factors that have a strong influence on the profitability. The effect of bank size was found to be more significant than other determinants identified. This has brought an attention to focus on bank size as a determinant of bank performance. The relationship between bank performance and size has been investigated by various researchers. Muhammad, Muhammad, & Muhammad, (2013) are among them. They found positive relationship between all measures of size used and profitability. The other is a research by Mohammad S. (2015).The result revealed that the smaller the bank assets are the higher its profitability. This conclusion contradicts with previous research results by Muhammad, et al. (2013).A research by Velnamy, & Nimalathasan, (2010) is another research which focuses on effect of firm size on profitability. They conducted a correlation analysis and found a positive relationship between size and profitability in commercial bank of Ceylon Ltd. Opposite to this they reported the nonexistence of relationship between size and profitability in bank of Ceylon. Thus the contradictions in findings call for further investigating the relationships between bank performance and size.

There were sixteen private and one governmental commercial banks operating in Ethiopia during the study period. Private banks were allowed to operate in the financial sector starting from the year 1994(NBE,2014). Thus the private banking sector has a short existence. The total asset of commercial banks in Ethiopia has reached 914 Billion Birr in June 2018. They reported 21 Billion Birr of gross profit in the same year ADDISBIZ(2018).The aim of this study is to assess the Effect of Size on Profitability of Ethiopian commercial Banks. The determinants of profitability were well investigated. There are researches on Ethiopian banks profitability and its determinants. The gap observed was the lack of studies which focus on bank size. The focus of this study was the bank size among other determinants of profitability of Ethiopian commercial banks. The study employed bank level data which was gathered from audited financial statements of the banks and other reliable sources.

From review of related literature it was learned that there is no consensus about the effect of bank size on performance. Findings About the direction of the effects were not easy to understand. In some cases they are found to be contradictory and ambiguous. This was the first gap identified and calls the attention to conduct this study. In addition lack of researches that explicitly examine the effect of bank size on profitability was observed. These are the rationales to the existence of this study .The purpose is to assess the effect of size on Ethiopian commercial banks profitability.

1.2 Statement of the problem

Different questions in relation to bank can be raised. One of the questions raised by researchers was to identify variables that determine the performance of banks. A performance of bank can be described based on its profitability. Past researches have examined the determinants and relationship of distinct variables and profitability. Among the studies were conducted by Susan (2014), Hope (2017), Akshaya (2017), Hirindu (2017), Kenenisa (2015) and Melaku (2016). All these found size to be one of the determinants of bank profitability. Bank size was studied with other determinants as part of the big picture .Among the identified determinants of profitability the significance of bank size was reported to be higher. As Sehrish, et al. (2011) level of significance of bank size was higher than other identified determinants .This gives a rationale to further investigate this determinant. Researches by Velnampy & Nimalathasan (2010), Mohammed (2015) and Muhammad, et al. (2013) are among the few works which are focused in identifying the effect of bank size on profitability. In Ethiopia there is a lack of such research works. The lack of such researches which explicitly examine the variable bank size as a determinant of profitability is the first gap identified.

The other gap identified was that there have been varying reports on the effect of bank size on profitability. Hope (2017) and Akshaya (2017) as per their research findings, argue that bank size has a negative effect on profitability. Susan (2014), Hirindu (2017), Kenenisa (2015) and Melaku (2016) reported contrary findings. For them bank size has a positive effect on profitability. Application of the recommendations by these studies with contradictory results would be difficult. There is no consensus reached about the effect of size on profitability of banks. These

contradictions in results are also observed among a research works made on the banks operating in the same environment.

1.3 Objective of the study

The objective of the study is to assess the Effect of Size on Ethiopian Commercial Banks Profitability

1.3.1 Specific objective

Compare the effect of size on profitability among different groups of commercial banks in Ethiopia

1.4 Research Questions

1. What is the relationship between bank size and profitability?
2. Is there any significant profit difference between banks with different sizes?

Hypotheses

H1: Bank size significantly affects bank profitability

H2.There is significant difference between the profitability of different sized banks

1.5 Significance of the study

Muhammad,et al. (2013) advised banks to restructuring and planning for expansion. The increased in size of banks will have an effect of maximizing their profit. As Jakob and Tigran (2011),big banks will play their role in creating financial stability by generating stable income. The Ethiopia banking industry can adapt such expansion strategy of creating bigger banks. This is supported by Moges (2017) .He recommended commercial banks to merge and to have scale advantage. Bringing the resources of Ethiopian banks with relatively small size together may help in creating bigger banks. This may bring the possibility of having financially or structurally stronger banks. These banks with their new shape can compete with other foreign entrant banks .An improvement in their performance may also be followed the restructuring process. Ethiopian banking industry must have researches which will help to make decisions related to size of

banks. This will help to find recommendations which are based on local researches. To bring this the need to identify those determinants which affect the operational results of Ethiopian banks is essential. Decision can be made based on researches which made their focus on those determinants. This study is significant in contributing to this research needs by intensively investigating one of the determinants of banks profitability, bank size. Other researchers interested to contribute to the same topic will find this research paper significant as a reference to their work. It is observable that many are investing In the Ethiopian bank industry. This research is significant in guiding their decision by showing which group of banks would likely generate better return for their future investment. It will also help banks to know their position in the industry. It will give some ground to their decisions to be made.

1.6 Scope of the study

The study includes all seventeen Ethiopian commercial banks which had been operating during the study period. Descriptive data analysis was made based on data collected for those banks. In conducting econometric data analysis the data was tested for classical linear regression model (CLRM) assumptions. Conducting these tests were the preceding activity in the econometric data analysis. From the test results it was learned that there had existed some outliners in the data. The existence of these outliners was believed to influence the results of the analysis. Further investigation to the data indicated that most outliners originated from figures that are of commercial bank of Ethiopia and Debub Global bank. Among various methods used in adjusting the influence of outliners, removing the data of those banks was selected. The data for those two banks was not used in the econometric data analysis .The years from 2013 to 2018 constitute the period of the study. The fiscal year for Ethiopian banks runs in two consecutive years .It starts from the month July of the preceding to June 30 of the succeeding year. In the data collection the data which was available at June 30 of the reporting year was used. It should not be forgotten that the operational data would represent six month period from the previous year. Secondary data was the base of the data for the study. A number of factors determine the operation of banks. Size of the bank is one factor used to determine the performance of bank profitability .The focus of this study is bank size .Bank size was used as a variable to predict the profitability of Ethiopian commercial banks. Even though the data for each bank was collected at the head office

level it is a representation of the operational performance of the banks in every parts of the country in which they had been operating.

1.7 Organization of the research

This research is organized into five chapters. The introduction of the research is presented in the first chapter. Chapter two is presented as a review of different literatures regarding the research objective. In chapter three the methodology of the study is presented. Data presentation with discussion and analysis can be found in chapter four. Lastly in chapter five the result of the study is used to draw conclusion and recommendation.

Chapter Two

Literature review

Theoretical background, empirical literature review, research gap observed and conceptual framework are presented in this chapter. This chapter gives theoretical base to a better understanding of the problem under study. Various related literatures by scholars, authors, researchers and analysts in the areas of bank size, bank performance and determinants of bank performance are included. The essentiality of the research is reinforced by an explanation of the knowledge gap.

2.1 Theoretical Background

Banking is vital life force to the existence of the current time goods and services trade. It takes a vital part in economic progress of every country. In this era without banking it is impossible to regard commerce. Banks strive to earn profit as any other profit seeking establishments (Babasaheb, et al. 2013).Policy makers are more concerned to know how banks are well organized and their ability to withstand any unfavorable financial situations .The significance of knowing what particular parts make large banks pop up here (Jan& Stefan, 2017).

Researchers were interested in identifying bank performance determinants. There are studies conducted to identify facts in relation to determinants of performance in banks. In this theoretical presentation of the chapter a definition to bank performance is given. Some bank performance determinants are also listed. Economies scale is an important concept which is presented in relation to bank size and profit. Among the proxy measurements which can be used to show how big a bank is, an additional explanation is given to total asset.

2.1.1 Bank Economies of scale

As Kristen R. & Rajdeep S.(2016) banks can achieve economies of scale by increasing size. This will boost the profit of a bank. The fixed costs will be absorbed by a wider asset range. The mean cost will be minimized consequently. For smaller banks with relatively small asset size mean cost will be raised higher. The reason for this is that fixed costs will be distributed to an asset

which has narrower base. An improved usage of resources to an improved efficiency will be attained as a result of increased scale of operation. In addition banking system will be healthier with efficiency and minimized risk.

Shelagh H.(2005), describe economies scale as a long term concept. As to him it can only be applied in the existence of varied inputs in a process of production. This variance is expected to encompass all factor inputs. By this assumption firms three tends can exist..

1. Increasing Returns to Scale or Scale Economies

In this case there exists an amplified proportionate increase in output than in increased factor input. Firms operating in this can minimize their mean cost with an increment in output.

2. Decreasing Returns to Scale or Scale Diseconomies In this situation for an increase in factor inputs the output factor proportionally will provide less.

3. Constant Returns to Scale

If a proportional increase in input factor which yield the same proportional increase in output factor exists it will be included in this category.

2.1.2 Bank Performance

Performance can be described as the ability to create sustainable profitability. The ability of generating revenue and profit from assets shows the efficiency of banks (European Central Bank, 2010).Nassreddine ,G., Fatma ,S. & Anis,J,(2013) described bank performance to be a function of internal and external determinants. They have explained that they had learned return on asset (ROA), return on equity (ROE) and net interest margin (NIM) are performance measures used frequently. Microeconomic determinants or inherent performance are the alternative naming to internal determinants. The Economic and legal environment related variables are declared to be external determinants. Size ,Capitalization, Liquidity ,Credit quality, Efficiency ,Control ,Degree of diversification ,Amount of bank deposits ,Governance and market share are listed by the researchers as being internal determinants. GDP growth, tax, Market concentration, maturity of the banking sector and Inflation are listed under the external determinants.

European Central Bank (2010) mentioned earnings as one key driver of performance. Banks must generate earnings .Emphasis must be given to its constituents and volatility .There are diversified measures to determine the bank performance. Those measures can be grouped into Traditional, economic and market based measures .Return on asset, return on equity and cost to income ratio are the most widely used from traditional measures.Net interest margin is another to this group.

2.1.2.1 Bank profitability

Profitability of bank has the first significance in the same way as business organization. Shareholders of banks can have their share of profit after fair profit is made. Banks accept money from customers which has interest .There is a need of money to spent in the initial formation for rent and office utilities .There are also costs which are estimated and allocated for a given fiscal period. All these form the financial resource used up for the operation cost of the bank. Before making interest rate decision on loans these costs need to be taken into account (Babasaheb , et al.2013).When losses occur profitability will be the first protection against. The capital position will be reinforced by it. Retain earnings will be invested. Return on assets (RoA), return on equity (RoE) and net interest margin are among measures of bank performance. When the net income of the year is divided by total asset it will give return on assets (RoA).

Return on assets = net income / average total assets

Another proxy measure of performance which will focus on income generation capacity function is the net interest margin.

Net interest Margin = net interest income /assets (or interest bearing assets)

Return on equity is one of the widely used measures of performance. It is an internal performance measure for shareholder value.

Return on equity = net income / average total equity

This can be decomposed to separate drivers

Return on equity = (result/turnover) x (turnover/total assets) x (total assets/equity)

The first element is the net profit margin and the last financial leverage multiplier. Return on equity is easily available and it relies on public information .In addition it suggest evaluation of the financial return of shareholders investment (European Central Bank 2010).

