Determinants of Bank Profitability: An Empirical Study on Ethiopian Private Commercial Banks

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This is to certify that the thesis prepared by Habtamu Negussie, entitled: *Determinants of Banks Profitability: An Empirical Study on Ethiopian Private Commercial Banks* and submitted in partial fulfillment of the requirements for the degree of Degree of Master of Arts (Business Administration in Finance) complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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ABSTRACT

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The purpose of this study is to investigate determinants of private commercial banks profitability in Ethiopia by using panel data of seven private commercial banks from year 2002 to 2011. The study used quantitative research approach and secondary financial data are analyzed by using multiple linear regressions models for the three bank profitability measures; Return on Asset (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). Fixed effect regression model was applied to investigate the impact of capital adequacy, asset quality, managerial efficiency, liquidly, bank size, and real GDP growth rate on major bank profitability measures i.e., (ROA), (ROE), and (NIM) separately. Beside this the study used primary data analysis to solicit mangers perception towards the determinants of private commercial banks profitability. The empirical results shows that bank specific factors; capital adequacy, managerial efficiency, bank size and macro-economic factors; level of GDP, and regulation have a strong influence on the profitability of private commercial banks in Ethiopia. Thus, management bodies of private commercial bank should strive to strengthen the identified significant factors and government bodies should also see the adverse effect of tight polices imposed on the existing private banks as well as for the new entrants.

Key words: profitability, commercial banks

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List of acronyms

ASQ	Asset Quality
BJ	Bera-Jarque
CAMEL	Capital adequacy, Asset quality, Management quality, Earning quality, Liquidity
CAP	Capital Adequacy
CLRM	Classical Linear Regression Model
DW	Durbin-Watson
GDP	Gross Domestic Product
LAS	Natural logarithm of total asset
LIQ	Liquidity
MGE	Managerial Efficiency
NBE	National Bank of Ethiopia
NIM	Net Interest Margin
NPL	Non Performing Loans
RGD	Real GDP growth rate
ROA	Return on Asset
ROE	Return on Equity

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Banks profitability is given due attention after the great economic depression is experienced in the United States of America in 1940s. Due to United State sub-prime mortgage crisis that happened recently in 2007-2009, the banking sectors of many countries suffer huge losses, especially United State of America and European Union countries. The poor performance of the banking industry has slowed down the United State of America economy and also the growth of global economy until current period. In Asia, although the losses in banking sectors are not as serious as U.S., it is also hurting the economy. If the banking industry does not perform well, the effect to the economy could be huge and broad. Because, banks are the critical part of financial system, play a pivotal role in contributing to a country's economic development (Rasidah and Mohd 2011).

The recent global financial crisis of 2007-2009 also demonstrated the significance of bank profitability both in national and international economies and the need to keep it under surveillance at all times. However, there is general agreement that bank profitability is a function of internal and external factors. The internal determinants refers to the factors originate from bank accounts (balance sheets and/or profit and loss accounts) and therefore could be termed micro or bank specific determinants of profitability (Tobias and Themba 2011).

The external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and profitability

of banks. Athanasoglou *et al.* (2006) stated that the importance of banks is more pronounced in developing countries because financial markets are usually underdeveloped, and banks are typically the only major source of finance for the majority of firms and are usually the main depository of economic savings. Thus, this study focused on the determinants profitability of private commercial banks in Ethiopia.

1.2. Statement of the problem

The empirical evidence suggests that banks have higher profits and margins in underdeveloped financial systems. Asll and Harry (2000) stated that once we control for the level of financial development, and financial structure i.e. the relative development of banks versus markets, does not have an independent effect on bank profitability or margins. In developed financial systems, bank profits and margins are indeed not statistically different across bank-based systems and market-based systems. Greater bank development lowers bank profits and margins. Underdeveloped banking markets tend to be rife with resource-costly. Inefficiencies and less-than-competitive pricing behavior, as also suggested by their relatively high profitability and net interest margins. Thus, greater bank development brings about tougher competition, higher efficiency and lower profits.

Commercial banks are the most dominant financial institutions in Ethiopia. The private sectors involvement started after Monetary and Banking proclamation No.83/1994. The access capital banking sector review for the 2010 fiscal year shows: the Ethiopian private commercial banking industry enjoyed high growth, high profits, and high dividends. Even in the midst of a challenging environment, all key areas of

banking operations; collecting deposits, providing loans, and foreign exchange dealing; showed growth of more than 20 percent. Profits were up 45 percent and shareholders (at banks open for more than a year) received an average return of 27 percent on their investments. Overall deposits collected by private banks rose by more than Birr 8 billion in a single year, from Birr 29.9 billion in June 2009 to 38.3 billion in June 2010. This represents a growth rate of 28 percent, which is not much lower than the average annual deposit growth seen in the past five years (31 percent).

The aforementioned facts gives a clue to the Ethiopian private commercial banks growth in profits is due to underdeveloped nature of the sector. Therefore, this growth may not continue when the finance sector become highly developed and the competition become tough, so investigation of the key determinants factors that influence the profitability of banks is vital. According to the access capital review of 2010 commercial banks will surely be challenged by the entry of six new banks (Abay, Enat, Hawassa, Debub Global, Noah, Zam-Zam), But none of these developments represents a serious blow to the prospects of the existing private banks in their view. Indeed, given still huge and still largely unmet financial intermediation needs in Ethiopia. Therefore, investigation of the major determinants of banks profitability is essential for the new entrants and for the existing banks.

The main purpose of this study was to analyze the financial data of Ethiopian private commercial banks for the fiscal year from 2002 to 2011 in order to investigate the determinants of bank profitability. In addition, to examine the relationship among measures such as capital adequacy, asset quality, managerial efficiency, liquidity, bank size, level of GDP and to discuss their impact on banks profitability which measured by Return on Asset (ROA), Return on Equity (ROE), and Net Interest

Margin (NIM). Beside this, private commercial bank managers are solicited to rank the determinants of profitability of private banks. Regression analysis was used to quantitatively examine the determinants of profitability of private commercial banks in Ethiopia.

1.3. Objectives of the study

1.3.1. General objective of the study

The main objective of this study is to investigate the determinants of private commercial banks profitability in Ethiopia.

1.3.2. Specific objective of the study

Specifically, this study addresses the following objectives;

- To determine the impact of capital adequacy on the profitability of private commercial bank.
- To examine the significance of asset quality on private commercial banks profitability
- To explore the impact of managerial efficiency on private commercial banks profitability
- To investigate how liquidity influence the profitability of private commercial banks.
- To explore the effect of bank size and level of GDP on the profitability of private commercial banks

1.4. Hypotheses of the study

In many quantitative proposals, writers use research questions. However, a more formal statement of research employs hypotheses. These hypotheses are predictions about the outcome of the results, and they may be written as alternative hypotheses specifying the exact results to be expected (more or less, higher or lower of something). They also may be stated in the null form, indicating no expected difference or no relationship between groups on a dependent variable as stated by (Creswell 2009). Therefore, the study were developed the following hypotheses:

- Hypotheses 1: profitability is positively correlated with capital adequacy of banks
- Hypotheses 2: asset quality of the bank has a positive relationship with profitability of the bank.
- Hypotheses 3: there is a positive relationship between managerial efficiency and banks profitability
- Hypotheses 4: liquidity and profitability of banks are positively correlated
- Hypotheses 5: bank profitability is positively correlated with bank size
- Hypotheses 6: real GDP growth is positively correlated with the profitability of banks.

1.5. Scope and limitation of the study

This study is confined only to know the key determinants of profitability of selected Ethiopian private commercial banks by analyzing the financial statements start from 2002 to 2011 fiscal year. The study comprised all private commercial banks which started their operation before 2005. As a result, out of the fourteen private commercial banks, seven private commercial banks; Abyssinia, Awash, Dashen, Nib International

Bank, United, Cooperative Bank of Oromia and Wegagen bank were selected under this study. All sampled banks are operated for more than decades and the study used ten years data except for Cooperative Bank of Oromia. The first limitation of the study is State owned banks are not considered. Therefore, the study does not reflect the overall picture of profitability of the banking industry in Ethiopia. Secondly, in relation to primary data analysis, the number of respondents included in the sample may not representative.

1.6. Significance of the study

The banking industry is crucial source of financing different business segments that is operated in a given country. Due to these facts, this study will help the banks to;

- Identify the determinants of profitability by examining the findings and recommendations.
- The study will also initiate other bank service providers to give due emphasis on the management of identified variables.
- Finally, the study will provides bank managers with understandings of activities that would enhance their banks profitability.

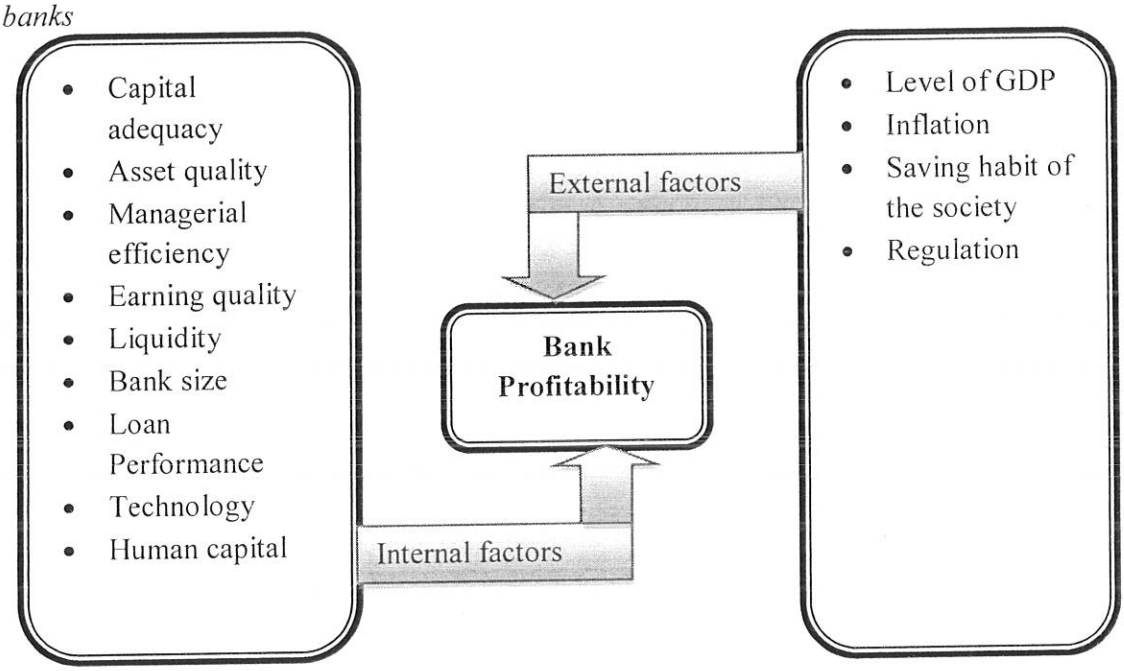
Furthermore, other interested researchers may take this study as a base for detailed and further studies.

1.7. Conceptual framework

Different empirical evidences suggested that profitability of financial institutions specifically banks is affected by internal and external factors. This study used both internal and external determinants of bank profitability includes capital adequacy, asset quality, managerial efficiency, earning ability, liquidity, bank size, technology, human capital, loan performance, saving habit of the society, level of GDP, inflation

and government regulation. The study has seen how these variables are determined the profitability of private commercial banks in Ethiopia.

Figure 1 shows the linkage of internal and external factors on the profitability of banks



Source: self-extracted

1.8. Operational definitions

- Profitability refers to measuring the results of a firm's policies and operations in monetary terms. These results are reflected in the firm's return on asset, return on equity, and net interest margin.
- Return on asset: Bank profitability was measured by the ratio of the return on average assets (ROA), calculated as net profit after tax divided by average total assets.
- Return on equity: ROA is more concerned about how much the bank is earning on their equity investment, the net income per birr of equity capital.

- Net interest margin: How well a bank's assets and liabilities are affected by the spread between the interest earned on the bank's assets and interest costs on its liabilities.

