CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Today, the bank performance has become a favorite subject for many stakeholders. A stable and efficient financial system represents efficient allocation of resources and it becomes the foundation of rising of financial performance of an organization which leads to achieve their ultimate objectives (Raza et al, 2011).

According to previous studies, determinants of bank performance are categorized into two main groups: external and internal. The Internal determinants are sometimes called microeconomic determinants or inherent performance which are specific to each bank and that, in many cases, are the direct result of managerial decisions, so such management effects will definitely affect the operating result of banks. External determinants, on the other hands, are variables that reflect economic and legal environment which are out of the control of the management of the banks. They are again grouped in to two parts as factors relating to the industry structure and to the macroeconomic environment within which the banking system operates.

Many studies have attempted to explain the contribution of a particular variable on the performance of banks. It should be noted that very often, the authors found different results even contradictory Rao & Tekeste (2012), Ameur and Mhiri (2013), Ongore and Gemechu (2013), Alper and Anbar (2011), Athanasoglou, et. al.(2005), Alexiou and Sofoklis (2009), Sufian and Chong (2008).

This paper focused on identifying explanatory factors that affect the performance (in the view of profitability) of commercial Banks operating in Ethiopia.
1.2 Background of Banking Industry in Ethiopia

Bank of Abyssinia, the first modern bank in Ethiopia, was inaugurated on Feb.16, 1906 following the agreement between the Ethiopian Emperor Minelik II and Mr.Ma Gillivray, a representative of the British owned National Bank of Egypt. Bank of Abyssinia was formally replaced by Bank of Ethiopia shortly after Emperor Haile Selassie came to power. It was a purely Ethiopian financial institution and was the first indigenous bank in Africa and established by an official decree on August 29, 1931. During the Italian invasion the bank was closed and several Italian banks opened branches in Ethiopia. The State Bank of Ethiopia was established in 1943, after Ethiopia regains its independence from fascist Italy, and in 1963 the bank legally separated as National Bank of Ethiopia and Commercial Bank of Ethiopia. In the period up to 1974, several other state owned as well as private financial institutions emerged (Weeks et.al, 2004)

In 1975, following the fall of the imperial government, all privately owned banks were nationalized and concentrated into Commercial Bank of Ethiopia. After the socialist regime was overthrown in 1991, the licensing and supervision of Banking Business Proclamation No. 84/1994 was issued in 1994 which led to the beginning of a new era for Ethiopia banking sector. Then the private banking companies re-emerged and that leads to have 16 registered private banks and 3 public owned banks operating in Ethiopia as of the current year.

The Ethiopian banking structure is still characterized by concentration in terms of ownership (dominated by the state owned banks), asset portfolio (largely CBE), and geographic distribution of financial institutions (mostly in major urban centers). It is also characterized by noticeable absence of certain types of financial institutions/markets such as investment banks, venture capital markets, private securities market (corporate bonds and stocks), and re-insurance companies. The country’s financial policy reserves the financial sector for Ethiopian nationals (Weeks et al. 2004).
1.3 Statement of the Problem

A single bank is highly connected with other banks for payment system and/or other various functions. The failure of a single bank not only affects its shareholders and depositors rather it also affects the performance of other banks and the whole economy of the country. The recent global recession can be taken as an example of economic disaster that occurred by the failure of banking business.

Harker and Zenios (1998) report shows that the bank performance is a function of its strategic choices, strategy execution, quality of services, and the environment. Accordingly, profitability difference for those banks operating in similar macroeconomic environment can be assured through the success of their competitive strategies and other managerial procedure. Comparative advantages, therefore, may arise from the bank’s size, asset growth, and risk management quality, market share, ownership structure, and concentration index. Thus, these explanatory variables of banks’ performance should be extracted in empirical researches.

For all the aforementioned reasons, like limited stock of knowledge on determinants of bank profitability, the lack of consensus in the banking literature on the factors that affect bank profitability, this study contributes its share to the literature in general and the development and growth of the banking sector of Ethiopia in particular by identifying the key factors that affect the profitability of Ethiopian commercial banks.