As Kristen R. & Rajdeep S.(2016) profitability of banks are affected by the market and by factors which are specific to bank .Business strategies and organizational structure are among the bank specific factors. Growth in the markets, market competition, market size and local economic conditions are components of market specific factors. In examining the bank size and its relationship with profitability these two factors must be considered.

Among different factors that are identified to affect bank profitability cost of funds is the first to be mentioned. It refers to interest expenses. These expenses will be incurred on fund sources like deposits, borrowing, share capital, reserves and other liabilities. Those funds are used for loans and advance requirements. Loans and advances give yield mainly in terms of interest income. This yield on funds is the other factor which will affect profitability .It is dependent on the portfolio management of banks. The third factor which affects profitability is spread. It is the difference between interest income and interest expenses. It shows the level of efficiency when interest spread is high. This can also be an indication of less competitive market. The last factor to be mentioned is non interest income .This is an income generated from non financial asset and services. Commission and brokerage on remittance facilities, guarantees underwriting contracts, locker rentals and other service charges fall to this factor category (Babasaheb , et al.2013).

2.1.3 Bank Performance Determinants

There are many determinants of bank performance. Some of them are external and others are internal. The selected determinant for bank performance is bank size.

2.1.3.1 Bank Size

Measuring how big a bank is paramount for many countries. This is because banks take the core part in countries financial and related engagements. This will give one of the rationales for their being closely overseen and controlled. The banking sector will work for all components of the economy .This will give one reason for the bank size to be decisive. The other reason for this to be decisive is that the banking industry stability is subjected to the possibility of unfavorable occurrences .This possible happenings will have impact in the economy and its actors. Big corporations prefer to work with large banks. These banks can provide long list of differentiated services internationally. They can also finance huge amount of funds (Jan& Stefan, 2017).

As Jan& Stefan, (2017) measuring size is complicated subject. There are many indicators of bank size which have variety of features. These may be grouped into categories. Market (cash flow based) indicators, accounting based indicators and regulation based indicators. Total assets and shareholders' equity are among the accounting based indicators. In recent research and documents the main emphasis is balance sheet totals.

In the course of investigating the determinants of bank profitability many have contributed their share. Works of Susan (2014), Hope (2017), Sehrish, et al. (2011) ,Jakob & Tigran (2011) and Andrew(2014) are in this long list. All of these works reported bank size to be Significant in determining profitability. The magnitude of the significance was reported as variant among the identified determinants of profitability. Sehrish, et al. (2011) tested the significance of the bank size in relation to other determinants of profitability. They concluded that bank size has the largest magnitude. Using indicator total asset by Controlling officials and scholars is frequent. The financial statements of banks can give the information of this indicator. Banks are obliged to periodically publicize audited financial statements.

Thus it is easy to find the information about total asset from balance sheet total. By using this indicator comparability will be easy. Total asset is less likely to be affected by changes than risk-weighted assets. Financial officials and bank controllers preference for using this indicator has

been continued (Jan& Stefan, 2017). There are also other indictors to measure how large and important a bank is. Their logical connection to some cases is high.

In other cases their Deficient performance can be observed .Difficulty in making comparison between different business models and geographical areas can be given as one of the pitfalls of these measures. Net income is one of these indicators. The other is number o customers .The number of customers can be justifiable indicator if it is used in a distinct component of business. It will be difficult to compare different types to banks if their customer base is different .It will be less meaningful to compare banks which have few corporate and institutional clients with banks with many retail customers. The first banks with fewer customers can generate greater earnings per client .The second banks which may have many clients but generate relatively small amounts of money with each of them. The third indicator is number of employees. in using this indicator we may face the same difficulty as using number of customers. Some banks may follow a strategy of having extensive branch expansion .This will need more supervisory and administrative staff. Other banks may prefer to have moderate branch number with larger asset and capital base. These banks may need few advisors and administrative staff but can generate higher revenues. The other indicator is number of branches. Using this indicator for measurement will only be logical for those banks with the same business model and geographic orientation. Banks may have different needs in establishing their branch network. Some banks may prefer to have few but well organized branches as center of activity. Other banks may prefer to have many branches which are smaller in size. The customer preference may also influence the number of branches. Total lending volume can be another indicator of bank size. Using this indicator for assessing those banks with similar business model is logical. If there are different types of banks in the industry its use in the analysis is questionable. The last indicator to be mentioned is gross value added. This indicator will consider the gross value added or the share of the economy's total (Jan& Stefan, 2017).

In the preparation of this material there was no decisive conclusion found in literature about a size of bank which can maximize profitability. It can be guessed that an increase in size of bank may contribute positively to some level and might change its contribution after some level of

bank size. One of the reasons for this can be an effect of bureaucratic complexities that may arise from the extremely large size of a bank. Basically a positive effect on profitability from economies of scale can be expected. Using logarithm of total assets as a proxy for bank size for economies scale effect with non linear relationship between size and profitability is possible. In this study it was assumed, the bigger the bank size the higher the profitability.

2.2 Empirical literature review

A great deal of investigation made in the area of determinants of bank performance can be found in literature. In this section a summarized review of literature regarding determinants of bank performance are presented .In addition an explanation to the current and establishment history of Ethiopian banks is included.

2.2.1 Commercial Banks in Ethiopia

As Babasaheb , et al.(2013) the main reasons for establishment of commercial banks are to serve savers and generate profit. Huge amount of money can be paid to vast areas with a spending of less money. It is described to be the core ingredient of latest economic society. The need of working capital by various divisions of large scale production and buying and selling were facilitated by them.

The establishment of Bank of Abyssinia in 1906 left the first mark on the beginning of modern Ethiopian banking. It was managed by the British owned Egyptian National Bank. The full right of Issuing bank notes and coins was given to it. To work on aborting the usage of Maria Theresa was another task given to this bank. Government and public funds were to transact in this bank .It had two branches in Addis Ababa, Harar (Eastern Ethiopia) and in Dire Dawa .It had also opened branches in Gore, Djibouti and Dessie .The bank was liquidated in 1931

.A new bank, Bank of Ethiopia was established in August, 1931 and had operated until the Italian invasion in 1935.It was entirely an Ethiopian institution .Its establishment was accelerated by the need of detaching Ethiopian banking from foreign control. It was also hoped that the bank

would fulfill the Ethiopians credit needs .It took all the activities and authorities of Bank of Abyssinia. It had extended its operations by opening branch in Debre Tabor, Agency in Gambella and transit office in Djibouti.

Banco Di Italia, Banco Di Roma, Banco Di Napoli and Banco Nazionale del lavoro are branches of main Italian banks which were established during the invasion .They were operational in the main towns of Ethiopia and had ceased operation after liberation. Banco Di Roma and Banco Di Napoli remained in Asmara. Barclays Bank was another foreign bank to come to Ethiopia with the British troops and it withdrew in 1943.

State bank of Ethiopia, which was acting as the central bank came operational in 1943. It was acting as the agent of the ministry of finance and had a power to issue bank notes and coins .It was engaged in all commercial banking activities. It had branches in Khartoum, Sudan and a transit office in Djibouti it ceased operation in 1963 by bank proclamation .This proclamation separated the function of commercial and central banking. The activities of state bank of Ethiopia were inherited by Commercial bank of Ethiopia in the same year. The employees were all Ethiopians. The national bank of Ethiopia stated operation in the beginning of year 1964as a share company as per proclamation no 207/1955.In 1964 Addis Ababa bank share company which was the first privately owned bank was established. It had an association with national and Grindlay Bank, London. Addis Ababa bank, Banco Di Roma and Banco Di Napoli were merged in 1976 to form Addis Bank following the declaration of socialism in 1974.In 1980 this bank was merged with commercial bank and was a sole commercial bank until 1994.In 1994 National bank of Ethiopia was established as s judicial entity following the declaration of liberal economy. The proclamation no 83/1994 and 84/1994 laid the legal basis for investment in the banking sector. Following this Awash international Bank was established in 1994.There are sixteen private and one governmental commercial banks in operation (NBE , 2014).

As ADDISBIZ (2018), the total asset of Ethiopian banks has reached about 914Billion In June 2018. The 62% is the share of Commercial bank of Ethiopia. The other 11% is held by Dashen and Awash Banks. 18 %is held by Bank of Abyssinia, Nib international, Wegagen , United ,

Oromia International banks and Cooperative bank of Oromia . The other 9% is the share of the other eight banks. The total gross profit recorded by all banks was about 21 Billion Birr. Commercial bank of Ethiopia has the lion's share which is 50%.Awash Bank, Dashen Bank and Wegagen Bank are banks with profit exceeding one Billion Birr . This has a share of 20%from the total gross profit of all banks. Bank of Abyssinia, Nib international, united, Oromia International Banks and Cooperative bank of Oromia are banks which had scored more than 500 million Birr each. This make up a share of18 %from the whole gross profit of banks. The rest12% percent profit is held by the other eight banks.

2.2.2 Bank performance and determinants Studies in Ethiopia

Factors that affect Ethiopian banks performance are researched by scholars. Tesfaye (2014) researched about the determinants of Ethiopian banks performance. He considered bank specific and external variables. The data used was collected for the years1990 through 2012.The bank performance was represented by the proxy return on assets. The study concludes that variation in profitability was by large explained by bank specific variables. As to the research results bank size was reported to have no significant impact on Ethiopian banks profitability. He recommended that the size of large banks in Ethiopia need to be reduced to optimal levels. The researcher advised an aggressive bank branches opening must be watched carefully. This was given as a remedy in minimizing the negative influence of increase in cost which in turn may influence the performance of banks. Contradictory to Tesfaye (2014) findings Moges (2017) reported different result about the impact of bank size on the performance of Ethiopian commercial banks. As to his research finding bank size has significant and positive effect on Ethiopian commercial banks performance. The proxies used to represent performance of the banks were return on asset and return on equity measurements. The researcher recommended commercial banks to merge and have scale advantage. His research covered a period from 2005 to 2014. Descriptive and random effect panel econometrics method of data analysis was used in making the analysis.

Elshaday, Kenenisa & Mohammed (2017) conducted a study that examines the determinants of performance of Ethiopian banks. The data was secondary data collected from a sample of eight

commercial banks which had been selected from sixteen commercial banks. The data collection period was the years 2007 to 2016.The methods used in the analysis were correlation and multiple linear regressions of panel data and analyzed with random effect model. Return of asset and return on equity were the selected dependent variables. The size of the bank was found to have positive and statistically significant effect on financial performance of the Ethiopian banks. They concluded that bank size was a determinant in boosting performance .Achieving economies of scale was the reason given to this. This result is in agreement with findings of Moges (2017). Rama & Tekeste (2012) carried a study to explore the key profitability determinants of commercial banks in Ethiopia. The data used was unbalanced panel data for the years 1999 to 2009.The internal and external factors to the banks were considered in the research. These were regressed against ROAA of the commercial banks. The unobserved bank specific characteristics were controlled by using the fixed effect model during analysis. The result of the study indicated that internal factors were the most determinants of Ethiopian banks profitability. Bank size was reported to have statistical significant and positive impact on the profitability of commercial banks in Ethiopia. Large banks were reported to earn higher profits than smaller commercial banks. Their research findings were supported by later researches by Moges (2017) & Elshaday et al.(2017).