1.9. Organization of the paper

The rest of this paper is organized as follows: Chapter two presents empirical and theoretical review of the literature related to the issue of determinants of bank profitability; Chapter three provides research design and methodology employed in the analysis was described; Chapter four contains results and discussion; and Chapter five gives summary, conclusion and recommendations. A "Reference" of related literature is referred while writing the paper and appendices are included after chapter five.

CHAPTER TWO

2. LITERATURE REVIEW

Under this chapter the theoretical and empirical evidences focusing on the determinants of private commercial bank profitability are presented. Accordingly, the first section, 2.1 presents overview of the banking system in Ethiopia. The second section 2.2 present review of earlier studies on Ethiopian banking industry. Finally, in section 2.3 reveals the internal and external determinants of banks profitability.

2.1. Overview of the banking system in Ethiopia

Traditional financial system in Ethiopia has long history and paramount contribution to economic betterment and social wellbeing of the society. Traditional institutions organized with a sense of cooperation and risk sharing has enabled Ethiopians to experience saving and financial management within its cultural context. Eqqub and Edir are some of the informal financial institutions that shaped the social bond and interaction (Gebeyaw Aychile 2008).

Modern banking in Ethiopia was introduced after the agreement that was reached in 1905 between Emperor Minilik II and Mr.Ma Gillivray, representative of the British owned National Bank of Egypt. Following the agreement, the first bank called Bank of Abysinia was inaugurated in Feb.16, 1906 by the Emperor. Within the first fifteen years of its operation, Bank of Abysinia opened branches in different areas of the country in Harar (Eastern Ethiopia), Dire Dawa, Dessie and Djibouti. By 1931 Bank of Abyssinia legally replaced by Bank of Ethiopia shortly after Emperor Haile Selassie came to power.

The new Bank, Bank of Ethiopia, was a purely Ethiopian institution, was the first indigenous bank in Africa, and established by an official decree on August 29, 1931 with capital of £750,000. In 1941, another foreign bank, Barclays Bank, came to Ethiopia with the British troops and organized banking services in Addis Ababa, until its withdrawal in 1943. Then on 15 April 1943, the State Bank of Ethiopia commenced full operation after 8 months of preparatory activities. In 1945 and 1949, the Bank was granted the sole right of issuing currency and deal in foreign currency. The Bank also functioned as the principal commercial bank in the country and engaged in all commercial banking activities.

The National Bank of Ethiopia with more power and duties started its operation in January 1964. Following the incorporation as a share company on December 16, 1963 as per proclamation No.207/1955 of October 1963, Commercial Bank of Ethiopia took over the commercial banking activities of the former State Bank of Ethiopia. It started operation on January 1, 1964 with a capital of Eth. Birr 20 million. In the new Commercial Bank of Ethiopia, in contrast with the former State Bank of Ethiopia, all employees were Ethiopians.

There were two other banks in operation namely Banco di Roma S. and Banko di Napoli S.C. that later reapplied for license according to the new proclamation each having a paid up capital of Eth. Birr 2 million. The first privately owned bank, Addis Ababa Bank Share Company, was established on Ethiopians initiative and started operation in 1964 with a capital of 2 million in association with National and Grindlay Bank, London which had 40 percent of the total share. In 1968, the original capital of the Bank rose to 5.0 million and until it ceased operation, it had 300 staff at 26 branches.

There were other financial institutions operating in the country like:

- Imperial Savings and Home Ownership public Association, which specialized in providing loans for the construction of residential houses and to individuals under the guarantee of their savings.
- Saving and Mortgage Corporation of Ethiopia whose aims and duties were to accept savings and trust deposits account and provide loans for the construction, repair and improvement of residential houses, commercial and industrial buildings and carry out all activities related to mortgage operations.
- Agricultural Bank that provides loan for the agricultural and other relevant projects established in 1945. But in 1951 the Investment Bank of Ethiopia replaced it. In 1965, the name of the bank once again hanged to Ethiopian Investment Corporation Share Company and the capital rose to Eth. Birr 20 million, which was fully paid up.

Following the declaration of socialism in 1974, the government extended its control over the whole economy and nationalized all large corporations. Organizational setups were taken in order to create stronger institutions by merging those that perform similar functions. Accordingly, the three private owned banks, Addis Ababa Bank, Banco di Roma and Banco di Napoli Merged in 1976 to form the second largest Bank in Ethiopia called Addis Bank with a capital of Eth. birr 20 million and had a staff of 480 and 34 branches. Then Addis Bank and Commercial Bank of Ethiopia S.C were merged by proclamation No.184 of August 2, 1980 to form the sole commercial bank in the country until the establishment of private commercial banks in 1994.

The Savings and Mortgage Corporation S.C. and Imperial Saving and Home Ownership Public Association were also merged to form the Housing and Saving Bank with working capital of Birr 6.0 million and all rights, privileges, assets and liabilities were transferred by proclamation No.60, 1975 to the new bank. The financial sector that the socialist oriented government left behind constituted only three banks and each enjoying monopoly in its respective market, the following was the structure of the sector at the end of the era: the National Bank of Ethiopia (NBE), the Commercial Bank of Ethiopia, and Agricultural and Industrial Development Bank.

Following the demise of the Dergue regime in 1991 that ruled the country for 17 years under the rule of command economy, the Ethiopian People's Revolutionary Democratic Front declared a liberal economy system. In line with this, Monetary and Banking proclamation of 1994 established the national bank of Ethiopia as a judicial entity, separated from the government and outlined its main function. Monetary and Banking proclamation No.83/1994 and the Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for investment in the banking sector. Currently private commercial banks in Ethiopia reached to fourteen as shown in the table 2.1 below. In April 2012 Debub Global Bank get license from the national banks of Ethiopia and they plan to start operation in July 2012.

Table 2.1 List of private commercial banks in Ethiopia

No	Private Commercial Bank	Establishment Year
1	Awash International Bank	1994
2	Dashen Bank	1995
3	Abyssinia Bank	1996
4	Wegagen Bank	1997
5	United Bank	1998
6	Nib International Bank	1999
7	Cooperative Bank of Oromia	2004
8	Lion International Bank	2006
9	Oromia International Bank	2008
10	Zemen Bank	2008
11	Bunna International Bank	2009
12	Birhan International Bank	2009
13	Abay Bank	2010
14	Addis International Bank	2011

Source: www.nbe.gov.et

2.2. Earlier studies on Ethiopian banking industry

Most literatures are used banks specific, industry specific, and macro economic factors as a determinant of banks profitability. Empirical evidence which included in this study are determinants of commercial banks profitability: an empirical review of Ethiopian commercial banks by Belayneh (2011), the financial performance of the Ethiopian commercial banks by Habtamu (2004), and Abebaw and Depaack (2011): What drives the performance of commercial banks in Ethiopia?.

The first paper was undertaken to see the three major determinants of commercial banks profitability; bank specific factors, industry specific determinants and

macroeconomic variables. With regard to banks specific factors such as, equity capital Belayneh (2011), pointed out Ethiopian commercial banks that increase their equity have a lower cost of capital and thus are more profitable. Bank size, loan, and non-interest income of Ethiopian commercial banks are also positive and highly significant factors of profitability. Credit risk is the main significant factor, which challenges the profitability of banks in Ethiopia. Fixed deposit and non-interest expenses are also the major causes that hinder Ethiopian banks profitability.

In relation to industry specific factors, he used market concentration as the only industry specific determinants for Ethiopian commercial banks. He stated that market concentration has a negative and highly significant impact on Ethiopian banks profitability. He used Hefindihal Hirchman index and the result shows that a better competition in the market and erodes the price making power of a single bank (Commercial Bank of Ethiopia) and in turn reduces the banking sector profitability.

Finally concerning with the macroeconomic variables Belayneh (2011), said that the only significant factor of Ethiopian commercial banks profitability is real GDP growth. According to the author, the current real economic growth of the country makes commercial banks to be more profitable. Contrary, inflation rate and lending interest rate played insignificant role in Ethiopian commercial banks profitability.

The second paper was done on the financial performance of commercial banks in Ethiopia. According to Habtamu (2004), the profitability status of commercial banks, tested by the profitability ratios, evidenced that the banks are operating at profit. Particularly, the efficiency of the private banks is by far better than the government owned bank, Commercial Bank of Ethiopia. Besides their performance, he stated that

a competition in the banking sector was started when private banks enter in to the market. The private banks become more competitive as evidenced by a larger share they gain in the deposits.

The prevalence of competition in commercial banks in Ethiopia is also evidenced when the commercial bank of Ethiopia, the 60 years old, lost its share in total assets possession and its share in total deposits concentration. However, the form of competition was initially on non-price (service) that means providing better services and followed by limited price competition when national bank of Ethiopia sets only the ceiling and floor for interest rate. In Habtamu (2004) recommendations, he stated that both price and non-price competition in the banking system should be strengthened.

The third paper by Abebaw and Depaack (2011) was also investigate the impact of bank-specific characteristics, macroeconomic conditions and financial market structure on Ethiopian commercial banks' profits, measured by return on average assets (ROA). A balanced panel data set of 62 observations, covering the period 2001-2008, provided the basis for the econometric analysis. The results under this study show that capital strength, represented by the equity to assets ratio, bank intermediation ratio represented by banks loans to total assets and bank size represented by assets, are the main determinants of Ethiopian banks profits.

With regard to Size measures, Abebaw and Depaack (2011) size of bank has a positive effect on profitability supporting the economies of scale argument. The impact of overhead to net interest income and nonperforming loan ratios are negative and significant. When he assesses the external factors, they have a relatively small

impact on the profitability of Ethiopian banks. He concluded that none of these measures was significant. Thus, overhead, capital strength and bank intermediation and size measures are important determinants of bank profits in Ethiopia. This shows that the key for success in profit for banks rely on individual bank characteristics implying proper management of activities by individual banks is indispensable to be profitable.

2.3. Determinants of banks profitability

Different empirical evidences suggested that profitability of financial institutions specifically banks are affected by internal and external factors. Andreas and Gabrielle (2009) stated that Bank profitability is usually measured by the return on average assets and is expressed as a function of internal and external determinants. The internal determinants include bank-specific variables. The external variables reflect environmental variables that are expect to affect the profitability of banks.

Internal factors such as capital adequacy ratio, asset size, asset quality, net-worth, liquidity, earnings quality, loan performance, business risk, management quality, people, technology and operating environment are major determinant that are used to analyzed the determinants of bank profitability. An external macroeconomic and industry-specific factor includes Effective tax rate, Real GDP growth, inflation, regulation and Bank concentration.

2.3.1. Internal determinants of bank profitability

Under this section theoretical and empirical evidences about the internal determinants of bank profitability are discussed. The theoretical and empirical literatures of major internal determinants of profitability of bank; capital adequacy, asset quality, and managerial efficiency, earning quality, liquidity, technology, human capital and loan performance are presented in this section.

I. Capital adequacy

Capital adequacy is a measure of a bank's financial strength, in terms of its ability to withstand operational and abnormal losses. Further considering the regulatory requirement on the minimum capital required to be maintained by banks, capital adequacy also indicates the ability of bank to undertake additional business. Indranarain (2009), Imad et al. (2011) and Berger (1995) stated that banks with high capital ratio tend to earn more profit through translating the safety advantage into profit. The size of capital provides financial flexibility for bank and financial institution. It identifies which financing options are available for the entity. The size of capital also influences the profitability of the bank in terms of return on assets, return on capital employed and return on shareholders' fund considering the funding mix (Financial Management and Analysis of Projects, 2006).

According to Abebaw and Depaack (2011) capital strength have a positive and dominant influence on profitability of commercial banks in Ethiopia. A bank should have adequate capital to support its risk assets in accordance with the risk-weighted capital ratio framework. It has become recognizes that capital adequacy more

appropriately relates to asset structure than to the volume of liabilities. This is exemplified by central banks' efforts internationally to unify the capital requirements of commercial banks and to generate worldwide classification formulae (Brickwork ratings 2008).