So the purpose of this paper is to investigate the effect of bank-specific, industry specific and macroeconomic factors on Ethiopia’s bank performance.

1.4 Research Questions
The main research question is: what factors determine financial performance of commercial banks in Ethiopia.

1.5 Objectives of the Study
General objective:

The main objective of the study is to examine bank-specific, industry-specific and macroeconomic determinants of commercial banks performance in Ethiopia.
Specific Objectives

- To examine the significance of bank size on bank performance
- To detect the relationship between capital adequacy and bank performance
- To identify the impact of operational efficiency on bank performance
- To investigate liquidity influence on bank performance
- To evaluate the linkage between Loan to Deposit ratio and banks performance
- To find the correlation between income diversification and bank performance
- To distinguish the relation between concentration and banks performance
- To verify the effect of bank size system on bank performance
- To confirm the attachment of inflation on bank performance
- To discover the effect GDP growth rate on performance of commercial banks

1.6 Hypothesis

H1: There is a positive significant relationship b/n bank size and bank performance.

H2: There is a positive significant relationship between capital adequacy and performance of Ethiopian commercial banks.

H3: There is a negative significant relationship between operational efficiency and performance of Ethiopian commercial banks.

H4: There is a negative significant relationship b/n liquidity and bank performance.

H5: There is a positive significant relationship between income diversification and performance of Ethiopian commercial banks.

H6: There is a positive significant relationship between loan deposit ratio and performance of Ethiopian commercial banks.

H7: There is a positive significant relationship between concentration and performance of Ethiopian commercial banks.

H8: There is a positive significant relationship between bank size system and performance of Ethiopian commercial banks.
H9: There is a negative significant relationship b/n inflation and bank performance.
H10: There is a positive significant relationship between GDP growth and performance of Ethiopian commercial banks.

1.7 Significance of the Study
Identifying bank performance determinant factors is vitally important for all stakeholders, such as the owners, the investors, the debtors, the creditors and depositors, the managers of banks, the regulators and the government. The paper may have important practical implication for banks to find out what determinants of profitability are crucial so that any concerned bodies can take initiatives in managing the dominant determinants. It is also used as a starting point for further study conducted on banking performance with different technique.

1.8 Delimitation/Scope of the Study
The scope of the study is confined sixteen banks out of eighteen commercial banks registered in Ethiopia. Performance of banks can be expressed in terms of competition, concentration, efficiency, productivity and profitability, but in this study performance is defined as profitability. Therefore, measuring performance (profitability) is delimited to three indicators- return on asset, return on equity and net interest margin-, and ten variables. The reason for the restriction of variables to ten is that the focus of most literatures lays on them and the availability of data, for instance, the study excludes credit risk due to confidentiality of data on non performing loan or provision for loan loss.

1.9 Organization of the Paper
This paper consists of five chapters with different sections and sub-sections, and it was structured as follows. Chapter one presents the introduction for the main part of the paper. Chapter Two reviews the most significant analytical and empirical studies. Chapter three focuses to present the methodology of the study. Chapter four also provides the analysis of results and discussion. Chapter five, as usual, gives conclusion and recommendation with policy implication and further research direction.
CHAPTER TWO

LITERATURE REVIEW

2.1 Analytical Literature

2.1.1 Bank performance

Better bank performance increases the reputation and image from public or market point of view. Literature pays a great deal of attention to the performance of banks, expressed in terms of competition, concentration, efficiency, productivity and profitability (Bikker and Bos, 2006).

2.1.2 Bank Performance Indicators.

Bank performance proxy measures are different in various literatures, such as Rao & Tekeste (2012), Ongore and Gemechu (2013), Alper and Anbar (2011), Athanasoglou, et. al., (2005), Alexiou and Sofoklis (2009), and Sufian and Chong (2008), on the issue of investigating the factors that influence the performance of the bank are most commonly employed one or two or all of the three alternative measures (ROA, ROE and NIM) were used.