2.2.3Bank performance and determinants Studies in other countries

Researchers from different parts of the world examined what determines profitability of banks. Jakob & Tigran (2011) examined the existence of dependability between bank size and profitability volatility. They studied the quarterly data of the period through 2004 to 2009 of the United States banks. They concluded that there is a negative relation between bank size and profit of banks. Similarly Andrew (2014) with the aim of identifying determinants of bank profitability conducted a research. The study period was 2005-2011 for South Africa banks .The empirical findings showed that lower profitability may be scored as a result of increasing size of bank. The other is research by Hirindu & Kushani (2017) made on Sri Lankan domestic commercial banks. They used data from financial reports of the twelve banks in Sri Lanka. The study covered the period 2011-2015 and included sixty observations. The analysis method used was regression analysis. Bank size was identified as one of the independent variables in the

regression model .The proxy used was logarithm of total asset. Profitability was the only variable which is used as dependent in the model. It was represented by Return on asset. As per their findings bank size was identified as one of the determinants of Sri Lanka banks profitability. The relation between the variables was revealed to be positive. A research by Sehrish, et al. (2011) in Pakistan is another to be mentioned. This research was conducted to assess the elements of bank specific characteristics of the Pakistan's banks in relation to profitability. The years 2005 to 2009 made the period selected for the research. Banks with greater total assets were understood or comprehended as best to relay on. Having this superior position was identified as convertible to superior profit. Two hypotheses were developed on the course of analysis. The research depicted that total asset, loans and deposit as proxies to bank size have a significant effect on profitability of Pakistan banks. In addition the effect of bank size was found to be more significant than other determinants identified.

Some studies focused on testing the relationships between profitability and bank size. Velnamy & Nimalathasan, (2010) investigated the effect of the firm size on profitability of the branches of Bank of Ceylon and commercial bank of Ceylon Ltd. These banks are found in Sri Lank. The data used for the study was the years 1997 to 2006.variables were evaluated using Secondary data. Net Profit, Operating profit, Return on Investment, Return on Equity, Return on Average Assets, and Return on Average Share holders were taken as indicators of profitability. The relationship between firm size and profitability in commercial Bank of Ceylon Ltd was found to be positive .The correlation analysis showed no relationship between firm size and profitability in bank of Ceylon.

A study by Muhammad,et al. (2013) was another study which focused on bank size and profitability. The study aimed at investigating the effect of different measures used for bank size on the profitability of Pakistan Banks. Quarterly statements of the banks were the source of data used in the research. Based on their assets banks were grouped into three categories. The groups were compared by using descriptive analysis and linear regression. Total assets, advances and deposits were measures of bank sized used by the researchers .They were used in measuring the impact of bank size on banks profitability. The impact of Banks size in terms of total assets on

profitability for large size group of commercial banks was observed as positive and significant. It was given as positive and insignificant for medium size group of banks. Contrary to the large group of banks small group of banks reported to have negative and significant impact. The impact of banks size in terms of advances on profitability for large banks was given as positive and significant. It was reported as positive and insignificant for medium size group of banks. The results reported to the small group of banks were negative and significant opposite to the results in large group of banks. The regression results for large group of banks were given to reveal that the impact of deposits on profitability is positive and highly significant. The impact of deposit for medium size group of banks was given by positive but insignificant. This impact of deposits on Profitability was given as negative and significant for the group of small size commercial banks. The researchers concluded that there was a positive impact of size on profitability. This was reported to be true for all measures of size which had been used in that research. Pakistan banks were advised by the researchers to increase size in order to maximize their profitability. Expansion and restructuring are strategies recommend by the research to manage a size increase.

Mohammad S. (2015) conducted a research which focused on bank size as a determinant of performance. The aim was to investigate the effect of bank size on profitability within different size bank groups. It was conducted to Jordanian listed commercial banks. It used the data for the years 2007 through 2012.Based on their total assets Jordan banks were grouped into three. The dependent variable used was return on equity as a proxy to profitability. The research revealed the existence of a significance difference in the profitability within different sized banks. The researcher concludes that the small and medium sized banks had better performance compared to large banks. This result of the research was the base to conclude that the smaller the bank assets the higher its profitability. This conclusion of the research clearly contradicts with the research results by Muhammad, et al. (2013).

2.3 Knowledge gap

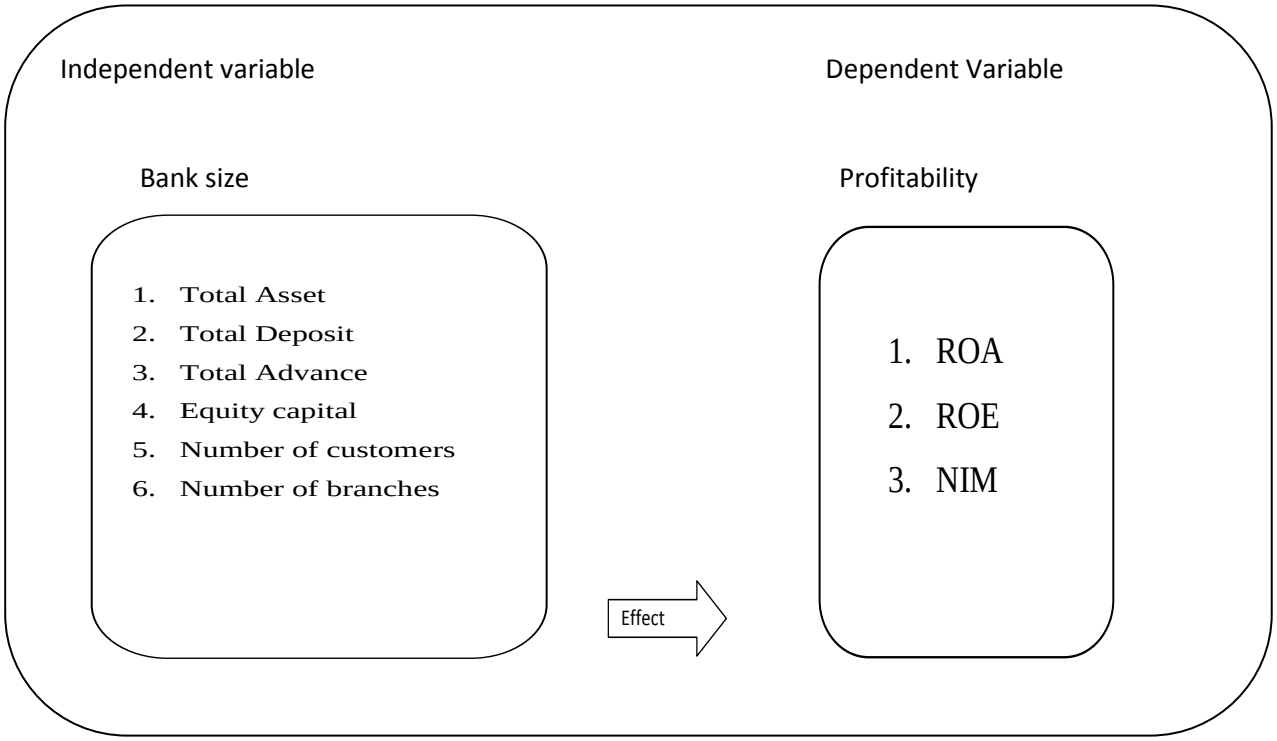
From literature review and theoretical presentation it was learned that there is a rationale behind investigating bank performance and its determinants. From the literature review it can be inferred that the determinants of profitability had been investigated to some extent. There are also some studies which had examined these determinants in our country. The results of these studies sometimes did not present identical results even for the same topic under study. The observed

variance in the research results made on bank size and its effect of profitability of banks is the one to be mentioned. Thus, it is difficult to use recommendations of researches in the in decisions regarding bank operation. Bank size and its effect on profitability must be investigated thoroughly. The focus of this study is on bank size and its effect on profitability .Beyond this scope, little is known about the optimal size which a bank needs to operate. As presented in review part of this study total asset can be used as a proxy to measure bank size. The knowledge gap observed in this is identifying the type of asset that contributes more to profitability. A type of asset can be ranked based on its projected contribution on profitability.

2.4Conceptual frame work

In developing the conceptual frame work various researches were used. Among the studies were conducted by Hirindu & Kushani (2017) , Hope (2017), Akshaya (2017), Hirindu (2017), Kenenisa (2015) and Melaku (2016).From These and other literature it was found that Profitability and bank size have relation. These researches identified profit to be the dependent variable. Bank size was identified as independent variable. In most of these works ROA and ROE were used as a proxy to measure profitability. It was used in measuring the level of significance of bank size in relation to profitability. Bank size can also be represented using different proxies .Jan & Stefan (2017) lists Total assets, Equity capital, Number of customers, Number of employees, Number of branches and Total lending volume as indicators of bank size.

Figure 1 Conceptual frame work for effect of bank size on profitability



Source: author construction (2019)

Chapter Three

Methodology

Research methodology as C.R.Kothari(2004),is " a way to systematically solve the research problem". It can be taken as identifying the way to scientifically conduct organized study. The range covered by methodology is wider than that of the research methods. When we discuss about methodology there is a need to weigh possibilities and give sensible argument about method or technique we employ. We have to give reasons for applying that one out of several methods or techniques. We have to reason out for rejecting other methods from using in examination, by the researcher or others. Methodology will tell us why a research study is taking place. In addition it will give the reason to how the definition of research problem took place. The question to the way and why to devise hypothesis is answered. What data and in what special way been chosen to be used is one information will disseminate .As One more in this list the reason why a selected data analysis was used will be given.

3.1 Research Approach

3.1.1 Research methods

Research methods is the term used to represent all the ways researcher flowed in the accomplishing the task of research .The purpose of conducting a study is to produce a possible remedy to an observed gap based on data which is able to be found .In doing so the data on hand must be associated with other side of gap which is not known. Those methods which are focused on the data gathering are the first group of the research methods which are based on this view. This group is dominant when the existing data is not enough to deliver a way of resolving difficulty. The other group comprised of the statistical techniques which are applicable to construct an association in the data and the unknowns. The last group is used to judge the correctness of the outcome we get (C. R. Kothari 2004).

In this study quantitative data was used. The method of data analysis was quantitative data analysis.

3.1.2Research design

The choice to be made about what, where, when, how much and by what means to address research forms a research design. It is the organization to the way for gathering and analysis of data in accordance with the research objective. It is a conceptual structure to accomplish research activity. It is a road map to gathering, evaluation and analysis of data. It is consisted of a brief summary of the activities starting from formulating the hypothesis through the final analysis (C. R. Kothari 2004).

The selected research design for this study was Correlation Design. The objective of the study is to assess the Effect of Size on Ethiopian Commercial Banks Profitability .In working to achieve this objective a relationship between the independent and dependent variables was to be investigated. This was the main reason for selecting this design. As Nicholas (2011), Correlation design is mainly applied when the relationship among concepts to be investigated. The correlation between variables can be positive, negative or none.

3.2 The Choice Regression Model

C. R. Kothari(2004) described the existence of different methods in determining the relationship between variables .He give an emphasis that no method without doubt can assure the existence of causal relationship in a correlation. The first question can be to the existence of association or correlation between variables which can be answered by correlation technique. The regression technique can tell if there is any cause and effect relationship between variables and to what degree. Cross tabulation, Charles Spearman's coefficient of correlation and Karl Pearson's coefficient of correlation are correlation study techniques. Karl Pearson's coefficient of correlation was mentioned as the most widely used in measuring the degree of relationship between variables. It assumes a linear relationship between variables. Variables are casually related as dependent and independent is another assumption of the technique. In addition the method assumes a normal distribution is made by large number of independent causes which are operating in variables.

Karl Pearson's coefficient of correlation $= \frac{\Sigma(Xi - \bar{X})(Yi - \bar{Y})}{n.\ \delta x.\ \delta y}$

Where

X_i = *i*th value of *X* variable

$\bar{X}$ = mean of *X*

Y_i = *i*th value of *Y* variable

$\bar{Y}$ = Mean of *Y*

n = number of pairs of observations of *X* and *Y*

σ_X = Standard deviation of *X*

σ_Y = Standard deviation of *Y*

The objective of the study is to assess the Effect of Size on Ethiopian Commercial Banks Profitability**.** Existence of association or correlation between variables was investigated by Pearson's technique. The cause and effect between variables were studied using regression method. This model was selected after reasonable reference to literature review and other references in related area of interest.