II. Asset quality

The asset quality is measure an ability to manage credit risk for a bank or financial institution. The asset quality reflects the composition and productivity of the assets. Thus, asset quality has a direct impact on the profitability of a bank. As per Yuqi (2006), in terms of risk poor asset quality is the major cause for banks poor profitability. It is evaluated by understanding the performance of assets category wise and estimating future performance factoring in the likely distribution of the assets in future. The bank's experience of loan loss, provisions/ write off, loan recovery rate, ability to reduce nonperforming assets and extent of weak assets are analyzed in this regard (Financial Management and Analysis of Projects 2006).

Many empirical evidences stated that asset quality has direct impact on the profitability of banks. The quality of assets particularly, loan assets and investments, would depend largely on the risk management system of the bank. The value of loan assets would depend on the realizable value of the collateral while investment assets would depend on the market value. Abebaw and Depaack (2011) used ratio of Nonperforming assets (loans) to total loans and advances (NPL) as an indicator of banks' asset quality. They stated that the amount of nonperforming assets has a direct implication in the profitability of the bank, that is if the proportion of the non performing assets in relation to total loans increase the profitability will be decreased

and vice versa. According to access capital research (2010), in recent years, non-performing loans (a key measure of lending practices) have improved substantially and now average only about 5 percent of total loans. Bank loans are expected to be the main source of income and are expected to have a positive impact on bank profitability.

III. Management quality

The performance of the other four CAMEL components will depend on the vision, capability, agility, professionalism, integrity, and competence of the Financial Institution's management. A sound management is crucial for the success of any institution; management quality is generally accorded greater weighting in the assessment of the overall CAMEL composite rating (brickwork rating 2008). The quality of the management will determine the success of a bank or financial institution. The performance of a bank is largely dependent on the vision, competence, and integrity and risk appetite of the management (Financial Management and Analysis of Projects 2006).

The ratios of operating expenses to operating income and operating expenses to total assets are commonly used to measure Managerial efficiency of the banks. Indranarain (2009), Bourke (1989) and Molyneux and Thornton (1992) stated that Higher the efficiency level of a bank, higher its profits level. Hence a positive relationship is expected between efficiency and profitability of banks. The analysis of the quality of a management is based on the experience of the management and their track record in terms of their vision and competence in running the bank.

The analysis of the management also factors in their integrity and the overall corporate governance standards in the bank. The risk appetite in terms of the of the bank's exposure to various categories of asset, adoption of technology and responsiveness to competition and growth strategy impacts the bank's profitability thus is considered during the analysis of bank profitability (Brickwork ratings 2008). Although, the relationship between expenditure and profits appears straightforward implying that higher expenses mean lower profits and the opposite, this may not always be the case. The reason is that higher amounts of expenses may be associated with higher volume of banking activities and therefore higher revenues (Tobias and Themba 2011).

IV. Earning quality

The quality and trend of earnings of a bank depend largely on how well the management manages the assets and liabilities of the bank. A bank must earn reasonable profit to support asset growth, build up adequate reserves and enhance shareholders' value. Good earnings performance would inspire the confidence of depositors, investors, creditors, and the public at large (Financial Management and Analysis of Projects 2006).

The quality of earnings of a bank determines the ability of the entity to meet debt obligations, the rate of growth of assets, reserves and ultimately the shareholders' value. The quality of earning coupled with the costs impacts the profitability. The quality of earning is also affected by the extent of asset liability mismatch and the resultant volatility in earnings due to changes in the interest rate (Brickwork ratings 2008). Generally a bank that depends more on leverage will experience more volatile

earnings and this also affects the credit creation and liquidity function of the bank (Tobias and Themba 2011).

V. Liquidity

A bank or financial institution has to be liquid to meet payment obligations to depositors and creditors. This calls for a sound Asset Liability Management by the bank. Liquidity analysis considers the bank's ability to meet its obligations and is very critical for a bank to remain a going concern. The absence of liquidity can lead to failure of a bank. It also considers the proportion of liquid assets to total assets along with their deposit renewal rate (brickwork rating 2010). Abdus Samad *et al.* (2001) and Pak and Huh (1995) used loan to deposit ratio to calculate the level of liquidity in their study. The liquidity condition of the commercial banks was also reliable in all cases, thought some measures should be made by the individual banks respective to their matter as per (Habtamu 2004).

A bank must always be liquid to meet depositors' and creditors' demand to maintain public confidence. There needs to be an effective asset and liability management system to minimize maturity mismatches between assets and liabilities and to optimize returns. As liquidity has inverse relationship with profitability, and banks must strike a balance between liquidity and profitability (Financial Management and Analysis of Projects 2006). According to Molyneux and Thornton (1992), and Guru *et al.* (1999), there is a negative and significant relationship between the level of liquidity and profitability. In contrast, Bourke (1989) reports an opposite result, while the effect of credit risk on profitability of banks appears clearly negative.

Current and quick ratios are inappropriate for measuring banks liquidity as per Brickwork rating (2008). A loan-to-deposit ratio is more relevant. However, a bank's liquidity and solvency are directly affected by portfolio quality. Consequently, financial analysts (investment officers) are carefully analyzing the bank's portfolio quality based on collectability and loan-loss provisioning. The trade-offs that generally exist between return and liquidity risk are demonstrated by observing that a shift from short term securities to long term securities or loans raises a bank's return but also increases its liquidity risks and the inverse in is true. Thus management of liquidity level for the banks because it affect the bank's profitability (Tobias and Themba 2011).

The new NBE directive were issued in 2012 related to the liquidity states that private commercial banks are obligated to allocate 27 percent of their gross loan disbursement to finance government bonds. Thus, this new directive will increase liquidity and loanable funds in the banking sector. As a result private banks could get temporary relief from the strain of illiquidity. They will also be able to disburse additional loans, since the additional liquid resources are beyond their operational needs (Addis fortune 15 January 2012).

VI. Bank size

Total assets of the bank measure bank size. In order to reduce the size effects, this study excludes Commercial Bank of Ethiopia. The size of the bank is included in this study, as an independent variable, which account for size related economies and diseconomies of scale. In most of the finance literature, the total assets of the banks are used as a proxy for bank size. However, since total assets deflated the dependent

variable in the model (Return on Asset) it would be appropriate to take natural logarithm before including it in the model to be consistent with other ratios. Size is used to capture the fact that larger banks are better placed than smaller banks in harnessing economies of scale in transactions to the plain effect that they will tend to enjoy a higher level of profits. Consequently, a positive relationship is expected between size and profit (Indranarain 2009).

One of the most important questions in the literature is how determine an optimal bank size in order to maximize bank profitability. According to Andreas and Gabrielle (2009), larger banks are likely to have a higher degree of product and loan diversification than smaller banks. In addition to the higher diversification potential, economies of scale can also arise from a larger size. Diversification reduces risks and economies of scale lead to increased operational efficiency. The growing banking size is positively related to bank profitability. However, they also argued that banks that have become extremely large exhibit a negative relationship between size and profitability due to agency costs, bureaucratic processes and other reasons related to a large firm size.

VII. Technology

European central bank (1999) stated that the information communication technology developments have had a strong influence on the structure and the activities of the banking sector. The elements that have changed are several, besides allowing transactions to be conducted more efficiently; technology allows banks to market their products more effectively. The technology deployed in banks affects its operational

efficiency and determines its competitive position in the market (Brickwork ratings 2008).

As per Thomas Ogoro *et al.* (2010), technological developments have removed repetitive, time consuming tasks, reduced human error and extended access to banking related facilities. Technology also provides customer information that it would be much more expensive to provide on a person-to-person basis. The dilemma still remains, however, as to how to maintain a satisfactory number of face-to-face interactions with the customers.

Information technology developments affect banking in two main ways. First, it contribute to the reduction of the costs associated with the management of information (collection, storage, processing and transmission) by replacing paper-based and labor-intensive methods with automated processes. Second, it modifies the ways in which customers have accesses to banks' services and products, mainly through automated channels (remote banking). Whereas improvements in the area of information management have been taking place for a long time, remote banking is a more recent phenomenon with developments occurring more progressively, especially in retail banking (European Central Bank 1999).

VIII. Human capital

The people in a bank are the most valuable resources and the major driving force for successes and failures. The quality of human resources employed by a bank greatly affects its profitability. The recruitment process and training standard of the financial institution, which reflects the quality of the people in the organization, their ability to guidance and support to operations staff, compensation package as per the industry

norms and attrition rate in the financial institution, which reflect the satisfaction among the employees and staff towards their work and organization (Brickwork ratings 2008).

The human capital in organizations is valuable because of the capabilities that the people have. As part of the strategic role, Human Resource managers are often seen as responsible for expanding the capabilities of the human resources in an organization. Currently, considerable emphasis is being focused on the competencies that the employees in the organization have and will need the organization to grow in the future. Yet the mobility of human capital is less a threat to competitive advantage than it would first seem to be because once an organization integrates human capital with other complementary resources and uses this integration to create organizational capabilities, losing one or a few individuals may not lead to a loss of competitive advantage (John I Njugun 2009).

IX. Loan performance

Loan is a type of debt. Like all debt instruments, a loan entails the redistribution of financial assets over time between lender and the borrower. According to access capital research (2011) lending by Ethiopia's private banks is coming to a virtual standstill. They found that the average private bank has recently been giving out just 30 million birr in loans per month, or almost half the peak lending volume seen in recent years. Lending patterns continue to vary widely among banks reflecting their strategic preferences as well as varying degrees of success in entering particular business segments. One of the major functions of any commercial bank is providing loan to the business society. Lending is the provision of resources (granting loan) by

one party to another. The second party doesn't reimburse the first party immediately there by generating a debt, and instead arranges either to repay or return those resources at a later date. Banks function as financial intermediaries, collecting funds from savers in the form of deposit and then supplying to borrowers as loans. Those functions benefit both the banks and the borrowers.

As quoted from Zewdu (2010) the principal profit- making activity of commercial banks is making loans to its customers. Lending represents the heart of the industry. Loan is a major asset, income source for banks, and risky area of the industry. Moreover, its contribution to the growth of any country is very clear. Therefore, managing loan in a proper way not only has positive effect on the banks profitability but also on the borrower firms and a country as a whole. The heart of any successful commercial lending function is credit discipline written in loan policy, structured loan approval process and strong loan administration function (Barrickman 1990).

2.3.2. External determinants of banks profitability

The external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions. According to Abebaw and Depaack (2011), the external factors, they have a relatively small impact on the profitability of Ethiopian banks. Turning to the external determinants, several factors have been suggested as impacting on profitability and these factors can further distinguish between control variables that describe the macroeconomic environment, such as real GDP growth, bank concentration, inflation, regulation, and other variables that represent market characteristics (Yuqi 2006).

I. Gross Domestic Product (GDP)

Macroeconomic conditions affect banking profitability in a number of ways. Firstly, there will be a higher demand for bank credit in times of economic boom than in times of recession. Economic growth is measured by the real GDP sector profitability (e.g. Belayneh (2011), Andreas and Gabrielle (2009), and Athanasoglou *et al.* (2008). Accordingly, they expect a positive relationship between bank profitability and GDP development as the demand for lending is increasing (decreasing) in cyclical upswings (downswings).

According to Belayneh (2011) from microeconomic indicators, the only significant factor of bank profitability is real GDP growth. He stated that the current real economic growth of the country makes commercial banks to be more profitable. A high aggregate growth rate may strengthen the debt servicing capacity of domestic borrowers, and therefore, contribute to less credit risk. Alternatively, adverse macroeconomic conditions hurt banks by increasing the amount of non-performing loans. Thus, it is expected that an improvement in economic growth enhance bank performance.

II. Bank concentration

The bank concentration variable is defined as the ratio of the largest banks' assets to the total assets of the entire banking sector. Market structure in the banking industry measured by means of the bank concentration variable according to the structure conduct profitability of banks in highly concentrated markets earn monopoly rents, as they tend to collude (Gilbert 1984). As collusion may result in higher rates being charged on loans and lower interest rates being paid on deposits, a higher bank

concentration have a positive impact on profitability. On the other hand, a higher bank concentration might be the result of a tougher competition in the banking industry, which would suggest a negative relationship between profitability and market concentration as stated in (Boone and Weigand 2000). As a result, the overall effect of market concentration on banking performance is again undetermined.