Return on Asset

ROA is one of the major ratios that indicate the profitability of a bank and it has emerged as the key ratio for the evaluation of bank profitability and has become the most common measure of bank profitability in the empirical literature Rao & Tekeste (2012), Alkhatib, (2012), Alexiou and Sofoklis (2009), and Ana et. al. (2011).

Return on Equity.

The other financial ratio to measure the bank performance is ROE that reflects how much profit a bank earned compared to the total amount of shareholder equity invested or found on the balance sheet and it measures how effectively a bank management is using shareholders’ funds.
ROE is the product of ROA and assets-to-equity ratio (equity multiplier that measures financial leverage). Essentially the ROE–ROA relationship clearly illustrates the fundamental tradeoff that banks face between risk and return, whereas the equity multiplier reflects the leverage or financing policies, i.e. the debt-equity proportion that the bank management used to fund the bank.

Net Interest Margin

Finally, the NIM variable focuses on the profit earned on lending, investing and funding activities. It reflects the cost of bank intermediation services and the efficiency of the bank. The higher the net interest margin, the higher the bank's profit and the more stable the bank is. However, a higher net interest margin could reflect riskier lending practices associated with substantial loan loss provisions.

The paper attempted to examine the impact of an extended number of factors that are distinguished as internal and external determinants on banks performance. The selection criteria of these variables are based on the results of existing empirically studies that shows significant influence of performance and the availability of each variable data.

**2.1.3 Bank Specific Variables**

Bank Size

Bank size is measured by the natural log of total assets. In the literature, mixed relationships are found between size and profitability. Large banks are likely to have an advantage of engaging in higher investment diversification than small banks. Since this diversification reduces risks and economies of scale lead to increase operational efficiency through minimizing costs, positive relationship is expected between bank size and profitability (Rao & Tekeste, 2012 and Alper and Anbar, 2011. On the other hand, in the diversification of bank branches, for instant, the operational expense may get higher and the variable may exhibit negative effects Ameur and Mhiri, 2013 and Sufian and Chong, 2008.

Capital Adequacy (CAR)
Capital adequacy (Equity-Asset Ratio) reflects the capital strength or capital structure of a bank. Large size of equity is expected to reduce the bank risk and increases a bank’s creditworthiness in reducing its funding cost for a bank with higher equity to assets ratios will normally have a lower need of external funding. However, lower capital ratios in banking imply higher leverage and risk, which therefore lead to greater borrowing costs.

Operational Efficiency

Cost Income Ratio (CIR) reflect bank’s operational efficiency and it is defined as non interest costs (operating cost, such as administrative costs, staff salaries and property costs excluding bad debts and doubtful expenses) divided by total of interest income and non-interest income (Dietricha and Wanzenriedb, 2009). CIR used as an indicator of management’s ability to control costs and is expected to have a negative relation with profits, since improved management of these expenses will increase efficiency and therefore raise profits (Guru et al. 2002).

Liquidity Risk

Liquidity is measured by liquid asset to total asset ratio. Commercial banks may confront with liquidity deficit, when they face a problem of meeting a large amount of demand (withdrawals). On the other hand, idle funds and the lower returns on liquid assets may also adversely affect the profitability of those banks with surplus liquidity. Therefore, liquidity may have a positive or a negative effect on banks profitability.

Income diversification (DIV)

Non-interest income is other alternative means of income other than earning from loans. Banks generate income from off-balance sheet such as from letters of credit and this non-interest income would represent a key source of bank revenue (Rasiah, 2010). Thus, the ratio of non-interest income over average assets is entered in the regression analysis as a proxy measure of income diversification onto non-traditional activities. Non-interest income consists of service charges, commission, guarantee fees, net profit from sale of investment securities, and foreign exchange profit.
Loan to Deposit Ratio (LDR)

Loans are the most important indicators of banks performance in the bank financial statements because they reflect the bank's primary activity. Assumed, other variables constant, the higher the rate of transforming deposits into loans, the higher the profitability will be. For that, a positive relationship between loan deposit ratio and banks profitability is expected. On the other hand, if increasing loans leads to higher funding requirements, a negative impact of the loan ratio on the banks profitability may accrue Alexiou and Sofoklis (2009) and Ana et. Al.(2011).