3.3 Explanation of the Model

3.3.1 Regression model

The simple regression model as Jeffrey (2013) can be used to investigate association between variables. There are times which make this model suitable as an empirical tool. The base of the model argument is that explaining one variable in terms of other variable. Representing the variables as y and x, it will show how y varies with changes in x. It is impractical to find precise relationship between variables. There are other factors to consider which affect y. Consideration must be given in identifying the functional association between x and y. Attention for the way of being certain about capturing ceteris paribus relation between y and x is needed. A simple equation is

$$Y = \beta_0 + \beta_1 x + u.$$

This equation can state simple regression model and it holds in a population of interest. It is two or bivariate regression model. It relates variables x and y .y is dependent variable and x is independent variable. Factors which affect y other than x are represented by *u*. It is named as

error term or disturbance in relation. It is treated as unobserved. We can think *u* as standing for unobserved. β_0 is called the constant term

3.3.2 Model of the research

The objective of the research is to assess the relation between bank size and profitability. From literature it was found that profit is dependent variable. Bank size is independent variable.ROE was taken as a proxy to Profit in this research. Bank total asset is taken as a proxy to size of bank in this research. Using the concept of regression the model for the research is given as

Model: $ROE = \beta_0 + \beta_1 TA + u.$

ROE= return on equity (proxy to profit)

β_0=Intercept

β_1=Slope of independent variable

TA=Total asset (proxy to size)

U= Random error

Based on total asset Ethiopian banks will be grouped into three. The first is small group .The others are medium and large groups of banks. These will be used as dummy variables in the model. The grouping will help in identifying whether there exist significant difference between profitability among different size of banks.

$ROE = \beta_0 + \beta_1 TAS + \beta_2 TAM + \beta_3 TAL + u$

ROE= return on Equity (proxy to profit)

β_0=Intercept

$\beta_1, \beta_2, \beta_3$=Slope of independent variable

TAS=Dummy variable to Total asset (proxy to size of small group of banks)

TAM= Dummy variable Total asset (proxy to size medium group of banks)

TAL= Dummy variable Total asset (proxy to size large group of banks)

U= Random error

3.4 Choice of Dependent and Independent variables for the Model

The cause and effect association is described by causal statements. The independent variable is the cause in this case. The dependent variable is the one which is affected by the independent variable. When an increase in one variable results an increase in another it is a positive correlation. When an increase in one variable is followed by a decrease in the other variable or vice versa it is a negative correlation (Nicholas 2011).

Intensive investigation to literature review helped in assigning the dependent and independent variables of the study. The variables related to this research are performance and bank size. Performance is the dependent variable. Bank size is an independent variable. Return on equity was used as a proxy to Performance. Total asset of banks was used as a proxy to Bank size.

Table 1 variable description

List of variables	Type	Proxy used	Description	Notation
Bank performance	Dependent	Return on equity	The ratio of profit after tax and total equity	ROE
Bank Size	Independent	Total asset	The total value of Asset	TA

Source: author construction (2019)

3.4.1Dummy variable

The explanatory variables in many regression analyses are assumed to be quantitative in nature. In other cases they are qualitative and may not be defined on a well defined scale. Such variables do not have any natural scale of measurement. Such variable indicate the presence or absence of a quality or an attribute .In data analysis such variables classify the data into mutually exclusive categories. These variables are called categorical variables, indicator variables or dummy variables. In regression analysis dummy variables are artificially quantified by making them to take values. These values used to code dummy variables are 1 and 0 to take one as an indication for the existence of an attributed. And Zero to indicate the absence of such an attribute (Jeffrey, 2013).

3.4.1.1Independent Dummy variable-Multiple categorical variable

If there are g categories of an attribute we need to include g-1 dummy variables in the model along with the intercept. The intercept for the reference category is the overall intercept in the model, and the dummy variable coefficient for a particular group represents the estimated difference in intercepts between that category and the reference category (Jeffrey, 2013).

To investigate the existence of profit difference among different sized banks dummy variables were used. The banks were grouped into Small, medium and large banks. With these the variables Small, medium and large dummy variables were constructed. The variable small takes the value 1 if the bank is small and 0 if not. The variable medium takes the value 1 if the bank is medium sized and 0 otherwise. The variable large takes the value of 1 if the firm is large and 0 if not. To investigate return on equity by introducing the bank size in the model we must omit one of the three categories.

$$ROE = \beta_0 + \beta_2 TAM + \beta_3 TAL + u$$

In this model the omitted category is small banks which will serve as the reference category.

3.5 Data Type and Source of Data

Quantitative data was the main source of information for the research. The data source was secondary and with a nature of panel data. As Jeffrey, (2013) each cross sectional member in such dataset has time series. The same cross sectional units are included. It will give an advantage of having multiple observations on the same units. This allows certain unobserved characteristics of variables to be controlled. By using more than one observation causal inference will be easy. The panel data which was used in this research was a balanced one. The numbers of time series observations for each cross sectional unit were the same. Data for the years 2013to2018 was collected. The annual reports of the banks were used as a source of data. Audited financial statements of the banks were also used .The national bank of Ethiopia report was another source.

This study grouped Ethiopian banks Based on total assets reported on June 30, 2018. Banks with Total asset of above 31 Billion Birr, Banks with total asset between 14-31 Billion Birr and

less than 14 billion Birr are classified as large, medium and small size banks respectively. Bank of Abyssinia, Awash and Dashen banks are in the large bank group . Cooperative bank of oromia, Nib, Wegagen, Birhan, United , Lion International and Oromia are banks in medium size group. Enat , Zemen, Addis International , Abay and Bunna are Banks in the small size group.

3.6 Population of the study

The population of this study includes All Ethiopian commercial banks which had been operating during the period 2013 to 2018. The total number of these commercial banks was seventeen.

3.7 Method of Data Analysis

The data analysis was made on the balanced panel data. Descriptive statistics, regression and correlation models were used in analyzing the panel data. The influence of the independent variable on the dependent variable was determined by t-statistics test. The regression was used to show the relationship between the dependent and independent variables of the study. The tests of normality, multi colinearity, and hetroskedasticity and model specification were performed before using this model. STATA software was used in computations made throughout the research process.

3.7.1 Literature driven hypothesis

For this study two general hypotheses were drawn.

H1: Bank size significantly affects bank profitability

H2.There is significant difference between the profitability of different sized banks.

3.7.2 Analytical activities

The main objective of the study was to assess the effect of size on profitability of Ethiopian Banks. To work on the whole population in investigating the effect of size on profitability was thought to be cumbersome. The researcher preference was to group Ethiopian banks into three manageable groups based on their size. These were used as dummy variables in the model .A

comparison between the profit differences between groups gave the picture of the whole banks under investigation.

The first specific objective was to Determine whether a significant difference between profits of different size banks exist. T-test on the means of ROE for the three groups of banks were made .These helped to see the existence of an estimated difference which is different from zero. This test was arranged to base pair differences. Three pairs were modeled and used. The first pair was ROE of small banks and medium banks. The second pair was medium and large banks. The third pair was small and large banks. These models were used to test the hypothesis that connotes to existence of significance difference between the profitability of different sized banks.

The second specific objective was to analyze the relationship between bank size and profitability. Pearson correlation was used to investigate possible correlation between variables. Simple regression was employed to further see the possible effect of size on profitability.

One way ANOVA was used to analyze the mean profitability between and within the three groups of banks in Ethiopia.

3.7 Limitations

The intention was to include all the seventeen commercial banks in the study .In doing so it was observed that some of the banks had the age of less than ten years. The data to be collected was intended to be gathered beginning from the establishment of the most recent bank year of establishment. The banks in their first year of establishment would not be efficient as new entrants to the industry. There may be some influence in comparing them to matured banks in the industry. To depend only on the secondary data may have some influence on the study. In the Ethiopian banking industry we can observe excessive confidentiality to give information. This created difficulty in finding input information for the research. Most of the websites of the Banks were not updated on time. This negatively influenced the process of searching the information Varity from those sources.

Chapter Four

ANALYSIS AND DISCUSSION OF RESULTS

The findings of the study are presented in this chapter. These findings are results of the analysis made on the data collected .This findings are presented in descriptive data and econometric analysis sections. The descriptive findings will be helpful in understanding the general situation of banks in different aspects. The trend of total asset, capital, net income and return on equity of bank is among these. In the econometric analysis, findings which are helpful to accept or reject the formulated hypothesis are presented.

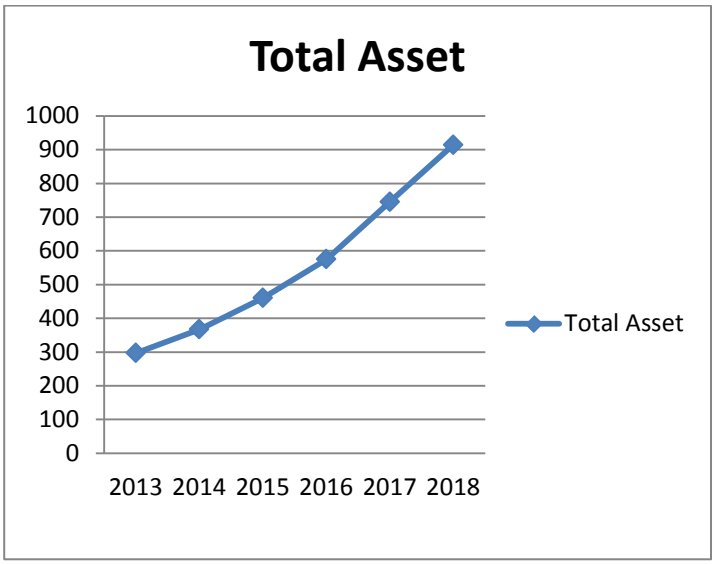
4.1 Descriptive Data Analysis

In this section descriptive statistics for Ethiopian commercial banks are presented. The descriptive data analysis mainly summarizes the observed characteristics of Ethiopian commercial banks during the study period. Total asset, capital, net income and return of equity are the focus of this descriptive data analysis. Graphs, tables, percentages, mean values; medium and maximum values are used in presenting the results of the descriptive data analysis.

4.1.1 Total asset of banks

From the data collected the total asset of banks had been increasing through the years 2013 to 2018.The finding of the analysis show that this increase of asset value was true for all the banks which were included in the study. The graph depicts this increase by plotting a connecting line through points. These points are the intersections of the values of total asset in the y axis and corresponding year in the x axis. The amount of total asset of banks was tripled in the year 2018 from the amount which the banks had scored in the year2013.