III. Inflation

High inflation is associated with higher costs as well as higher income. If a bank's income rises more rapidly than its costs, inflation is expected to exert a positive effect on profitability. Several economists have found that countries with high inflation rates have inefficiently small banking sectors and equity markets. This effect suggests that inflation reduces bank lending to the private sector, which is consistent with the view that a sufficiently high rate of inflation induces banks to ration credit as stated by John H. B and Bruce C. (2006).

They also show the impact of inflation on asset returns and bank profitability, recall that the theory we have been discussing holds that inflation in sufficiently high doses kicks off a chain of events that ultimately leads to underdeveloped economic growth. The chain begins when high inflation lowers the real return on assets. They found that inflation is negatively associated with real money market rates, real Treasury bill rates, and real time-deposit rates; that is, as inflation increases, the real rate of return on these instruments falls. They found no significant statistical relationship between inflation and the real bank loan rate. However, inflation does appear to have a negative impact on bank profitability measures.

According to access capital research (2010), private banks in Ethiopia are sometimes seen as generating "excessive" profits given the year-after-year returns of 25-30 percent that have been provided to shareholders for more than a decade now. However, seen from several perspectives, it is not at all apparent that banks' profit levels should be seen as excessive. For example, real returns after accounting for the high inflation of the past five years are only in the range of 5-10 percent per annum, as annual inflation averaged 19 percent in the last five years.

IV. Regulation

The banking industry is among one of the most heavily regulated industries in the world and Ethiopian banking industry also one the most heavily regulated industry. As quoted from Sudin Haron (1996), the main reason for regulation is to provide a sound, stable and healthy financial system, and Peltzman (1968) was among the first researchers to empirically test the effects of regulation on performance. Instead of profit, he used the bank's capital as a proxy for performance. Peltzman's findings indicated that a prohibition on interstate branching and legal restrictions on new entry had a significant impact on the market value of a bank's capital. Fraser and Rose (1972) also studied whether the opening of new institutions had any significantly adverse effect on the growth and profitability of competing institutions. They found that, despite some evidence of slowing in the growth rate of deposits, the profitability of existing institutions was not adversely affected by the opening of new branches by their competitors.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

This chapter discusses the research design and methodology. The chapter is organized in six sections. The first section 3.1 discusses the research design. Sampling design is presented in section 3.2. Methods of data collection and analysis are presented in section 3.3 and 3.4 respectively. In section 3.5 model assumption and data properties of the study are presented. Lastly, limitation of the methodology is presented in section 3.6.

3.1. Research design

The main objective of this study was to investigate the determinants of private commercial banks profitability in Ethiopia and this study adopted an explanatory approach by using balanced panel research design to realize a stated objective. As quoted from Tobias and Themba (2011) the advantage of using panel data is that it controls for individual heterogeneity, less collinearity variables and tracks trends in the data something which simple time-series and cross-sectional data cannot provide (Baltagi 2005). The study was employed quantitative research approache by using both primary and secondary data gathered from managers and financial statement of private commercial banks respectively. For primary data collection the study used structured survey method and collected data was analyzed by using SPSS 16 software. For secondary data analysis the study was used E-views 6 software.

3.2. Sampling design

The population of this study included all private commercial banks in Ethiopia. However, commercial banks which started their operation after 2005 were not considered. As results, out of the 14 private commercial banks, seven commercial banks Abyssinia Bank, Awash Bank, Dashen Bank, Nib International Bank, United Bank, Cooperative Bank of Oromia and Wegagen Bank are selected. All private commercial banks included in this study are operated for decades except Cooperative Bank of Oromia. Thus, the study used a ten years data for all sampled banks but one bank i.e Cooperative Bank of Oromia, has only a seven years data, since the bank start operation on the year 2005.

3.3. Methods of data collection

In order to carry out any research activity; information should be gathered from proper sources. The study employed both primary and secondary data. Primary data was collected by soliciting the manager of each private commercial bank included in the study through structured survey questionnaire (see appendix 1). The secondary data was collected from National Bank of Ethiopia, website of the private banks, annual reports, financial statements and other published and unpublished documents.

3.4. Data analysis

The collected data was analyzed by using descriptive statistics, correlations, and multiple linear regression analysis. Secondary and primary data were analyzed by using E-views 6 and SPSS 16 for windows software package respectively.

3.4.1. Descriptive statistics

Mean, minimum, maximum and standard deviation values are used to analyze the general trends of the data from 2002 to 2011 for the variables which included in the study. A correlation matrix was used to examine the relationship between the dependent variable and explanatory variables to investigate multicolinarity problem between variables.

3.4.2. Description and measurements of variables

According to Creswell (2009), the variables need to be specified in quantitative researches so that it is clear to readers what groups are receiving the experimental treatment and what outcomes are being measured. Bank profitability is usually measured by the return on average assets, return on equity, and net interest margin which are expressed as a function of internal and external determinants. The internal determinants include bank-specific variables. The external variables reflect environmental variables that are expected to affect the profitability of banks. In this paper both internal and external variables are used to investigate the determinants of private commercial banks profitability.

3.4.2.1. Dependent variables

Bank profitability was measured by the ratio of the Return on Average Assets (ROA), Return on Average Equity (ROE), and Net Interest Margin (NIM). All profitability measures included in the study are described as follows;

Return on Asset (ROA)

As Golin (2001) points out, the ROA has emerged as key ratio for the evaluation of bank profitability and has become the most common measure of bank profitability. The following authors also used ROA as a measure of bank profitability (Yuqi Li (2006), Abebaw and Depaack (2011), Berger (1995), Indranarain Ramlall (2009), Imad *et al.* (2011), Tobias and Themba (2011), Belayneh (2011), and Athanasoglou *et al.* (2008)).

The ROA reflects the ability of a bank's management to generate profits from the bank's assets. It shows the profits earned per birr of assets and indicates how effectively the bank's assets are managed to generate revenues, although it might be biased due to off-balance-sheet activities. Average assets were used in this study, in order to capture any differences that occurred in assets during the fiscal year. ROA can be calculated as:

$$Return\ on\ Asset\ (ROA) = \frac{Net\ Profit\ After\ Tax}{Average\ Total\ Assets}$$

This is probably the most important single ratio in comparing the efficiency and operating performance of banks as it indicates the returns generated from the assets that bank owns.

Return on Equity (ROE)

Although ROA provides useful information about bank profitability, we have already seen that it is not what the bank's owners (equity holders) care about most. They are more concerned about how much the bank is earning on their equity investment, an

amount that is measured by the return on equity (ROE), the net income per birr of equity capital. ROE were used by some of the following authors Indranarain Ramlall (2009), Bourke (1989), Molyneux and Thornton (1992), Belayneh (2011), Andreas and Gabrielle (2009), Athanasoglou *et al.* (2008), and Guru *et al.* (1999).

$$Return\ on\ Equity\ (ROE) = \frac{Net\ Profit\ After\ Tax}{Average\ Equity\ Capital}$$

Net Interest Margin (NIM)

Another commonly watched measure of bank profitability is called the Net Interest Margin (NIM), the difference between interest income and interest expenses as a percentage of total loans and advances which includes deposits with foreign banks, treasury bills and other investments. One of a bank's primary intermediation functions is to issue liabilities and use the proceeds to purchase income-earning assets. If a bank manager has done a good job of asset and liability management such that the bank earns substantial income on its assets and has low costs on its liabilities, profits will be high.

$$Net\ Interest\ Margin\ (NIM) = \frac{Net\ Interest\ Income}{Total\ Loans\ and\ Advance}$$

How well a bank manages its assets and liabilities, which is affected by the spread between the interest earned on the bank's assets and interest costs on its liabilities. This spread is exactly what the net interest margin measures. NIM was used as a measure of bank profitability by James Nguyen (2006), Ho and Saunders (1981), Angbazo (1997), Levine (2004), and Claeys *et al.* (2004).

3.4.2.2. Independent variables

This paper used the major dimensions of a bank's operation: Capital adequacy, Asset quality, Management quality, and Liquidity. These variables can be measured in the following formulas;

- Capital adequacy: the study used gross capital to total asset ratio.

$$Capital\ adequacy = \frac{Gross\ Capital}{Total\ Assets}$$

- Asset quality: The ratio of total NPLs to total loan and advance was used and the higher the ratio the lower the asset quality.

$$Asset\ quality = \frac{Total\ NPLs}{Total\ Loan\ and\ Advance}$$

- Managerial efficiency: The ratio of operating expense to operating income was use and the higher the ratio the lower the managerial efficiency.

$$Managerial\ efficiency = \frac{Operating\ Expense}{Operating\ Income}$$

- Liquidity: the ratio of total loans to total deposits was used

$$Liquidity\ = \frac{Total\ Loan}{Total\ Deposit}$$

- Bank size: natural logarithm of total asset of the bank

Bank profitability is also expected to be sensitive to macro economic factors.

- Real GDP: The yearly real Gross Domestic Product (GDP) growth rate was used

Table 3.1 Description of the variables used in the regression model

Variable	Description	Notation	Hypotheses
Dependent variables			
Return on Asset	The return on average total assets of the bank in year t.	ROA	NA
Return on Equity	The return on equity capital of the bank in year t.	ROE	NA
Net Interest Margin	The difference between interest income and interest expenses as a percentage of total assets	NIM	NA
Independent variables			
Capital adequacy	The ratio of gross capital over total assets	CAP	+
Asset quality	The ratio of total NPL to total loan and advance	ASQ	+
Managerial efficiency	The ratio of operating expenses to operating income	MGE	+
Liquidity	The ratio of loans over deposits	LIQ	+
Bank size	Natural logarithm of total asset of the bank	LAS	+
GDP	The yearly real gross domestic product (GDP) growth rate	RGD	+

Multiple Linear Regression Analysis

A multiple linear regression model was used to determine the relative importance of each independent variable to determine banks profitability. The p-value of explanatory variables was used to test the hypotheses at a 1%, 5% and 10% significance level. The multiple linear regressions model for ROA, ROE, and NIM is shown on equations below. These models were run by using E-views 6 software. The seven private commercial banks financial statement was used to analyze the profitability of private banks in Ethiopia. The adopted regression models are presented as follows;

$$ROAit = Ci + \alpha 1CAPit + \alpha 2ASQit + \alpha 3MGEit + \alpha 4LIQit + \alpha 5LAS + \beta 1RGDt + ei \quad \text{---(1)}$$

$$ROEit = Ci + \alpha 1CAPit + \alpha 2ASQit + \alpha 3MGEit + \alpha 4LIQit + \alpha 5LAS + \beta 1RGDt + ei \quad \text{---(2)}$$

$$NIMit = Ci + \alpha 1CAPit + \alpha 2ASQit + \alpha 3MGEit + \alpha 4LIQit + \alpha 5\ LAS + \beta 1RGDt + ei \quad \text{---(3)}$$

Where;

ROAit = return on asset of bank *i* at time *t*

ROEit = return on equity of bank *i* at time *t*

NIMit = net interest margin of bank *i* at time *t*

CAPit = Capital adequacy of bank *i* at time *t*

ASQit = Asset quality of bank *i* at time *t*

MGEit = Managerial efficiency of bank *i at* time t

LIQit = Liquidity of bank *i* at time *t*

LASit = size of the bank *i* at time *t*

RGDt = Real GDP growth rate at time *t*

Where t = 2002-2011, Ci = constant for each bank (fixed effects), α= bank specific factors coefficients, β= macroeconomic factor coefficients.

3.5. Model assumptions and data properties

The following diagnostic tests were carried out to ensure that the data fits the basic assumptions of linear regression model.

- Normality: Descriptive statistics was undertaken to examine the distribution of data. Upon examination the Bera-Jarque (BJ) test uses to know the property of a normally distributed random variable that the entire distribution is characterized by the first two moments the mean and the variance.