2.1.4 Industry Specific Determinants
Concentration (HHI)

It measures the market structure in the banking industry by means of the bank concentration variable. Market concentration is measured by using the Herfindahl-Hirschman (H-H) index (Athanasoglou et al., 2005) or the ratio of the three largest banks’ assets to the total assets of the entire banking sector. In this study market concentration is measured by using the Herfindahl-Hirschman (H-H) index, which is the sum of the squares of market share of the sample banks included in this particular study. The high concentration ratio in the market creates greater than average efficiency in these markets yielding a positive profit concentration relationship (Berger, and Hannan, 1989). 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 performance and market concentration. As a result, the overall effect of market concentration on banking performance is again indeterminate.

Size Bank System (SBS): reflect the importance of bank financing in the economy and it is measured by the ratio of total assets of banks to GDP. Regarding to the bank size system, Demerguç-Kunt and Huizingha (1999) provide the evidence that small size bank system allow to high margins and profits, when they explore the bank profitability of 80 countries over the 1988-1995 period. As well, BenNaceur (2003),
reports that the growth of bank system does not necessarily contribute to improve profitability of the banking sector in Tunisia.

2.1.5 Macroeconomic Determinants

GDP - GDP growth is expected to have a positive impact on bank profitability according to some literatures (Demirguc-Kunt and Huizinga, 1999; Bikker, and Bos, 2006; Athanasoglou et al., 2006). Accordingly, we expect a positive relationship between bank profitability and GDP development as the demand for lending is increasing (decreasing) in cyclical upswings (downswings). However, BenNaceur and Goaid, (2005) suggest that GDP growth does not tell any characteristic of the banking regulation and the advanced technology in the banking sector.

Inflation (INF): is used to represent the changes in the general price level or inflationary conditions in the economy and it is measured by annual country inflation rate. Abreu and Mendes (2000), point out a negative relationship between the inflation rate and bank’s profitability in European countries. Likewise Ayadi and Boujelbene (2012), report a negative effect of inflation on Tunisian bank profitability over the 1995-2005 period.

2.2 Empirical Literature

Rao & Tekeste (2012), conducted the research on the topic “Determinants of Profitability of Commercial Banks in a Developing Country. In the study equity to asset ratio, non-interest income to total income and bank size have positive and significant impact on the profitability, the loan loss reserve to total loans is found to have negative impact on profitability though it is statistically insignificant, liquidity and operational efficiency are also negatively affect the profitability of the banks. But the external factors (concentration, inflation and GDP) are found to be statistically insignificant.

The paper conducted by Ameur and Mhiri (2013), to identify the explanatory factors of banks’ Performance on ten Tunisian commercial banks from 1998 to 2011 incorporate bank-specific, industry-specific and macroeconomic factors. The
findings suggest that the bank capitalization and the best managerial efficiency have a positive and significant effect on the Tunisian bank performance. However, concentration and bank size have a negative and a significant effect on performance. On the other hand, the macroeconomic variables do not have a significant effect on bank performance, except inflation which seems to affect negatively bank’s net interest margin. Moreover, private owned banks seem to be more profitable than state owned ones.

Ongore and Gemechu (2013), study on determinants of financial performance of commercial banks in Kenya. The finding revealed that specific factors such as capital adequacy, asset quality and management efficiency significantly affect the performance of Kenyan commercial banks, except for liquidity variable. The relationship between bank performance and capital adequacy and management efficiency was found to be positive and for asset quality the relationship was negative. But the overall effect of macroeconomic variables was inconclusive and the role of ownership identity on the financial performance of commercial banks was insignificant. Even if it is found that GDP has negative correlation with performance indicators, the relationship is insignificant.

Azam and Siddiqui (2012), applied multiple regression technique to analyze the internal and the external determinants of Pakistan banking industry. The empirical results show that foreign banks are less affected by the macroeconomic factors of the host country than domestic banks and they have a higher profitability margin in Pakistan.