Figure 2 Total Asset of commercial banks



Source: own computation

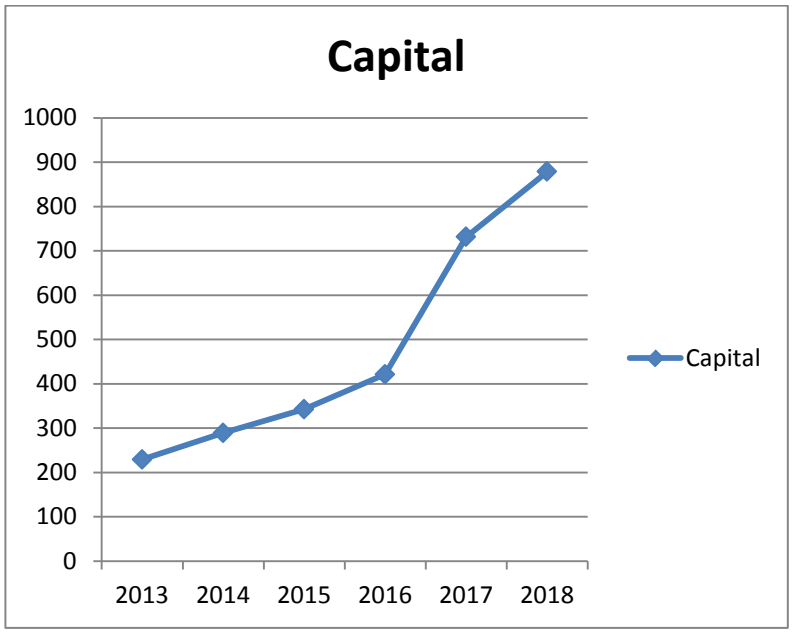
The total asset of commercial banks had been showing a continuous increase in their Total Asset in the years 2013 to 2018.The registered total asset value of all commercial banks was Birr 297,008,069,286 in 2013.This has reached to Birr 914,088,258,000 in the year 2018.Birr 367,216,621,746, Birr 460, 082, 459, 426, Birr 575,212,274,091 and Birr 745,473,889,279 are values for the years from2014 to 2017.

The total asset of Bank of Abyssinia, Awash and Dashen which had been grouped as large size banks Reported to have a total asset worth of Birr 132,676,485,000 in the year 2018.The medium sized banks group has Cooperative bank of oromia, Nib, Wegagen, Birhan, United , Lion International and Oromia as elements has registered a total asset of Birr 164,235,282,000 in the year 2018. Enat , Zemen, Addis International , Abay and Bunna which are Banks in the small size group reported a total asset of Birr 76,896,089,000 in 2018

4.1.2 Total capital of banks

The capital of Ethiopian banks was found to be increasing. From the graph it can be seen that the increase in capital was continuous but not constant. The slop of the line connecting the amount of capital in year 2016 to 2017 is stepper than any other slop depicted in the graph. This shows the percentage of capital increase in this period was high compared to other periods.

Figure 3 Total capital of banks



Source: own computation

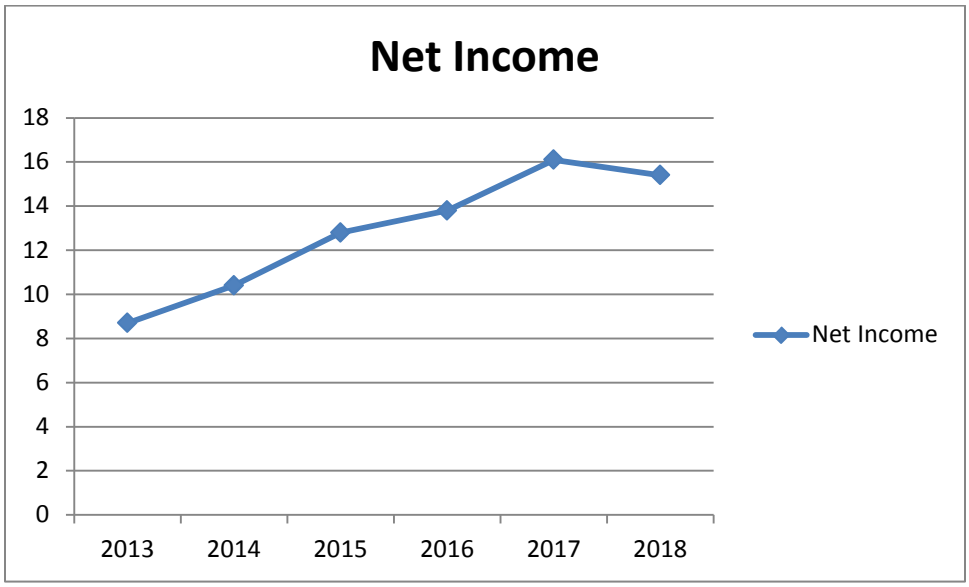
The total capital of commercial banks had been showing a continuous increasing trend in the years 2013 to 2018.The registered total capital of all commercial banks was Birr 22,921,321,556in 2013.This has reached to Birr 87,866,766,860in the year 2018.Birr 28,929,307,433, Birr 34,257,664,669,Birr 42,135,296,886 and Birr 73,139,623,682are values of total capital in the years from2014 to 2017.

The total capital of Bank of Abyssinia, Awash and Dashen which had been grouped as large size banks Reported to have a total capital of Birr 74,203,307,413in the year 2018.The medium sized banks group has Cooperative bank of oromia, Nib, Wegagen, Birhan, United , Lion International and Oromia as elements has registered a total capital of Birr 19,159,832,860

in the year 2018. Enat , Zemen, Addis International , Abay and Bunna which are Banks in the small size group reported a total capital of Birr 7,567,631,000 in the same year.

4.1.3 Net income of banks

Figure 4 Net income trend for Ethiopian commercial banks



Source: own computation

The total income of commercial banks had been showing a continuous increasing trend in the years 2013 to 2017.The total income generated from all commercial banks has declined to Birr 15,433,084,000 in the year 2018 from the preciding amount of Birr 16,143,279,566 in the year 2017.The registered net income of all commercial banks was Birr 8,734,583,662 in 2013.Birr 10,451,224,575, Birr 12,807,819,190and Birr 13,817,780,612are values of commercial banks net income in the years from2014 to 2016.

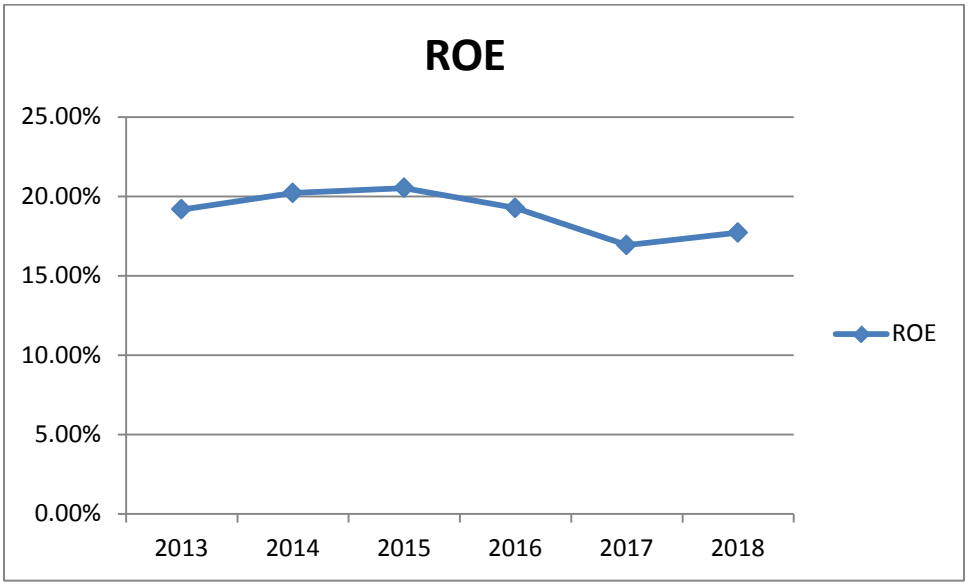
Bank of Abyssinia, Awash and Dashen which had been grouped as large size banks Reported to earn a net income of Birr 2,984,380,000 in the year 2018.The medium sized banks group which has Cooperative bank of oromia, Nib, Wegagen, Birhan, United , Lion International and Oromia as elements had registered a total income of Birr 3,837,021,000in the year 2018. Enat ,

Zemen, Addis International , Abay and Bunna which are Banks in the small size group reported a total net income of Birr 1,175,049,000nin the same year.

4.1.4 ROE of commercial banks

As calculated from the collected data for the years 2013 to 2018 the average yearly return on equity of Ethiopian banks was increasing for the years 2013 to 2015.The scores for the years 2013 and 2014 were 19.17% and 20.21% respectively. Ethiopian banks have registered an average return on equity of 20.52% in the year 2015.This was the highest of all the registered average yearly return on equity results. In the next consecutive years return on equity of Ethiopian commercial banks showed a declining trend. These are 19.26 %, 16.93% and 17.71% average return on equity. The 16.93% return on equity registered in the year 2016 was the smallest of all calculated yearly average returns on equity. The minimum return on equity which is negative 12.64% was registered by Debub Global bank in the year 2013.In the year 2015 commercial bank of Ethiopia has registered the maximum return on equity of 68.28%.

Figure 5 yearly average ROE trend for Ethiopian commercial banks



Source: own computation

Table 2 Average equity and ROE of large, medium and small group of banks

Bank group	Total Asset Value at June 30,2018	Average Equity	Mean ROE
Large	Above 31 Billion Birr	3,199,776,801	20.79%
Medium	Between 14 and 31 Billion Birr	1,722,102,564	18.33%
Small	Less than 14 Billion Birr	809,776,725	14.89%

Source : author computation from financial statements of banks

When the average return on equity and equity are summarized the mean roe for large banks found to be 20.79%.The average equity for this group was calculated to be 3,199,776,801.The highest equity in the observation was 6,495,714,000 and it was registered by Awash bank . The minimum equity reported was 1,110,000,000 by Bank of Abyssinia.18.33% was the mean return on equity calculated for medium size bank group. The average equity for this group was 1,722,102,564 with a maximum of 3,830,000,000and a minimum of 381,548,363.Berhan bank and Wegagen banks registered the minimum and maximum equity for this group.

The average equity for the banks in the small group was 809,776,725.Buna bank recorded a maximum equity of 1,983,419,000 among the observations in the dataset for the smallest bank group. Enat bank equity of 123,678,090 was the least recorded to this group. When the average return on equity for this group was calculated it was found to be 14.89% .The average return on equity of large banks was the highest and that of the medium size banks was the second. The return on equity of small size banks was the lowest. The average return on equity of large banks was 2.46 percent more than that of average return on equity of medium size group of banks. The average return on equity of the largest banks group was 5.9 percent more than registered by small grouped banks.

Table 3 descriptive statistics of variables

Variable	Bank Group	Obs	Mean	Max	Min	Std.Dev.
Return on Equity	Large	18	20.79%	0.2966	0.1326	0.042801
	Medium	42	18.33%	0.3153	0.032	0.049717648
	Small	30	14.89%	0.2024	0.0582	0.037593
Total Asset	Large	18	26,546,162,639	55,268,107,000	10,160,000,000	12,057,919,195
	Medium	42	12,897,165,515	29,888,034,000	2,197,315,312	7,284,654,892
	Small	30	5,638,900,575	14,319,598,000	130,024,754	3,905,047,726

Source: author computation

The above table gives a summary of the descriptive statistics of variables, Return on Equity and Total Asset. The information for the commercial banks was gathered for the years 2013 to 2018.The group of banks identified as large bank group has a total of 18 observations. The mean value of variable return on equity was 20.79% .This bank group has a minimum return equity value of 13.26%.The group maximum return on equity was calculated to be 29.66%. These results can be interpreted as this bank group earned an average 20.79 cents net profit for a single birr invested in bank's equity .This group has on average Birr 26,546,162,639 worth of total asset during the study period. The medium size group average total asset for the study period was calculated to b e Birr 12,897,165,515. This group with 42 observations has an average return on equity of 18.33%.The maximum return that the group got is 31.53 cents net profit for a single birr invested in equity. The minimum was3.2cents for a single Birr invested in equity. The small bank group has got on average 14.89 cents for a single Birr invested in equity. The maximum return equity was 20.24 %.One bank registered 3.76 cents in its equity, this was the minimum return on equity registered in the group. On the average the possession of total asset was calculated to be Birr 5,638,900,575.