- Multicollinearity: different empirical studies show different argument towards the mulitcolinarity problem. Mashotra (2007) stated that multilicolliantory problems exist when the correlation coefficient among variables greater than 0.75. Cooper & Schindler (2009) suggested that a correlation above 0.8 between explanatory variables should be corrected for. Lastly, Hair *et al.* (2006) argued that also correlation coefficient below 0.9 may not cause serious

multicolinary problem. A correlation matrix used to ensure the correlation between explanatory variables. Then balanced panel data models are applied to control for multicollinearity.

- Heteroscedasticity: Finally, the model was estimated in Eviews assuming cross-section heteroscedasticity to control for the possible effects heteroscedasticity in the error variance. Durbin-Watson (DW) test was used to evaluate the problem of heteroscedasticity.

3.6. Limitations of methodology

The multiple regressions were utilized due to the nature of the study, but also possess a major conceptual limitation, which is that the mechanisms governing the various phenomena are not statistically identified. In specific, limitations of methodology can grouped as the following.

3.6.1. Limitations of ratio analysis and data source

This limitation is resulted from the nature of ratio analysis. Financial ratio is an expression of the relationship between two items selected from the income statement or the balance sheet. Even if ratio analysis helps to evaluate the weak and strong points in the financial and managerial performance, while it does not reveal the amount and quality of its components. Consequently, it could mislead the research results if there is an improvement on the ratio figure, but it may come from an increase or decrease of the individual components. This study was mainly based on quantitative studies. Secondary data are obtained directly from banks financial statement; therefore it may have potential bias from the data source

CHAPTER FOUR

4. RESULTS AND DISCUSSION

This chapter deals with the results of study which include descriptive statistics of variables, correlation results for dependent and explanatory variables, diagnosis test for the regression models, and regression analysis for three profitability measures; return on asset, return on equity, and net interest margin and discussion of results. Secondary data analysis was done by using E-views 6 software. Beside secondary data analysis, primary data collected from the managers of private commercial banks are presented, analyzed and discussed in this chapter. Mean and standard deviation value of the respondents' perception was used to rank the major determinants of profitability of private commercial banks in Ethiopia.

4.1. Descriptive statistics of variables

In this section descriptive statistics for the dependent; Return on Asset (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) and explanatory variables involved in the regression model are presented. Mean, maximum, minimum and standard deviation values are included in the table below. These figures are gives overall description about data used in the regression models.

The table below shows descriptive statistics for all variables. Return on Asset, Return on Equity, and Net Interest Margin all have a positive mean value 2.39, 21.31, and 4.85 respectively. There is greater variation in the data set of Return on Equity, because some banks are employed more capital, which increases bank's ROE. Bank size, liquidity and GDP show high mean value of 9.15, 47.43, and 9.26 respectively.

Liquidity which measured by total loan to total deposits has been a highest mean value, that means there is no liquidity problem because, the data shows their level of total deposits greater than the total loans.

Table 4.1 Descriptive statistics of variables

Dependent variables	Mean	Max	Min	Std. Dev
ROA	2.39	4.68	-2.37	1.42
ROE	21.31	42.29	-3.58	11.31
NIM	4.85	8.33	2.63	1.43
Independent Variables	Mean	Max	Min	Std. Dev
Capital adequacy	0.60	10.15	0.06	1.77
Asset quality	5.89	14.75	0.00	2.74
Managerial efficiency	0.48	1.93	-0.01	0.35
Liquidity	47.43	128.57	20.34	18.98
Bank size	9.15	10.17	4.86	1.06
GDP	9.26	12.70	-2.10	4.70

Source: E-views output from private banks financial statements

As it can be seen from the above table, Return on asset has mean value of 2.39, which is lowest as compared to that of other dependent variables. The standard deviation 1.42 and range 7.15 showed that there was lowest variability in the data for the profitability measures. Return on equity has average value of 21.31 it is the highest of all dependent variables. The standard deviation 11.31 and range of 45.87 showed high variability. Lastly, Net Interest Margin mean was 4.85 and ranked as a moderate average value. The standard deviation 1.43 which is not far from mean value and showed moderate variability as compared to other dependent variables. It means that almost all private commercial banks are applying relatively consistent interest rate on

all kinds of finances and few variations were observed in net interest margin. Thus, their net interest income is almost similar because the National Bank of Ethiopia is set the interest rate for banks.

Explanatory variables also displayed in table 4.1, above and six explanatory variables which are expected to determine the profitability of private commercial banks are exhibited; capital adequacy, asset quality, managerial efficiency, liquidity, bank size, and GDP have different characteristics.

Capital adequacy has the second lowest mean value of 0.60; the range was 10.21 which show moderate variability, and the moderate standard deviation of 1.17 as compared to other independent variables. This shows that the data was consistent because the standard deviation value is not much far from the mean value. The capital adequacy mean value results suggest that about 60% of the total assets of private commercial banks were financed by shareholders funds while the remaining 40% was financed by deposit liabilities.

Asset quality has the average value of 5.89 and the standard deviation value of 2.74. The minimum and maximum value is 14.75, and 0.00 respectively. The mean value of asset quality indicates that about 5.89 percent of total loan and advance of private commercial banks was comprises non-performing loans. Thus, private commercial banks have a good asset quality; because the result is not far from the average value (5 percent) of NPL from their loan and advance as reported in Access Capital Research (2010).

Managerial efficiency has the moderate mean value of 0.48, and the range of 1.94 which shows the lowest variability, the standard deviation value of 0.35 which is the

lowest variability as compared to other explanatory variables. The mean value indicates that private commercial banks are efficient because their operating expense per unit of operating return is low, which means for 0.48 birr operating expense there is one birr operating income.

The mean value of liquidity of private banks was 47.43, and the range of 148.91 which is the highest variability among variables. The standard deviation value of the variable is 18.98, highest deviation as compare to other explanatory variables. The mean value of liquidity shows that the Ethiopian private commercial banks was very liquid, two times more than the minimum statutory liquidity ratio of 20 percent set by National Bank of Ethiopia (NBE) in January 2012.

The bank size plays an important role to maintain the position of a bank in the market. The size of private commercial banks under this study has mean value of 9.15, and the maximum and minimum value of 10.17 and 4.86 respectively. But the standard deviation value is 1.06 which the third highest value among independent variables. These results show that private commercial banks in Ethiopia have a small variation in their total asset.

The last independent variable is the level real GDP growth rate, has the highest standard deviation value of 4.07, and the mean value of 9.26. The maximum and minimum value is 12.07 and -2.10 respectively. According to the above table, from the independent variables liquidity and GDP growth rate have large standard deviation of 18.98 and 4.70 respectively compared with other variables. It revealed that the liquidity in the bank and level of GDP growth rate have more significant variance than other explanatory variables included in the study.

4.2. Correlation analysis between study variables

In this section the correlation between profitability measures; return on asset, return on equity, and net interest margin and explanatory variables; capital adequacy, asset quality, managerial efficiency, earning ability, liquidity, bank size, and GDP have been presented and analyzed. A correlation matrix used to ensure the correlation between explanatory variables. Cooper & Schindler (2009) suggested that a correlation coefficient above 0.8 between explanatory variables should be corrected for because it is a sign for multicolinearity problem. Mashotra (2007) argued that the correlation coefficient can be 0.75. Lastly, Hair *et al.* (2006) argued that also correlation coefficient below 0.9 may not cause serious multicolinary problem. Thus, one explanatory variables, earning quality have been more than 0.8 correlation coefficient with bank size, the variable was exclude from the regression model to control multicolinearity problem.

4.2.1. Correlation analysis between return on asset and explanatory variables

The ROA reflects the ability of a bank's management to generate profits from the bank's assets and this profitability measure is correlated with other explanatory variables either positively or negatively. In table 4.2 below, the correlation analysis was undertaken between profitability measure; return on asset and explanatory variables; capital adequacy, asset quality, managerial efficiency, liquidity, bank size, and GDP.

As it can be seen from the table below, there was a positive correlation between return on asset and capital adequacy, managerial efficiency, asset quality, bank size, and GDP. Whereas, there is a negative correlation between private commercial banks profitability measure; return on asset, and liquidity. That means the more the ratio of loan to deposit ratio of banks, the less the ROA of private commercial banks in Ethiopia. This relationship support the statement given by Hempel *et al*, (1994) a high liquidity ratio indicates a less risky and less profitable bank.

Table 4.2 Correlation matrix: ROA

	ROA	CAP	ASQ	MGE	LIQ	LAS	RGD
ROA	1						
CAP	0.284	1					
ASQ	0.109	-0.196	1				
MGE	0.739	-0.362	0.181	1			
LIQ	-0.074	0.301	-0.280	-0.019	1		
LAS	0.690	0.582	0.165	0.687	-0.188	1	
RGD	0.468	0.111	-0.051	0.118	0.288	0.035	1

Source: E-views output from private banks financial statements

As per the table above, the correlation coefficient between return on asset and asset quality was 0.11 which is the smallest positive coefficient as compared to other variables, this mean that private commercial banks asset quality has small association with profitability which supports argument that private commercial banks have weak lending practice, which in turn have impact on asset quality. But, managerial efficiency and return on asset has highest positive correlation coefficient which is 0.74. This result shows that the managerial efficiency of private commercial banks

which measured by the ratio of operating expense to operating income have significant relationship with the profitability measured by return on asset.

4.2.2. Correlation analysis between return on equity and explanatory variables

Return on Equity (ROE), the net income per birr of equity capital, which is more concerned about how much the bank is earning on their equity investment. The correlation analysis was done between profitability measures; return on equity and explanatory variables; capital adequacy, asset quality, managerial efficiency, earning ability, liquidity, bank size, and GDP.

Table 4.3 Correlation matrix: ROE

	ROE	CAP	ASQ	MGE	LIQ	LAS	RGD
ROE	1						
CAP	0.268	1					
ASQ	0.111	-0.196	1				
MGE	0.504	-0.362	0.181	1			
LIQ	-0.069	0.301	-0.280	-0.019	1		
LAS	0.669	0.583	0.165	0.687	-0.188	1	
RGD	0.481	0.111	-0.051	0.118	0.288	0.035	1

Source: E-views output from private banks financial statements

As described in the above table there is a positive relationship between return on equity and capital adequacy, asset quality, managerial efficiency, bank size and GDP. Bank size which was measured by logarithm of total asset has a considerable relationship with ROE (a coefficient of 0.669), since private banks are more concerned to increase their capital investment their net profit per birr of equity capital

increases. Size is closely related to the capital adequacy of a bank since relatively large banks tend to raise less expensive capital and hence it appears more profitable. Managerial efficiency also significantly correlated with ROE. While, there is a negative correlation of –0.069 between return on equity and liquidity. Liquidity has similar implication like return on asset, which means although more liquid assets increase the ability to raise cash on short-notice; excess cash in the bank is increase the level of non-earning asset.

4.2.3. Correlation analysis between net interest margin and explanatory variables

One of a bank's primary intermediation functions is to issue liabilities and use the proceeds to purchase income-earning assets, and Net Interest Margin (NIM) can be measured as the difference between interest income and interest expenses as a percentage of total assets. The correlation analysis between profitability measures; net interest margin and explanatory variables; capital adequacy, asset quality, managerial efficiency, earning ability, liquidity, bank size, and GDP was done.

According to the table 4.4 below, there is a positive correlation between net interest margin and explanatory variables; capital adequacy, managerial efficiency, liquidity, and GDP level. Real GDP growth rate is highly correlated with NIM as compared to other explanatory variables, since there is a higher demand for bank credit in times of economic betterment in turn intermediation function of banks will enhance. Whereas, Asset quality and bank size have negative correlation coefficient with net interest margin, which indicates that the spread between the interest earned on the bank's

assets and the interest costs on its liabilities are not correlated with quality of assets and the size of private commercial banks in Ethiopia.

Table 4.4 Correlation matrix: NIM

	NIM	CAP	ASQ	MGE	LIQ	LAS	RGD
NIM	1						
CAP	0.025	1					
ASQ	-0.166	-0.196	1				
MGE	0.171	-0.362	0.181	1			
LIQ	0.149	0.301	-0.280	-0.019	1		
LAS	-0.197	0.583	0.165	0.687	-0.188	1	
RGD	0.255	0.111	-0.051	0.118	0.288	0.035	1

Source: E-views output from private banks financial statements

4.2.4. Correlation analysis between explanatory variables

The correlation between explanatory variables; capital adequacy, asset quality, managerial efficiency, liquidity, bank size, and GDP included in this study are presented and analyzed.