Alkhatib, (2012), with the purpose to empirically examine the financial performance of five Palestinian commercial banks listed on Palestine securities exchange. The finding implies that operational efficiency and asset management individually have significant impact on ROA, when they used along with bank size and credit risk, they add significant effect on Tobin’s Q and EVA.

San1 and Heng (2013), conducted the study aims to investigate the impact of bank-specific factors. The results imply that ratios employed in this study have different effects on the performance of banks in both China and Malaysia, except credit and
Operating ratios influence performance of banks in China, but this influence is not true for Malaysian banks regardless of the measure of performance.

The study of Alper and Anbar (2011) focuses on the bank specific and macroeconomic determinants of Profitability in Commercial Bank of Turkey. The finding the research reveals that asset size and non-interest income have a positive and significant effect on bank profitability. However, size of credit portfolio and loans under follow-up have a negative and significant impact on bank profitability. With regard to macroeconomic variables, only the real interest rate affects the performance of banks positively. These results suggest that banks can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio. In addition, higher real interest rate can lead to higher bank profitability.

The Greek banks working paper investigates the bank-Specific, industry-specific and macroeconomic determinants of profitability (Athanasoglou, et. al., 2005). The results show that all bank-specific determinants, except size, affect bank profitability significantly as capital and labor productivity positive and operating expenses negative impact on profitability. The macroeconomic determinants: inflation and cyclical output also clearly affect the performance of the banking sector. Moreover, the industry specific factors: ownership and industry concentration are found insignificant.

Other similar study on Greek banks was conducted by Alexiou and Sofoklis (2009). The finding suggests that most of the bank-specific determinants were significantly affect bank profitability. However, there is relatively weak relationship between size and profitability, and ambiguous picture were considered on macroeconomic factors.
CHAPTER THREE

Research Design and Methodology

3.1 Sample and Sampling Techniques
Among 18 commercial banks in Ethiopia, 16 banks were selected as the sample for the study. The remaining 2 banks: Debub Global Bank and Enat Bank were excluded because they have only two years data until 2014. This means that the study covers 88.9% of the population (commercial banks in Ethiopia).

3.2 Source and Tools/Instruments of Data Collection
The study used secondary data to investigate the bank specific, industry specific and macroeconomic determinants of the bank performance in Ethiopian commercial banks. Therefore, all the annual audited financial statements, which were calculated in Ethiopian Birr as of June 30 of each year for the sixteen Ethiopian banks, and the macroeconomic variables data (inflation and GDP) were gathered from National Bank of Ethiopia.

3.3 Methods of Data Analysis
Quantitative method of data analysis is used. It can be of great value to the researcher who is attempting to draw meaningful results on determinant factors on any subject area from a large body of data. This study employed 'Stata' statistical package for reporting the summary results in numerical terms with a specified degree of confidence. Unbalanced panel data used because each cross-sectional unit of the study does not have the same number of time series observations due to difference in their date of establishment to absorb 12 years of data.

3.3.1 Panel data
The panel data was adopted for conducting our econometric modeling. This is because of panel data have space and time dimensions and panel data can take heterogeneity explicitly into account, give more variability, less co-linearity among variables, more df and more efficiency (Gujarati, 2004).
3.3.2 Econometric methodology

3.3.2.1 Empirical Specification and Estimation

In this section, the methodology adopted for the empirical analysis to recognize the determinants of performance in Ethiopian bank is introduced. Accordingly, there is a need to estimate a relationship of the following form using the panel data consisting of sixteen banks’ data across a period from 2003 to 2014. The model question is

\[ Y_{it} = a + \beta X_{it} + \varepsilon_{it} \]  

Where, \( a \) represents the intercept, \( \beta_1, \beta_2 \ldots \beta_n \) represent the respective regression coefficients for explanatory variables \( X_1, X_2 \ldots X_n \) for estimating \( Y_{it} \), the equation, then, can be written as;

\[ Y_{it} = a_i + \beta_1 BS_{it} + \beta_2 IndS_{it} + \beta_3 Macro_{it} + \varepsilon_{it} \]  

Where, \( Y_{it} \) is an index of Performance represented by ROA, ROE and NIM, BS is vector of bank specific variables, IndS is vector of industry specific variables and Macro is vector of macroeconomic variables that are believed to determine the level of performance. While \( a_i \) is unobserved macro, industry and bank specific time; invariant effect which allows for heterogeneity in the means of the \( Y_{it} \) series across banks and \( \varepsilon \) is the error term.