4.2. Econometric analysis

The main objective of the study is to assess the Effect of Size on Ethiopian Banks Profitability. Determining the existence of a significant difference between profits of different size banks was a specific aim to work on. T-test on the means of roe of different sized banks was applied to attain this objective. The results are summarized and presented in the following tables. By examining the results we can reject or accept the null hypothesis. This hypothesis was drawn by the intention of showing the non existence of significant difference between the profitability of different sized banks. In order to reject this hypothesis the tests must show the existence of significant mean difference between roe of different sized banks.

4.2.1Classical linear regression model (CLRM) Assumption tests

4.2.1.1Bartlett's Homogeneity test

Homogeneity of variance or homoscedasticity is a test for equal variances among samples from a population. Bartlett's test is a one of the tests to check the homogeneity of variances .From our STATA results the following results were found

Bartlett's test for equal variances: chi2(2) = 2.5684 Prob>chi2 = 0.277

From this result it chi2 squared statistics was found to be 2.56 84 (p>0.277) does not reject the null hypothesis of equal variance at 0.05 significance level.

4.2.1.2Test for absence of Autocorrelation Assumption

This assumes that there is no correlation between error terms. In other words the covariance between them overtime will be zero. (Jeffrey, 2013).

Breusch-Godfrey LM test for autocorrelation

lags(p)	F	df	Prob > F
1	0.862	(1, 85)	0.3557

H0: no serial correlation

The result indicates that null hypothesis of no autocorrelation should not be rejected, since the P – values are in excess of 0.05 .The conclusion is that the null hypothesis of no autocorrelation is not rejected.

4.2.1.3Test for Normality

As Jeffrey (2013) the residuals from a distribution are assumed to be normally distributed .If it is drawn to a histogram it should give a bell shape.

Shapiro-Wilk W test for normal data was used in this study. The null hypothesis is that the distribution of the residuals is normal, here the p value is 0.21 we failed to reject the null at (95%).we conclude then that residuals are normally distributed.

4.2.1.4Test for Multicollinearity

As Jeffrey (2013) there must be no linear dependency between independent variables. Multicollinearity is the existence of exact linear dependency between independent variables. If there is multicollinearity then model estimation of a model will be impractical.

For this research the independent variable is one .There is no need of running the multicollinearity test .

4.2.2 Mean comparison t test

The t-test is a basic statistical method for examining the mean difference between two groups. The test was made between different Size banks by pairing two at a time .The first pair was Large and medium. The other was large and small. The last was medium and small

Table 4 mean comparison for large and medium

Pair one		Mean	N	S. Dev	S. Error	95%Conf.Interval	
	ROE Large	.2078611	18	.0428014	.0100884	.1865765	.2291458
	ROE Medium	.183319	42	.0497176	.0076716	.1678259	.1988122

Pair one	ROE Large& ROE Medium	Combined differences					t	df	P-Value (T > t)
		Mean	Standard Deviation	Standard error	95%Conf.Interval		1.8227	58	0.0368
		.0245421	.0487258	.0062905	.1780945	.2032689			

(STATA2013 output)

Table 5 mean comparison for large and small

Pair Two		Mean	N	S. Dev	S.Error	95%Conf.Interval	
	ROE Large	.2078611	18	.0428014	.0100884	.1865765	.2291458
	ROE Small	.1488767	30	.0375935	.0068636	.134839	.1629143

Pair Two	ROE Large& ROE Small	Combined differences					t	df	P-Value (two tailed)
		Mean	Standard Deviation	Standard error	95%Conf.Interval		4.9962	46	0.0000
		.0589844	.0486561	.0070229	.1568676	.1851241			

STATA2013 output

Table 6 mean comparison for medium and small

Pair Three		Mean	N	S. Dev	S. Error	95%Conf.Interval	
	ROE Medium	.183319	42	.0497176	.0076716	.1678259	.1988122
	ROE Small	.1488767	30	.0375935	.0068636	.134839	.1629143

Pair Three	ROE Medium & ROE Small	Combined differences					t	df	P-Value (two tailed)
		Mean	Standard Deviation	Standard error	95%Conf.Interval		3.1953	70	0.0021
		.0344424	.0479275	.0056483	.1577056	.1802305			

STATA2013 output

The above tables presented a summary of outputs of the two way t-test .As it can be inferred from the tables, all paired means under the test depicted differences .These differences were all significant at 0.05 level. The comparison for medium and small sized banks was calculated to be significant at 0.01 level. Large and small banks mean difference was found to be significant at 0.01 level. A deliberate presentation of the bank group with larger size first helped to observe the sign of the difference. All observed differences from the mean difference test are non negative. This is an assuring signal to support profitability in terms of Roe is higher for banks with large volume of asset.

From the above t- test we learned that there is a significant mean difference among different group of banks.

All the t values are found to be different from Zero, these are 1.8227, 4.9962 and 3.1953 respectively .Based on this we can reject the null hypothesis and accept the alternative hypothesis which support the existence of significant difference between the profitability of different sized banks.

4.2.3 One way ANOVA

A one way ANOVA was used to further investigate the profit among different sized banks. This test can compare means of groups which are greater than two.

Table 7 One way ANOVA

Source	Sum of squares	df	Mean of squares	F	Prob > F
Between groups	. 042542305	2	.021271153	10.67	0.0001
Within groups	.173473745	87	.001993951		
Total	.216016051	89	.002427147		

STATA2013 output

The above table presented a summary of ANOVA test results from STATA. It was run to investigate t the existence of statistical significant difference among the three group means of banks. We can see from the table that the significant level is 0.0001 which is below 0.05.From this we can tell that there exist a statistically significant difference in the mean roe between the three different groups of banks.The result is also significant at 0.01 level. The significant F value of 10.67 tell us that at least one treatment effect differs from Zero.

We reject the null hypothesis of the non existence of mean difference. This conclusion was based on that our F value is 10.67 with a significant value of 0.0001 which is clearly an indication for the existence of a statistical difference in profitability.

4.2.4 Correlation

Correlation analysis for the possible relation among the dependent and independent was run in this research. This was very helpful to support our hypotheses; Bank size significantly affects bank profitability.

Table 8 Correlation between roe and total asset

		ROE	Total Asset
ROE	Correlation	1	
	sig		
	N	90	90
Total Asset	Correlation	0.3092	1
	sig	0.0030	
	N	90	90

From the correlation matrix presented in the table it can be concluded that there exist a significant correlation between profitability and Total asset .The coefficient of correlation is positive and is 0.3092 which is significant at 0.05 level. This result is also significant at 0.01 level.

4.2.5 Regression Model

Our hypothesis is that Bank size significantly affects bank profitability. The first step was to check the existence of relationship between bank size and profitability. From the correlation test we learned that there exist a significant correlation between the dependent and independent variable. To further find the possible cause and effect of correlation simple regression with dummy variables was used. These variables are dummies to represent Large, Medium and Small sized banks. Three models of regression were presented .The first model was a regression ROE on Large and Medium. The second is regression of ROE on Large and Small. The third model is ROE on Medium and Small. One group is used as a control group in each model.

Table 9 Model Regress ROE to Large and Medium

Source	SS	df	MS	Number of obs = 90
Model	.042542305	2	.021271153	F(2, 87) = 10.67
Residual	.173473745	87	.001993951	Prob > F = 0.0001
Total	.216016051	89	.002427147	R-squared = 0.1969
				Adj R-squared = 0.1785
				Root MSE = .04465

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Large	.0589844	.0133132	4.43	0.000	.0325231	.0854458
Medium	.0344424	.0106743	3.23	0.002	.0132261	.0556586
_cons	.1488767	.0081526	18.26	0.000	.1326725	.1650809

STATA2013 output

In this model the results are for large and medium group of banks. The small group of banks was used as a control variable in the model. For large group of banks the impact of size on Roe is

highly significant and positive. For medium size group of banks the impact of assets on profitability is positive significant with a p value of 0.002.

R square in the model summary above tells that 19.69% of change in ROE is caused by Total asset.

Table 10 Model Regress ROE to Large and Small

Source	SS	df	MS	Number of obs = 90
Model	.042542305	2	.021271153	**F(2, 87) = 10.67**
Residual	.173473745	87	.001993951	**Prob > F = 0.0001**
Total	.216016051	89	.002427147	**R-squared = 0.1969**
				Adj R-squared = 0.1785
				Root MSE = .04465

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Large	.0245421	.0125797	1.95	0.054	-.0004615	.0495457
Small	-.0344424	.0106743	-3.23	0.002	-.0556586	-.0132261
_cons	.183319	.0068902	26.61	0.000	.169624	.1970141

STATA2013 output

In this model the results are for large and small group of banks. The medium group of banks was used as a control variable in the model. For large group of banks the impact of size on Roe is insignificant and positive. For small size group of banks the impact of assets on profitability is negative significant with a p value of 0.002.

R square in the model summary above tells that 19.69% of change in ROE is caused by Total asset.

Table 11 Model Regress Roe to Medium and Small

Source	SS	df	MS	Number of obs = 90
Model	.042542305	2	.021271153	**F(2, 87) = 10.67**
Residual	.173473745	87	.001993951	**Prob > F = 0.0001**
Total	.216016051	89	.002427147	**R-squared = 0.1969**
				Adj R-squared = 0.1785
				Root MSE = .04465

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Medium	-.0245421	.0125797	-1.95	0.054	-.0495457	.0004615
Small	-.0589844	0133132	-4.43	0.000	-.0854458	-.0325231
_cons	.2078611	.010525	19.75	0.000	.1869416	.2287806

STATA2013 output

In this model the results are for medium and small group of banks. The large group of banks was used as a control variable in the model. For medium group of banks the impact of size on Roe is insignificant and negative. For small size group of banks the impact of assets on profitability is negative highly significant with a p value of 0.000.

R square in the model summary above tells that 19.69% of change in ROE is caused by Total asset.

Based on the regression result on model one for Large and Medium group of banks the following equation was developed.

$$ROE = 0.149 + 0.034TAM + 0.059TAL$$

The variables for large and medium group of banks in the model are both significant at 0.05 levels. This can show the size of a bank is a significant predictor of its profitability. In the other two models the dummy variable small group is significant at 0.05 level with negative magnitude.

CHAPTER FIVE

Conclusion and Recommendation

5.1 Summery

The focus of this study was effect of bank size on profitability of commercial banks in Ethiopia. All Seventeen commercial banks in Ethiopia which had been operating during the study period were included in the study. The data was collected for the years 2013to 2018**.**Annual Audited financial statement reports of banks were used for data collection .Assessing the effect of size on Ethiopian commercial Banks profitability was the overall objective of this study. The study gave answer to a question raised about the relationship between bank size and profitability. In addition a respond was found to the enquiry made to the existence of significant difference between profitability among different size banks. Bank profitability was the dependent variable and ROE was the proxy used in the study. The independent variable was Bank size and Total Asset was the proxy used. For econometric analysis and descriptive statistics panel data was used. Regression analysis was also used to test the hypothesis. The regression analysis was also important in determining the existed cause and effect between the independent and dependent variables. Tests of auto correlation, normality, and hetroscadeastcity were made based on the assumptions of Classical linear regression model (CLRM).For this the tools used were Breusch-Godfrey LM test for autocorrelation, Shapiro-Wilk W test and Bartlett's Homogeneity test .