According to table 4.5 below, the size of private commercial bank with managerial efficiency and capital adequacy is highly correlated as compared to other explanatory variables included in this study with the coefficient of 0.687 and 0.583 respectively. Since their coefficient is less than 0.70 we can concluded there is no series multicolinarity problem as supported with empirical evidence; Mashotra (2007) argued that the correlation coefficient can be 0.75. Cooper & Schindler (2009) suggested that a correlation coefficient above 0.8 should be corrected for. Lastly, Hair

et al. (2006) argued that also correlation coefficient below 0.9 may not cause serious multicolinarity problem.

As presented in table 4.5 below, capital adequacy has a positive correlation coefficient with GDP and liquidity. But, it has a negative correlation coefficient value of -0.196, and -0.362, with asset quality, and managerial efficiency respectively. Asset adequacy has a negative correlation coefficient value of with all explanatory variables except with managerial efficiency and bank size.

Table 4.5 Correlation matrix between explanatory variables

	CAP	ASQ	MGE	LIQ	LAS	RGD
CAP	1					
ASQ	-0.196	1				
MGE	-0.362	0.181	1			
LIQ	0.301	-0.280	-0.019	1		
LAS	0.583	0.165	0.687	-0.188	1	
RGD	0.111	-0.051	0.118	0.288	0.035	1

Source: E-views output from private banks financial statements

As per the above table, managerial efficiency has a positive correlation coefficient with all explanatory variables except with liquidity and capital adequacy. Liquidity is negatively correlated with asset quality, managerial efficiency, and bank size, but it is positively correlated with capital adequacy and GDP. The size of private commercial bank is positively related with asset quality, capital adequacy, managerial efficiency, and GDP, but it is negatively related with liquidity. Lastly, GDP has a negative correlation coefficient with asset quality of banks. But, with the other explanatory variables it is positively correlated. The result is similar with the findings of Bourke (1989), and Molyneux and Thornton (1992).

4.3. Regression analysis results and discussions

In this section regression analysis for banks profitability measures; return on asset, return on equity, and net interest margin have been undertaken to understand the relationship between determinants of bank profitability and explanatory variables. Three regression analyses were done to examine the relationship between profitability measures and independent variables. According to Chris brooks (2008), if the *p*-value for the Hausman test is less than 1%, indicating that the random effects model is not appropriate and that the fixed effects specification is to be preferred. Due to this fact, after running random effect model regression, p-value for the Hausman test (see Appendix 2) was less than 1%, so running fixed effect model is appropriate.

The Fixed Effect model assumes that the marginal effects of the explanatory variables on the dependent unit are the same for all units (i.e. banks). The constant term is allowed to vary among the banks to account for the differences between units. These constant terms capture all unobserved characteristics that differentiate the units from each other. Since, for example, unique differences and cross sectional variation between banks can play an important role in explaining the variation in ROA or ROE among banks.

The model also assumes that the error terms are homoskedastic and uncorrelated both over time and across banks. An advantage of the Fixed Effect method is that it leads to consistent estimates even if the time-invariant component of the error term is correlated with the regressors. It has also been shown that the Fixed Effect estimator is consistent even when the Random Effect model is valid or even if the time-

invariant component of the error term is correlated with the regressors (as James Nguyen (2006) quoted from Johnston and Dinardo (1998)).

4.3.1. Diagnosis tests

The study was test the Classical Linear Regression Models (CLRM) assumptions, after running three regression models; for return on asset, return on equity, and net interest margin. As per Chris brooks (2008), the first assumption required that the average value of the errors is zero (E (ut) = 0*)*. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Since, no intercept parameter without constant term the first assumption will never be go against that means there is no potentially severe biases in the slope coefficient estimates in the regression model.

Hetroscedasticity test: white test

The second assumption of CLRM stated that the variance of the errors is constant, $\sigma 2$ this is known as the assumption of homoscedasticity. If the residuals of the regression have systematically changing variability over the sample, that is a sign of heteroscedasticity. White test was used for general test of heteroscedasticity. Since, table 4.6 below, shows that the test result for three regression analysis's *p*-values are considerably in excess of 0.05, we can say that there is no evidence for the presence of hetroscedasticity.

Table 4.6 Hetroscedasticity test: white test result

	Return on Asset	Return on Equity	Net Interest Margin
F-statistic	2.239854	2.687701	1.957777
Prob. F(6,59)	0.1016	0.0725	0.0864
Obs*R-squared	12.24452	14.16722	10.95853
Prob. Chi-Square(6)	0.0567	0.0978	0.0897
Scaled explained SS	9.82232	21.91022	7.526596
Prob. Chi-Square(6)	0.1323	0.0813	0.2749

Source: E-views output from private banks financial statements

Autocorrelation test: Durbin-Watson (DW) test

According to Chris brooks (2008), assumption three said that the CLRM's disturbance terms is the covariance between the error terms over time (or cross-sectionally, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. In addition he said that if the errors are not uncorrelated with one another, it would be stated that they are 'autocorrelated' or that they are 'serially correlated'. To test this assumption the Durbin–Watson (DW) statistical test was applied.

As table 4.7 below indicates that the DW test result was 2.11, 1.72, and 1.53 for the three profitability measure; return on asset, return on equity, and net interest margin respectively. This indicates that there was no serious evidence of autocorrelation in the data since the DW test result is not for from two, because Chris brooks (2008) pointed out the there is no autocorrelation problem if the *DW* is near 2.

Table 4.7 Durbin-Watson test results for the regression models

	Return on asset	Return on equity	Net interest margin
Durbin-Watson test	2.11	1.72	1.53

Source: E-views output from private banks financial statements

The forth CLRM assumption is not violated, Since E (u) = 0, this expression will be zero and therefore the estimator is still unbiased, even if the regressors are stochastic. Chris brooks (2008) added that it turns out the Ordinary Least Square estimator is consistent and unbiased in the presence of stochastic regressors, provided that the regressors are not correlated with the error term of the estimated equation.

Normality test: Bera-Jarque (BJ) test

Finally, assumption five require to check whether the disturbances are normally distributed or not. According Chris brooks (2008), one of the most commonly applied tests for normality is the Bera-Jarque (BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterised by the first two moments, the mean and the variance. If the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be bigger than 0.05 to not reject the null of normality at the 5% level.

Table 4.8 Bera-Jarque statistics result for the regression models

	ROA	ROE	NIM
Probability Jarque-Bera statistic	0.68	0.75	0.77

Source: E-views output from private banks financial statements

Thus, the study were test for this assumption and as it can be seen from the above table, the Bera-Jarque result was a probability of 0.68 for return on asset regression model, 0.75 for return on equity regression model, and 0.77 for net interest margin regression model, this implies that the inferences we made about the coefficient estimates was appropriate.

4.3.2. Regression analysis between return on asset and explanatory variables

To examine the relationship between profitability measures and explanatory variables three regression analysis were run. The first regression analysis was undertaken to investigate the relationship between ROA and independent variables. This regression model was applied:

$$ROA = -9.9 + 0.15CAP + 0.25ASQ + 0.78MGE + 0.01LIQ + 1.18LAS + 0.09RGD \quad \text{----------(1)}$$

In the following table coefficients, standard errors, t-values, and p-values for explanatory variables, and R-squared, Adjusted R-squared, Standard Error of regression, F-statistic, Prob (F-statistic) for the regression, and number of observations included in the study are presented.

Table 4.9 Regression analysis result between ROA and explanatory variables

	Coefficient	Standard error	t-value	p-value
C	-9.927832	3.657338	-2.714496	0.0089
Capital adequacy	0.147898	0.067563	2.189025	0.033**
Asset quality	0.245768	0.613518	0.400588	0.690
Managerial efficiency	0.775045	0.145777	5.316634	0.000***
Liquidity	-0.005320	0.004070	-1.307147	0.197
Bank size	1.178303	0.223084	5.281883	0.000***
GDP	0.089835	0.015638	5.744680	0.000***
R-squared	0.72349			
Adjusted R-squared	0.690427			
S.E of regression	0.510739			
F-statistic	37.38744			
Prob(F-statistic)	0.0000***			
Number of obser.	66			

***Significant at 1%;

**Significant at 5%;

*Significant at10%

Source: E-views output from private banks financial statements

As it can be seen from the above table, managerial efficiency, bank size and level GDP growth rate are statistically significant at 1 percent significant level, capital adequacy was statistically significant at 5 percent with return on asset. These results are similar with the findings of Tobias and Themba (2011), Indranarain Ramlall (2009), and Andreas and Gabrielle (2009), Belayneh (2011), and Athanasoglou *et al.* (2008), which means management of operating expenses to income, total asset of banks, and real GDP growth, have great contribution to improve their profitability. The result also shows that private commercial banks should focus to raise their capital

level to enhance their profitability. Because, it support the argument that well capitalized banks face lower cost of bankruptcy and lower need for external funding especially in emerging economies where external borrowing is difficult and costly. Likewise, capital strength makes a significant contribution to the profitability of private commercial banks in Ethiopia and this finding also similar with the finding of Abebaw and Depaack (2011), Berger (1995), Indranarain (2009), and Imad *et al* (2011).

All explanatory variables have a positive relationship with return on asset in agreement with the hypothesis except liquidity, low coefficient of -0.005 shows that liquidity has weak impact on the profitability of private commercial banks and any increase in liquidity leads to poor profitability. A positive coefficient of capital adequacy (0.147) implies that an increase in capital leads to increase profitability. The managerial efficiency has a positive coefficient of 0.775; this means operational cost efficiency leads to better profitability. Similarly, bank size and GDP have a positive coefficient of 1.178 and 0.089 respectively. This means any increase in these variables leads to increased in profitability of private banks in Ethiopia.

The result is consistent with the findings of Yuqi li (2006), Molyneux and Thornton (1992), and Guru *et al* (1999). Asset quality and liquidity level of private commercial banks included in this study has no significant relationship with return on asset, in contrast, with Bourke (1989). But many previous studies for instance Yuqi li (2006), and Tobias and Themba (2011), stated that Poor asset quality and low levels of liquidity are the two major causes of bank failures. Tobias and Themba (2011) added the many of the financial institutions in Kenya that were collapsed in 1986 due to

non-performing loans and that most of the larger bank-failures, involved extensive insider lending.

R-squared is measured the goodness of fit of the explanatory variables in explaining the variations in banks profitability measure ROA. As clearly described in Table 4.9 R-squared value for the regression model was 0.72. This indicates the explanatory variables in this study jointly explain about 72 percent of the variation in the profitability measure, return on asset. The remaining 28 percent of the variation in the profitability of private banks explained by other variables which are not included the model. Therefore, these explanatory variables together, are good explanatory variables of the profitability of private commercial banks in Ethiopia. Beside this F-statistics (37.39) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.0000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

4.3.3. Regression analysis between return on equity and explanatory variables

The second regression analysis was done to know how much the bank is earning on their equity investment, an amount that is measured by the return on equity (ROE) in relation with explanatory variables included in this study. This regression model was used:

$$ROE = -2.17 + 0.26CAP - 1.92ASQ + 4.34MGE - 0.09LIQ + 4.85LAS + 1.05RGD \quad \text{----------(2)}$$

Table 4.10 Regression analysis result between ROE and explanatory variables

	Coefficient	Standard error	t-value	p-value
C	-2.17298	3.28564	-1.867862	0.067
Capital adequacy	0.259346	0.634633	0.408655	0.684
Asset quality	-1.916444	5.762856	-0.332551	0.741
Managerial efficiency	4.342801	1.369306	3.171534	0.000***
Liquidity	-0.086980	0.038229	-2.275245	0.027**
Bank size	4.853988	2.095457	2.316434	0.024**
GDP	1.054440	0.146890	7.178447	0.000***
R-squared	0.703361			
Adjusted R-squared	0.660159			
S.E of regression	4.797441			
F-statistic	25.70260			
Prob(F-statistic)	0.000000***			
Number of obser.	66			

***Significant at 1%;

**Significant at 5%;

*Significant at10%

Source: E-views output from private banks financial statements

In the above table coefficient, standard error, t-value, and p-value for all explanatory variables and the value of R-squared, adjusted R-squared, S.E of regression, F-statistics with p-value and number of observations included in this study were presented.