The trend in banks capital, total asset, income and return on equity of Ethiopian commercial banks was learned from the descriptive data analysis.The total asset and total capital of commercial banks had been showing a continuous increase in the years 2013 to 2018. The total Net income of commercial banks was increasing in the years 2013 to 2017.It declined in the year 2018. The average yearly return on equity of Ethiopian banks was increasing for the years 2013 to 2015.These scores are 19.17% ,20.21% and 20.52% respectively. 19.26 %, 16.93% and 17.71% are average return on equity scores in the years 2016 to 2018. Debub Global bank in the year 2013 scored negative 12.64% which is the minimum return on equity registered in the study period. The maximum score in return on equity was 68.28% which was registered by commercial

bank of Ethiopia. Grouping of banks was made based on the total asset they possessed at June, 30 2018.The large group holds banks with a total asset estimated above 31 billion. If the value of asset was estimated to be between 14 and 31 billion Birr the bank was grouped as medium. All other banks which had reported an asset value less than 14 billion Birr were grouped as small. The large bank group which has three banks reported a mean return on equity of 20.79%.Its minimum and maximum return on equity were calculated to be 13.26% and 29.66%.The maximum and minimum return on equity for medium group were 31.53 % and 3.2%.The average return on equity for this group was 18.33%.The average return on equity for small group of banks was calculated to be 14.89%.A maximum return on equity of 20.24 % and a minimum return on equity of 3.76% were calculated for this bank group.

The econometric analysis showed the existence of a significant statistical difference in profitability among different bank size. The basic statistical method used for this was t-test. Large and medium, large and small and medium and small are pairs used for the test. The t values are found to be 1.8227, 4.9962 and 3.1953 respectively. These are all significant at 0.05 level. A further investigation on the means of different size group was made using A one way ANOVA. Significant F value of 10.67 was found from this test. This is an indication that at least one treatment effect differs from Zero. The result is significant at 0.01 and 0.05 levels. A possible relation among the dependent and independent variables was investigated by Using Correlation analysis. This showed the existence of significant correlation between profitability and total asset. The coefficient of correlation is 0.3092. This is significant at 0.05 and 0.01 levels. To further find the possible cause and effect of correlation simple regression with dummy variables to represent Large, Medium and Small sized banks was estimated. The first model was developed for large and medium group of banks. The small group of banks was used as a control variable. The impact of size on Roe for the large group of banks was highly significant and positive. For medium size group of banks the impact of assets on profitability is positive significant with a p value of 0.002.This regression model has .1488767 as the value for the intercept .The coefficients.0589844 and .0344424 are estimated to represent slopes of independent variables represented by large and medium group of banks.

Large and small group of banks are used to estimate the second model. The control variable in this model was the medium group of banks. The impact of size on Roe for the large group of banks is insignificant and positive. For small size group of banks the impact of assets on profitability is negative and significant with a p value of 0.002.This regression model has .183319 as the value for the intercept .The coefficients.0245421 and -.0344424 are estimated to represent slopes of independent variables represented by large and small group of banks.

The third model was developed for medium and small group of banks. The large group of banks was used as a control variable. The impact of size on Roe for the medium group of banks was highly insignificant and negative. For small size group of banks the impact of assets on profitability is negative highly significant with a p value of 0.000.This regression model has .2078611 as the value for the intercept .The coefficients-.0245421 and -.0589844 are estimated to represent slopes of independent variables represented by medium and small group of banks. R square in the model summary tells that 19.69% of change in ROE is caused by Total asset.

5.2 Conclusion

The research was made to investigate the effect of size on Ethiopian banks profitability. The data used to test this impact was collected from the years 2013 to 2018. Descriptive and econometrics methods of analysis were used. The descriptive presentation on the profits of banks showed an increasing trend through the period under investigation. In the years from 2013 to 2017the combined profit of Ethiopian commercial banks was increasing. It declined in the year 2018. An increase in total asset possession was another observed development in the operations of Ethiopian commercial banks. The conclusion is the same for the capital of commercial banks. Return on equity of Ethiopian commercial banks had been increasing from the year2013 to 2015.It was decreasing in the years 2016 and 2017. In the year 2018 it showed an improvement compared to its prior year.

By The investigation of the means of the banks roe the research found out that there exist a significant mean difference .This difference between the means evidenced that there exist significant difference between profits of different sized banks. The investigation the correlation

between bank size and profitability showed a positively magnitude effect. The regression analysis showed that size measured by total asset is a predictor of profitability.

5.2. Recommendation

The conclusion of this study was that there exists a significant profit difference between banks with varied sized banks. This variance was concluded to be positively correlated with the bank size determined by total asset the banks possessed. This result clearly showed that decision makers in the banking sector should focus on the relation between profit and bank size. The recommendation of this research is that banks should give priority to incorporate a plan of expansion in their strategy. In doing so their focus should not only be size but how to make resource from this expansion more productive. In applying the results of this research individual banks should investigate their unique feature regarding the relationship between profitability and bank size. This will help them to better apply remedial actions based on this research. They should also identify and prioritize their strategy to those items which determine bank size. They should also set a target of bank size which will be best to enhance their profit generating efficiency. All possible alternatives to the intended expansion must be carefully examined. Bringing the resources of different banks with relatively small size in terms of possible measures of size of bank is one in the list of alternatives .This would help banks with unsatisfactory performance to perform better together .

Recommendation for Future study

Since total asset is a more comprehensive term used to describe different types of assets, it would be crude to recommend any manipulation on this resource. Those items which will contribute positively and significantly should be identified with future research works.

Expansion of banks is supported by this research. Expansion in terms of size must be investigated thoroughly. Expansion in terms of size needs to be explained better. Increasing in size is not expected to contribute positively for every level of asset size. Therefore Ethiopian commercial banks need to encourage researches which investigate the optimal operation size .

REFERENCES

Addisbiz. Ethiopian Banks Profit Latest News.(December,2018) Retrieved January 1,2018,from https://addisbiz.com/business-news/

Akshaya,K.(2017).Factors Affecting Bank Profitability of Commercial Bank of Ethiopia :An Econometric Analysis ,International Journal of Management, IT and Engineering ,Vol.7(8)

Andrew, M.(2014). Internal Determinants Of Bank Profitability In South Africa: Does Bank Efficiency Matter?,International business &Economics Research Journal,Vol.13(5)

Babasaheb , S., Salve, T. & Mulani,M.(2013).Fundamental of Banking: University of Pune for F.Y.B.Com

C.R.Kothari,(2004).Research Methodology Methods and Techniques: New Age International (P) Limited publishers

Elshaday, T.,Kenenisa, D. & Mohammed, S. (2017).Determinant of financial performance of commercial banks in Ethiopia: Special emphasis on private commercial banks, African Journal of Business Management, Vol.(12)1

European Central Bank (2010). Beyond ROE: How to measure bank performance, Appendix to the report on EU banking structures

Faure, AP. (2015).Banking:An introduction,Quoin institute(pty) Limited &bookboon

Hirindu ,K.(2017).The Factors Effecting on Bank Profitability: International Journal of Scientific and Research Publications, Vol. 7

Hirindu,K. & Kushani,P.(2017) .The Factors Effecting on Bank Profitability:International Journal of Scientific and Research Publications,Vol.7(2)

Hope,K.(2017).Bank Capital and Profitability :A Study of Selected Banks in Ghana, European Journal of Business and Innovation,Vol.5,No.3

Jakob ,D.H. & Tigran, P.(2011).Bank Size, Market Concentration and Bank Earnings volatility in the US, DNB Working Paper,NO.282

Jan,S. & Stefan,S.(Eds.).(2017).Large or Small ? How to measure Bank Size, Deutsche Bank Research, EU Monitor Global financial markets

Jeffrey, M.(2013).Introductory Econometrics :A modern Approach : South Western, Cengage Learning

Kenenisa ,L.(2015).The Effect of Bank Size and Ownership on Financial Performance of commercial Banks in Ethiopia, Excel International Journal of Multidisciplinary Management Studies,Vol.5(8)

Kristen, R. & Rajdeep, S.(2016):Has the Relationship between Bank Size and Profitability Changed? Federal Reserve Bank of Kansas City Economic Review • second quarter

Melaku,A.(2016).Determinants of Banks Profitability in Ethiopia: A Case Study of Private Commercial Banks,Research Journal of Finance and Accounting,Vol.7(7)

Moges, E. (2017). The Determinants of Private Commercial Banks Profitability: In The Case of selected Ethiopian Private Banks, International Journal of Economic Behavior and Organization ,(5)1

Mohammad ,S. (2015).The Impact of Bank Size on Profitability: An Empirical Study on listed Jordanian Commercial banks. European Scientific Journal,vol.11(34)

Muhammad, A., Muhammad, Z. & Muhammad, I., (2013). Impact of Banks Size on Profitability: Evidence from Pakistan: International Journal of Applied Research, Vol.2

Nassreddine ,G., Fatma ,S. & Anis,J,(2013): Determinants of Banks Performance: viewing test by cognitive mapping technique (case of Biat), International Journal of Contemporary Economics and Administrative Sciences v.3(1)

National Bank of Ethiopia web site (NBE).(2014).Retrieved January 26,2019,from http://www.nbe.gov.et/aboutus/history.html

Nicholas, W.(2011).Research Methods: The Basics: Routledge : Taylor and Francis Group, an Informa business

Rama, K. & Tekeste, B. (2012). Determinants of Profitability of Commercial Banks In A Developing Country: Evidence from Ethiopia, International Journal of Accounting and Financial Management Research(IJAFMR), Vol. 2(3)

Sehrish,G.,Faiza,I. & Khalid,Z. (2011).Factors affecting Bank Profitability in Pakistan:The Romanian Economic Journal,Vol.14(39)

Shelagh ,H.(2005): Modern Banking, John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester,

Susan,M.(2014).The Analysis of Profitability of Kenya's Top Six commercial Banks: Internal Factor Analysis, American International Journal of Social Science,Vol.3,No.5

Tesfaye, B. (2014).The Determinants of Ethiopian Commercial Banks performance, European Journal of Business and Management ,Vol.(6)14

Velnamy,T. & Nimalathasan, B.(2010).Firm Size on Profitability :A comparative Study of Bank of Ceylon and Commercial Bank of Ceylon Ltd in Srilanka .Global Journal of Management and business Research,vol.10(2)

Appendix

Appendix I: Test for Normality

Shapiro-Wilk W test for normal data

Variable	Observation	W	V	Z	Prob>z
Roe	90	0.98120	1.422	0.776	0.21875

The null hypothesis is that the distribution of the residuals is normal, here the p value is 0.21 we failed to reject the null at (95%).we conclude then that residuals are normally distributed.