As per table 4.10 above, managerial efficiency and level of GDP has a positive relationship with profitability measure; return on equity, and both are statistically significant at 1 percent significance level. With regard to managerial efficiency which is usually measured by operational expense efficiency, it has strong impact on profitability and similar with the findings of Indranarain (2009), Bourke (1989) and Molyneux and Thornton (1992). In relation to the level of GDP the result is consistent with the findings of Belayneh (2011), Andreas and Gabrielle (2009), and Athanasoglou *et al.* (2008). Liquidity and the size of bank are also statistically significant at 5 percent level of significance with return on equity. With regard to bank size the result is similar with Indranarain (2009), and Andreas and Gabrielle (2009). In relation to liquidity as measured by the ratio of total loan to total deposit the result is agree with the findings of Yuqi li (2006), Molyneux and Thornton (1992), and Guru *et al.* (1999).

According to the above table, against to the hypothesis stated in chapter one the regression analysis result indicated that asset quality and liquidity have a negative relationship with the bank profitability measure; return on equity. Although, there is negative relationship between return on equity and liquidity, it is significant at 5 percent significance level, which means the more liquidity the bank, the lower the profitability. The result is similar with the findings of Molyneux and Thornton (1992) and Guru *et al.* (1999); they find a negative and significant relationship between the level of liquidity and profitability. While, with regard to negative coefficient of asset quality of private banks; it indicates that the poor asset quality leads to lower their profitability, the result is similar with the finding of Tobias and Themba (2011), but it is not significant.

Table 4.10 also shows that variations in the dependent variable for the profitability, as measured by return on equity, are explained satisfactorily by variations in the selected explanatory variables, Because R-squared 0.70, which indicates that explanatory variables included in the study together explain about 70 percent of the variation in the profitability. The remaining 30 percent variation in the profitability of private commercial banks in Ethiopia is explained by other variables which are not included in the study. Table 4.7 also presented, the value F-statistics is 25.70 with p-value of 0.0000, which used to measure the overall significance of the regression model. The null hypothesis can be clearly rejected since the p-value is 0.0000 which is sufficiently low and we can say that the model is well fitted at 1 percent level of significance.

4.3.4. Regression analysis between net interest margin and explanatory variables

Another commonly watched measure of bank profitability measure is net interest margin, the difference between interest income and interest expenses as a percentage of total loans and advance. The last regression analysis was done to investigate the relationship between net interest margin and explanatory variables included in this study. This regression model was prevails;

$$NIM = 1.48 - 0.36CAP - 2.39ASQ + 0.19MGE - 0.01LIQ + 0.41LAS + 0.05RGD \quad \text{----------(3)}$$

Table 4.11below presented all explanatory variables with coefficient, standard error, t-value, and p-value, and it also shows the attributes of regression model like R-

squared, adjusted R-squared, S.E of regression, F-statistic value with p-value and number observation include in the study.

Table 4.11 Regression analysis result between NIM and explanatory variables

	Coefficient	Standard error	t-value	p-value
C	1.476043	6.136604	0.240531	0.8108
Capital adequacy	-0.361487	0.124541	-2.902556	0.000***
Asset quality	-2.388410	1.130909	-2.111937	0.039**
Managerial efficiency	0.192524	0.268714	0.716462	0.477
Liquidity	-0.009534	0.007502	-1.270831	0.209
Bank size	0.411955	0.411215	1.001799	0.321
GDP	0.051774	0.028826	1.796104	0.078*
R-squared	0.587384			
Adjusted R-squared	0.495282			
S.E of regression	0.941455			
F-statistic	7.763343			
Prob(F-statistic)	0.00000***			
Number of obser.	66			

***Significant at 1%;

**Significant at 5%;

*Significant at10%

Source: E-views output from private banks financial statements

From the table above, in contrast to the hypothesis, three explanatory variables, capital adequacy, asset quality, and liquidity, have negative relationship with net interest margin, with a coefficient of -0.36, -2.39,and -0.01 respectively. This means any increase in capital position, poor asset quality of private banks, and having more

liquid asset leads to lower profitability. NIM was negatively related with capital adequacy and the result is consistent with the findings of James Nguyen (2006). While, in agreement with the hypothesis done in chapter one, the rest three explanatory variables, managerial efficiency, bank size, and GDP, have a positive relationship with NIM, with a coefficient of 0.19, 0.41, and 0.5 respectively. The study found that a 1% increase in operational costs could results in 0.19% decrease in profitability. With regard to bank size the result is similar with the findings of James Nguyen (2006).

As it can be seen from the above table, the only explanatory variable statistically significant at 1 percent level of significance was capital adequacy, but it was negatively related with net interest margin and the result is concur with finding of James Nguyen (2006). Asset quality of private banks is statistically significant with net interest margin at 5 percent level of significance, but it has a negative relationship with the profitability measure, the result is similar with the finding of Tobias and Themba (2011). Lastly, level of GDP growth rate is a measure of the total economic activity and is expected to have an impact on numerous factors related to the supply and demand for loans and deposits. It is statistically significant at 10 percent level of significance and it is has a positive relationship with net interest margin. The result is consistent with the findings of Andreas and Gabrielle (2009), Athanasoglou *et al* (2008), and Yuqi Li (2006).

Table 4.11 reveals that a small explanatory power of the regression model as opposed to other regression model. The R-squared value is 0.58, which indicates that explanatory variables included in this study collectively explain about 58 percent the variation in the profitability measure, net interest margin. The remaining 42 percent of

the variation in the profitability of private commercial banks in Ethiopia is explained by other explanatory variables which is not included in this study. In addition to this, Table 4.11 described, the value F-statistics is 7.76 with p-value of 0.0000, which used to measure the overall significance of the regression model, since the p-value is 0.0000 which is sufficiently low. The null hypothesis can be rejected and we can say that the model is well fitted at 1 percent level of significance.

4.4. Primary data analysis on determinants of bank profitability

In this section primary data gathered from the managers of private commercial banks through structured survey questionnaire (see appendix 1) was analyze and discussed. Seven private commercial banks Managers were solicited to rank the major factors that determine the profitability of private commercial banks in Ethiopia.

4.4.1. Respondents' profile

Background information of respondents was presented in this part. As clearly described in Table 4.12 below, 71.4 percent of survey respondents indicated that they have second degree; the remaining 28.6 percent of the respondents are first degree holders.

Table 4.12 Respondents' profile

Questions		Frequency	Relative frequency (%)	Cumulative frequency (%)
Level of education	Diploma			
	First Degree	2	28.6	28.6
	Second Degree	5	71.4	100
	Above second degree			
Work experience	1-5 years			
	6-10 years	1	14.3	14.3
	11-15 years	4	57.1	71.4
	Above 15 years	2	28.6	100
	Total	7	100	100

Source: Survey output

In relation with work experience of the respondent, 57.1 percent of survey respondents indicated that they had 11-15 years of work experience in the banking industry. About 28.6 percent of respondents indicated that they had more than 15 years of banking experience, the rest 14.3 percent of respondents said that they had banking work experience from 6-10 years.

4.4.2. Determinants of bank profitability

Descriptive statistics (mean and standard deviations) of the respondent scores were computed and analyzed by comparing these mean scores and deviations among respondents. The reason for using descriptive statistics is to compare the different factors that affect the profitability of private commercial banks by using the means and standard deviations values. Based on their work experience in the banking

industry and perception the following responses were obtained. In the following table the respondent's perception on the determinants of financial performance of private commercial banks in Ethiopia and ranking was done on each variable.

Table 4.13 Respondents' perception towards private banks profitability

Determinants of bank profitability	Mean	Standard deviation	Rank
Capital adequacy	1.14	.378	1st
Asset quality	1.29	.488	2nd
Managerial efficiency	1.29	.488	2nd
Earning quality	1.71	.488	5th
Liquidity	2.00	1.000	6th
Bank size	1.43	.535	3rd
Loan Performance	1.43	.535	3rd
Technology	1.57	.535	4th
Human capital	1.43	.535	3rd
Level of GDP	2.14	.900	7th
Inflation	3.14	1.069	8th
Saving habit of the society	1.43	.535	3rd
Government regulation	1.14	.378	1st

Source: Survey output

As it can be seen from the table above, bank capital position and government regulation towards the banking industry has very significant impact on the profitability of private commercial banks in Ethiopia. Since, both have the same mean score of 1.14 with the standard deviation of 0.378. Asset quality and managerial efficiency are ranked as the second significant factors with similar mean and standard deviation values of 1.29 and 0.488 respectively. Likewise, banks size, loan performance, human capital and saving habit of the society are considered as the third

determinants of profitability of private commercial banks, their mean and standard deviation value was 1.43 and 0.535 respectively.

Table 4.13 above also displayed that, the technology adopted by the private banks was ranked as the fourth significant factor as compared to other factors with a mean value of 1.57 with a standard deviation value of 0.535. Earning quality and liquidity of private commercial banks was ranked as fifth and sixth significant factor for the profitability of private banks in Ethiopia. Lastly, level of GDP and inflation are ranked as the seventh and eighth significant variables for the profitability of private commercial banks in Ethiopia. Level of GDP has a mean score of 2.14 with the standard deviation value of 0.900, and inflation also has a mean and standard deviation value of 3.14 and 1.069 respectively.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter the major findings of the study are summarized; conclusions are drawn based on the findings and recommendations are forwarded for the concerned bodies.

5.1. Summary and conclusions

The main objective of this study was to investigate the determinants of profitability of private commercial banks in Ethiopia. Specific objectives were to determine and evaluate the effects of bank-specific factors expressed within the CAMEL framework and macroeconomic factor. Balanced panel data of sixty seven observations from 2002 to 20011 of seven private commercial banks was analyzed using multiple linear regressions method. In this study, both secondary and primary data analysis to investigate the major determinant factors of profitability of private commercial banks in Ethiopia was used. With regard to secondary data analysis based on the financial statement of private banks and three regression models were used for three profitability measures; (ROA), (ROE), and (NIM). In relation to the primary data analysis the structured survey questionnaires were provided to selected managers of private commercial bank. Mean and standard deviation value of the respondents was used to rank the determinants that affect the profitability of private commercial banks in Ethiopia. The major findings of the study results from secondary and primary data analysis are presented as follows:

- Descriptive analysis results revealed that almost all private commercial banks are applying relatively consistent interest rate on all kinds of finances and there

is only few variations was observed in net interest margin. The capital adequacy mean value results suggest that about 60% of the total assets of private commercial banks were financed by shareholders funds while the remaining 40% was financed by deposit liabilities. The mean value of asset quality indicates that about 5.89 percent of total loan and advance of private commercial banks was comprises non-performing loans. The mean value of managerial efficiency indicates that private commercial banks are efficient because their operating expense per unit of operating return is low, which means for 0.48 birr operating expense there is one birr operating income. The mean value of liquidity shows that the Ethiopian private commercial banks was very liquid, two times more than the minimum statutory liquidity ratio of 20 percent set by National Bank of Ethiopia (NBE).

- In relation to ROA, managerial efficiency, bank size and level GDP growth rate have significant impact on the profitability of private banks. All explanatory variables have a positive relationship with return on asset in agreement with the hypothesis except liquidity, low coefficient shows that liquidity has weak relationship with profitability. Asset quality and liquidity level of private commercial banks included in this study has no significant relationship with ROA. The explanatory variables included in this study jointly explain about 72 percent of the variation in return on asset.
- With regard to ROE as a profitability measure for the study, managerial efficiency and level of GDP has a positive relationship and significant at 1 percent significance level. Liquidity and the size of bank are also statistically significant with return on equity at 5 percent significance level. Against to the hypothesis the regression analysis result indicated that asset quality and

liquidity have a negative relationship with return on equity. Although, there is negative relationship between return on equity and liquidity, it is significant, which means the more liquidity the bank, the lower the profitability.