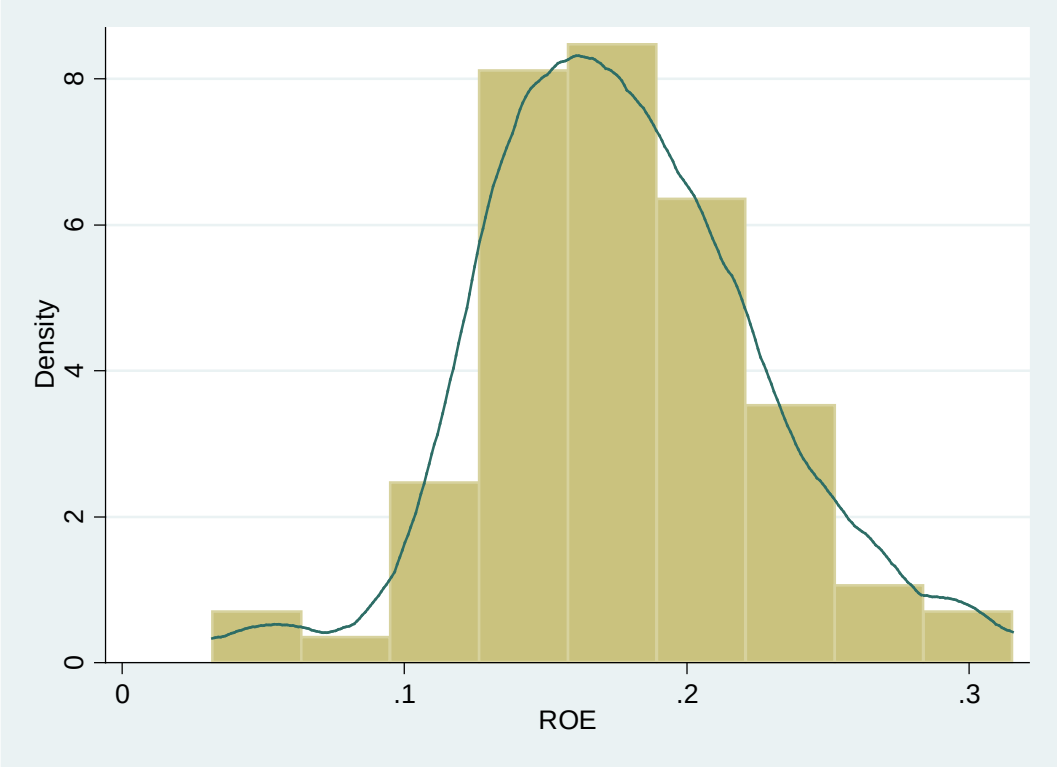


Figure 6 Histogram ROE,kdensity

(bin=9, start=.032, width=.03147778)

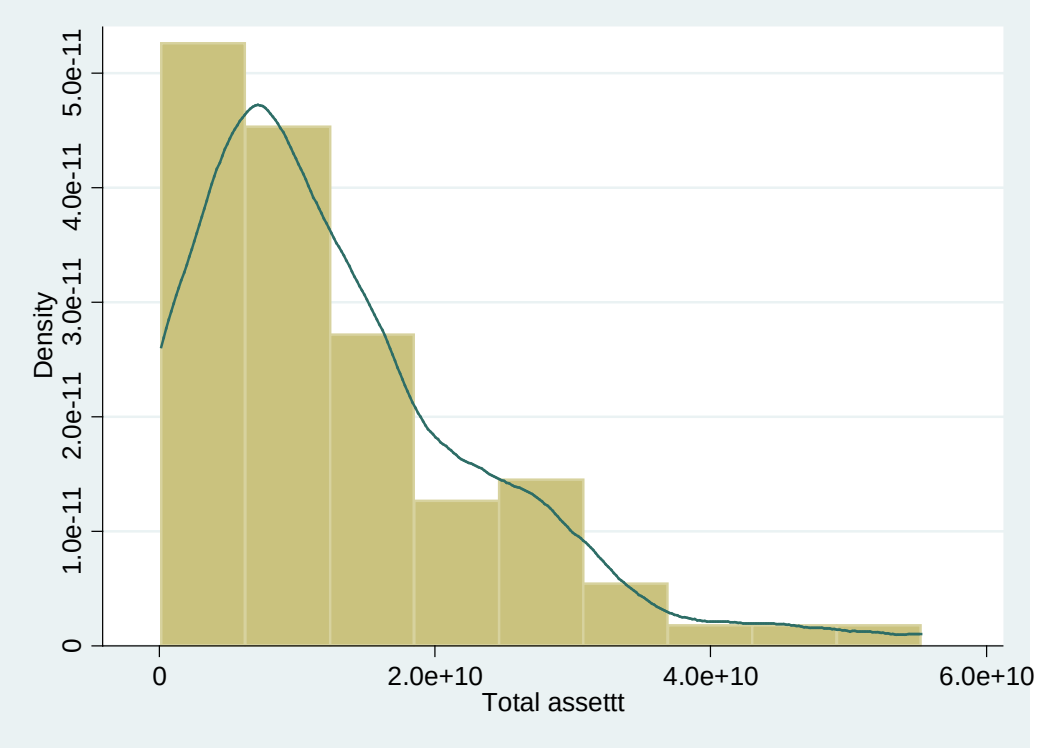


Figure 7 Histogram Total Asset

Appendix II: Housman Test

Housman fixed random

---- Coefficients ----

| (b) (B) (b-B) sqrt(diag(V_b-V_B))

| fixed random Difference S.E.

Totalasset	**-5.57e-13**	**7.20e-13**	**-1.28e-12**	**4.08e-13**

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(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 9.81

Prob>chi2 = 0.0017

0.0017< 0.05 use fixed effect

Appendix III: Breusch-Godfrey Serial Correlation Test

Breusch-Godfrey LM test for autocorrelation

lags(p)	F	df	Prob > F
1	0.862	(1, 85)	0.3557

H0: no serial correlation

Appendix -IVRaw Data

Raw Data

Year	ROE	Total Asset	Total Equity	Net Income
Awash Bank Established(1994)				
2013	0.2123	17,783,926,000	2,066,218,968	438,608,637
2014	0.2381	22,106,346,000	2,596,942,946	618,267,020
2015	0.2026	25,210,501,000	3,185,025,284	645,337,629
2016	0.189	31,147,684,000	3,934,354,124	743,765,868
2017	0.2085	41,974,865,000	4,809,338,284	1,002,939,134
2018	0.2298	55,268,107,000	6,495,714,000	1,492,426,000
Dashen Bank Established(1995)				
2013	0.2966	19,747,174,767	2,045,698,696	606,756,384
2014	0.2743	21,962,202,063	2,597,625,196	712,484,276
2015	0.2494	24,763,885,516	2,923,893,980	729,133,970
2016	0.2165	28,576,433,848	3,357,826,341	727,049,906
2017	0.1894	34,624,602,052	3,992,984,139	756,103,732
2018	0.1583	45,425,378,000	5,866,611,000	928,954,000

	Bank of Abyssinia Established(1996)			
2013	0.2459	10,160,000,000	1,110,000,000	273,000,000
2014	0.1882	11,276,391,264	1,528,960,000	287,806,706
2015	0.1495	13,667,558,000	1,810,550,000	270,711,362
2016	0.1764	16,828,069,000	2,124,425,510	374,781,181
2017	0.1841	25,324,804,000	2,904,813,945	534,729,199
2018	0.1326	31,983,000,000	4,245,000,000	563,000,000
	Wegagen Bank Established(1997)			
2013	0.1889	10,400,000,000	1,800,000,000	340,100,000
2014	**0.1484**	11,500,000,000	2,140,000,000	317,470,000
2015	0.1462	13,700,000,000	2,410,000,000	352,400,000
2016	0.1339	16,189,764,130	2,805,773,614	375,617,514
2017	0.1586	20,949,168,439	3,355,787,368	532,162,590
2018	0.208	27,400,000,000	3,830,000,000	796,500,000
	United Bank Established(1998)			
2013	0.2347	9,985,996,951	1,201,148,139	281,959,149
2014	0.1766	11,876,368,588	1,575,271,739	278,170,018
2015	0.1668	14,360,871,959	1,686,239,671	281,319,314
2016	0.1636	17,269,872,962	2,072,489,331	339,015,308
2017	0.1517	21,902,917,609	2,515,639,934	381,715,309
2018	0.1942	28,030,918,000	2,953,813,000	573,634,000
	Nib International Bank Established(1991)			
2013	0.1718	9,144,543,615	1,665,929,319	286,267,552
2014	0.1597	10,747,283,267	1,964,357,028	313,768,037
2015	0.1548	13,256,124,481	2,177,304,084	377,072,879
2016	0.1417	15,830,321,762	2,517,955,877	356,678,952
2017	0.1748	21,019,709,062	2,954,061,908	516,443,380
2018	0.1512	26,700,000,000	3,400,000,000	514,000,000
	Oromia International Bank Established(2008)			
2013	0.1415	3,911,231,433	547,603,345	77,494,495

2014	0.2048	6,151,660,507	748,521,384	153,296,020
2015	0.2234	9,534,850,080	992,923,465	221,796,710
2016	0.1884	11,281,588,879	1,317,818,628	248,316,900
2017	0.1742	16,292,906,921	1,665,658,622	290,203,754
2018	0.2808	23,796,732,000	2,591,446,000	727,705,000
	Lion International Bank Established(2006)			
2013	0.2054	2,942,432,757	541,945,285	111,296,106
2014	0.1538	3,613,339,108	627,819,964	96,580,249
2015	0.2442	5,859,362,240	822,121,673	200,761,387
2016	0.2445	8,119,231,644	1,069,859,572	261,541,328
2017	0.1853	10,975,928,809	1,448,883,791	268,457,606
2018	0.216	14,319,598,000	1,808,872,860	390,766,000
	Birhan International Bank Established(2009)			
2013	0.137	2,197,315,312	381,548,363	52,289,353
2014	0.1611	2,814,260,901	554,442,136	89,293,584
2015	0.1438	4,171,944,423	726,801,823	104,549,682
2016	0.2454	7,196,302,723	1,060,237,369	260,194,327
2017	0.1849	10,488,873,242	1,885,056,375	348,619,148
2018	0.1414	14,100,000,000	2,200,000,000	311,000,000
	Cooperative Bank of Oromia Established(2004)			
2013	0.2719	6,537,470,275	695,991,486	189,261,573
2014	0.3153	7,350,371,854	1,090,376,174	343,798,158
2015	0.2214	11,462,067,034	1,410,910,719	312,438,110
2016	0.032	10,687,348,107	1,220,946,535	39,116,730
2017	0.137	17,724,240,571	1,517,050,113	207,820,614
2018	0.2203	29,888,034,000	2,375,701,000	523,416,000
	Abay Bank Established(2010)			
2013	0.1125	1,951,000,000	338,008,171	38,034,297
2014	0.1274	3,199,000,000	452,138,831	57,596,367
2015	0.1752	4,582,000,000	715,975,573	125,450,996
2016	0.1525	6,187,000,000	960,526,649	146,505,042
2017	0.1429	8,624,000,000	1,328,173,199	189,793,720
2018	0.1758	12,325,000,000	1,803,479,000	316,985,000

	Addis International Bank Established(2011)			
2013	0.1209	916,200,000	225,000,039	27,203,348
2014	0.1416	1,262,722,000	315,457,297	44,654,810
2015	0.1318	1,714,970,000	445,065,702	58,660,063
2016	0.1341	2,462,189,000	636,452,039	85,355,634
2017	0.1218	3,414,604,000	757,603,743	92,254,680
2018	0.1259	4,209,059,000	897,058,000	112,905,000
	Bunna International Bank Established(2009)			
2013	0.1589	2,128,453,819	372,502,857	59,186,701
2014	0.1547	3,011,945,779	516,764,127	79,953,484
2015	0.1985	4,499,695,787	677,718,845	134,503,018
2016	0.1947	6,820,959,469	960,547,622	187,046,906
2017	0.1744	9,839,932,000	1,358,216,000	236,833,000
2018	0.1589	13,021,152,000	1,983,419,000	315,263,000
	Enat Bank Established(2012)			
2013	0.0582	130,024,754	123,678,090	7,193,676
2014	0.074	1,417,349,356	289,896,365	21,581,029
2015	0.1194	2,209,448,595	444,678,756	53,113,902
2016	0.1185	3,248,190,666	666,495,497	78,977,767
2017	0.1098	4,848,281,087	908,830,400	99,790,705
2018	0.1339	6,482,374,000	1,186,892,000	158,875,000
	Zemen Bank Established(2008)			
2013	0.1908	3,248,479,460	493,486,627	94,145,946
2014	0.1954	3,924,769,457	657,011,545	128,405,487
2015	0.2004	4,874,340,646	764,856,914	153,275,484
2016	0.2024	7,374,131,617	1,002,020,972	202,765,311
2017	0.2013	9,669,056,487	1,314,564,886	264,573,040
2018	0.1597	12,438,906,000	1,696,783,000	271,021,000