- Capital adequacy was negatively related with NIM and it is significant at 1 percent significance level. While, in agreement with the hypothesis done in chapter one, the rest three explanatory variables, managerial efficiency, bank size, and GDP have a positive relationship with NIM. Asset quality of private banks was statistically significant at 1 percent with net interest margin, but it has a negative relationship with NIM. Lastly, level of GDP was statistically significant at 10 percent and it is has a positive relationship with net interest margin. The explanatory variables included in this model collectively explain about 58 percent of the variation in the profitability measure, NIM.

Based on the findings it can be concluded that managerial efficiency, bank size, level of GDP, and capital adequacy have significant impact on ROA; which means any increase (decrease) on the value of these variables leads to an increase (decrease) on profitability of private commercial banks in Ethiopia. Managerial efficiency, liquidity, bank size and GDP have significant influence on ROE and except with the liquidity all these variables have positive relationship with profitability of private banks. Lastly, capital adequacy, asset quality and GDP have considerable relationship with NIM, except level of GDP all these variables have a negative correlation with profitability.

Based on primary data analysis bank capital position and regulation towards the banking industry has very significant impact on the profitability of private commercial banks. Asset quality and managerial efficiency are ranked as the second

significant factors. Likewise, banks size, loan performance, human capital and saving habit of the society are considered as the third determinants of profitability of private commercial banks. Lastly, level of GDP and inflation are ranked as the seventh and eighth significant variables for the profitability of private commercial banks in Ethiopia. Thus, it can be concluded that profitability in the Ethiopian banking sector is largely driven by capital position and regulation than other internal and external factors.

5.2. Recommendations

In order to hold up risky surprises and maintaining financial stability, it is vital to identify the determinants that mostly influence the overall performance of private commercial banks in Ethiopia. Therefore, based on the study results I would like to forward the following recommendations for the concerned bodies.

- Management bodies of private commercial banks should strive to strengthen the bank specific factors like capital position, managerial efficiency, asset quality, and bank size. Because, The competition become tough since increase in new entrant to the market, banks are increasingly being substituted by the general public as a source of funds by new share companies being established in a variety of sectors, and the micro-finance industry continues to show rapid growth.
- Tight government regulations towards the banking sector were one of the major determinants factors for the profitability of private commercial banks. Accordingly, government bodies should see the adverse effect of the policies imposed on the banks for existing private banks as well for the new entrants.

For instance, new directive of NBE towards capital reserve requirement, liquidity position of banks reduced the deposit growth rates from 30-35 to 20-25 percent per year as stated in access capital research (2011), and tight credit policies may create or worsen an existing inflationary situation and make realistic interest rate levels difficult to achieve.

- In general, as many literatures supports financial intermediation in Ethiopia is still in its early stages even by the standards of other low-income countries: more than 90 percent of the population is unbanked (versus an average of 60-70 percent elsewhere in Africa); and many other metrics such as the total number of banks, banks contribution to GDP, bank accounts per person, branches per person, and bank credit per person are lower in Ethiopia compared to other African countries. Thus, private commercial banks should focus to reach this unmet demand of finance by adjusting their strategy with the government regulation.
- At last, this study investigates the determinants of profitability of private commercial banks in Ethiopia. But, the variables included in the study were not exhaustive. Future researchers could include other bank specific and macroeconomic variables such as inflation and exchange rates in the regression models.

References

Abebaw Kassie G. and Depaack K. 2011, 'What drives the performance of commercial banks in Ethiopia?' *international journal of research in commerce and management* Panjab Univesity, Chandigarh - 160 014, volume no: 2 (2011), issue no. 7 (july) *ISSN 0976-2183*

Abdus, S. & M.and Kabir, H., 2001, 'The performance of Malaysian Islamic Bank During 1984-1997: An Exploratory Study'. *International Journal of Islamic Financial Services,* Vol. 1 No.3.

Access Capital Research, 2010. '*Ethiopian Banking Sector Review'*

Addis fortune January 15 2012, volume 12, number 611.

Andreas Dietricha and Gabrielle Wanzenriedb, 2009, 'What Determines the Profitability of Commercial Banks? New Evidence from Switzerland' *Institute of Financial Services* IFZ, Lucerne University of Applied Sciences, Grafenauweg 10, 6304 Zug, Switzerland.

Angbazo and Lazarus, 1997, 'Commercial Bank Net Interest Margins, Default Risk, Interest-Rate Risk, and Off-Balance Sheet Banking' *Journal of Banking and Finance* 21, no. 1:55-87. Bank Scope 2005, Bureau Van Dijk, New York.

Anna P. I. Vong and Hoi Si Chan, 2007, 'Determinants of Bank Profitability in Macao'. Faculty of Business Administration, University of Macau.

Athansasoglou, P., Brissimis, S. & Delis, M., 2006, 'Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability'. *Journal of International Financial Markets*

Asian Development Bank hand book and manual, 2006, 'Financial Management and Analysis of Projects'

Asll Demirguc-Kunt and Harry Huizinga, 2000, 'Financial Structure and Bank Profitability' *the World Bank Development Research Group Finance.*

Baltagi, B.H., 2005, *'Econometric Analysis of Panel Data'* John Wiley & Sons Publish. Chichester.

Barrickman, J.R., 1990, *' Successful Commercial lending from the ground up'. Bottom line*, 7(2): 12-14.

Belayneh Hailegeorgis, 2011, 'Determinants of Commercial Banks Profitability: An empirical study on Ethiopian Commercial Banks' Addis Ababa University.

Berger, A. N., 1995, 'The relationship between capital and earnings in banking'. *Journal of Money, Credit and Banking 27,* 432–456.

Bourke, P., 1989, 'Concentration and other determinants of bank profitability in Europe, North America and Australia'. *Journal of Banking and Finance 13, 65- 79.*

Clayes, S., Vennet, R., 2004, 'Determinants of Bank Interest Margins in Central or Eastern Europe', *Working Paper*, Ghent University, Belgium.

Cooper, D. C., & Schindler, P. S., 2009, *'Business Research Methods'* 9th edn.Tata McGraw-Hill. New Delhi

Creswell John, 2009, *'Research Design' Qualitative, Quantitative, and Mixed Methods Approaches)*, third edition by SAGE publications.inc.2009.

European Central Bank (ECB), 1999, *'The effects of technology on European banking system'*

Fraser, Donald R. and Peter S. Rose, 1972, 'Bank Entry and Bank Performance', *Journal of Finance*, Vol. 21, No. 1, pp. 65-78.

Gebeyaw Aychile, 2008, 'Financial Performance of National Bank of Ethiopia Workers' Savings and Credit Association with special emphasis to adjustments (NBE WSACA)'

Gujarati, D. N., 2007, *'Basic Econometrics'* McGraw-hill. New York

Guru, B.K., J. Staunton and B. Balashanmugam, 1999, '*Determinants of Commercial Bank Profitability in Malaysia*', Paper presented at the 12th Annual Australian Finance and Banking Conference, Sydney, Australia, 16-17 December.

Habtamu Berhanu, 2004, Financial Performance of the Ethiopian Commercial Banks; Faculty of Business and Economics, Addis Ababa University

Hair, J F, Black, W C, Babin, B J, Anderson, R E, and Tatham, R L (2006). *Multivariate Data Analysis*, 6 thedn., New Jersey: Pearson Education.

Ho, Thomas S., and Anthony Saunders (1981). "The Determinants of Bank Interest Margins: Theory and Empirical Evidence". *Journal of Financial and Quantitative Analysis* 16, 581–600.

Imad Z. Ramadan, Qais A. Kilani, Thair A. Kaddumi (2011). Determinants of Bank Profitability: Evidance from Jordan; *International Journal of Academic Research* Vol. 3. No. 4.

Indranarain Ramlall (2009). Bank-Specific, Industry-Specific and Macroeconomic Determinants of Profitability in Taiwanese Banking System: Under Panel Data Estimation; *International Research Journal of Finance and Economics* ISSN 1450-2887 Issue 34 (2009) © EuroJournals Publishing, Inc. 2009

Kozo Kiyota, Barbara Peitsch, and Robert M Stern (2007). The Case for Financial Sector Liberalization in Ethiopia

Levine Ross (1999). "Law, Finance, and Economic Growth", *Journal of Financial Intermediation.*

Malhotra, N (2007). *Marketing Research: An applied Orientation*, 5th ed., PHI, New Delhi.

Molyneux, P. and J. Thorton (1992). The determinants of European bank profitability, *Journal of Banking and Finance* 16 (6), 1173-1178.

Pak, H. S. & Sung, K. H. (1995). Comparative analysis of Korean bank's performance. *Journal of Accounting*, California State University, Vol. Fall 1995, pp. 143-150.

Peltzman Sam (1968). "Bank Stock Prices and the Effects of Regulation of the Banking Structure", *Journal of Business*, Vol. 41, No. 4, October, pp. 413-430.

Rasidah Mohd Said and Mohd Hanafi Tumin (2011). Performance and Financial Ratios of Commercial Banks in Malaysia and China, *International Review of Business Research Papers* Vol. 7. No. 2. Pp. 157-169

Saidov Elyor (2009). Factors affecting the performance of foreign banks in Malaysia College of business (finance and banking) university Utara Malaysia (801516)

Sudin Haron (1996). Competition and other external determinants of the profitability of Islamic banks, *Islamic economic studies* Vol. 4, no. 1,

Thomas Ogoro Ombati, Peterson Obara Magutu, Stephen Onserio Nyamwange, and Richard Bitange Nyaoga (2010). Technology and Service Quality in the banking industry; *African Journal of Business & Management (AJBUMA)*

Tobias Olweny and Themba Mamba Shipho (2011). Effects of Banking Sectoral Factors on the Profitability of Commercial Banks in Kenya, *Economics and Finance Review* Vol. 1(5) pp. 01 – 30, July, ISSN: 2047 – 0401

Yuqi Li (2006). Determinants of Banks. Profitability and its Implication on Risk Management Practices: Panel Evidence from the UK in the Period 1999-2006; University of Nottingham

Zewdu Seyoum Semu (2010). Impact of reducing loan by Ethiopian banks on their own performance, *research report*, university of South Africa

www.nbe.gov.et

www.brickworkratings.com

APPENDIX: 1

Addis Ababa University

School of Public and Business Administration

Department of Management

Program of Master of Business Administration in Finance

Dear respondents

This questionnaire is prepared to managers of private commercial Banks. The objective of the questionnaire is to collect information about the determinants of profitability of private commercial banks in Ethiopia.

Note:

- ✓ No need of writing your name
- ✓ The information you provide will be valuable for the successes of the research paper. Please be honest and objective while filling the questionnaire.
- ✓ The information you give is used only for academic purpose and will be kept confidential.

Thank you in advance for your cooperation.

Part one: Demographic Information

1. Level of education

A. Diploma
B. First Degree
C. Second Degree
D. Above second degree

2. Work experience in the banking industry

A. 1-5 years
B. 6-10 years
C. 11-15 years
D. More than 15 years

Part two: Determinants of Banks profitability

1. The major factors that affecting private commercial banks profitability in Ethiopia are listed below. After you read each of the factors, evaluate them in relation to your bank experience and then put a tick mark (√) under the choices below.

5=strongly agree 4=agree 3=undecided 2=disagree 1=strongly disagree

S. No	Key variables	Agreement scale					Remark
		1	2	3	4	5	
1.	Capital adequacy						
2.	Asset quality						
3.	Managerial efficiency						
4.	Earning quality						
5.	Liquidity management						
6.	Bank size						
7.	Loan performance						
8.	Technology						
9.	Human capital						
10.	level of GDP						
11.	Inflation						
12.	Saving habit of the society						
13.	Government regulation						

APPENDIX: 2

Correlated Random Effects - Hausman Test

Equation: RAN

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	60.962399	6	0.0000

** WARNING: estimated cross-section random effects variance is zero.