Then, the equation would be;

ROA Model: - Return on Average Assets as dependant variable

\[ ROA_{i,t} = \alpha + \beta_1 SIZE_{i,t} + \beta_2 CAR_{i,t} + \beta_3 CIR_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 DIV_{i,t} + \beta_6 LDR_{i,t} + \beta_7 HHI_{i,t} + \beta_8 SBS_{i,t} + \beta_9 INF_{i,t} + \beta_9 GDP_{i,t} + \varepsilon_{i,t} \]  

ROE Model: - Return on Average Equity as dependant variable

\[ ROE_{i,t} = \alpha + \beta_1 SIZE_{i,t} + \beta_2 CAR_{i,t} + \beta_3 CIR_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 DIV_{i,t} + \beta_6 LDR_{i,t} + \beta_7 HHI_{i,t} + \beta_8 SBS_{i,t} + \beta_9 INF_{i,t} + \beta_9 GDP_{i,t} + \varepsilon_{i,t} \]  

NIM Model: - Net Interest Margin as dependant variable

\[ NIM_{i,t} = \alpha + \beta_1 SIZE_{i,t} + \beta_2 CAR_{i,t} + \beta_3 CIR_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 DIV_{i,t} + \beta_6 LDR_{i,t} + \beta_7 HHI_{i,t} + \beta_8 SBS_{i,t} + \beta_9 INF_{i,t} + \beta_9 GDP_{i,t} + \varepsilon_{i,t} \]
CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results

This chapter provides empirical evidence on the determinants of bank profitability in the Ethiopian Banking industry. The section has two parts: the result of descriptive statistics and the regression of the three models.

4.1.1 Descriptive Statistics Results.

This part presents the outcomes of the descriptive statistics for main variables involved in the regression model. I introduce summary statistics for all variables in Table 4.1.

Table 4.1 Descriptive Statistics of Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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<tr>
<td>roa</td>
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<td>2.4832</td>
<td>1.7719</td>
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<td>.51</td>
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<tr>
<td>Bank Specific Factors</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>size</td>
<td>143</td>
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<td>1.34</td>
<td>4.86</td>
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<tr>
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<td>.158</td>
<td>.108</td>
<td>.04</td>
<td>.77</td>
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<td>cir</td>
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<td>48.1</td>
<td>50.4</td>
<td>13.4</td>
<td>441.9</td>
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<tr>
<td>liq</td>
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<td>41.36</td>
<td>11.2</td>
<td>15.8</td>
<td>93.8</td>
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<tr>
<td>div</td>
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<td>1.97</td>
<td>0.31</td>
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<td>19.7</td>
<td>20</td>
<td>129.6</td>
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<td>Industry Specific Factors</td>
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<td>.07</td>
<td>.43</td>
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<td>.006</td>
<td>.01</td>
<td>.03</td>
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<td>Macroeconomic Specific Factors</td>
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<td>.037</td>
<td>-.02</td>
<td>.14</td>
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</tbody>
</table>
As shown in the Table 4.1, the descriptive statistics of the study, there are 143 observations due to unbalanced data collected from sixteen commercial banks over the period 2003 to 2014. The mean for ROA, ROE and NIM are 2.483216, 22.84898 and 4.276335 percent, and the standard deviations are 1.771959, 14.82329 and 1.754202 percent respectively with a minimum of -3.952926, -20.20195 and 0.509554 percent, and a maximum of 6.717239, 77.70969 and 10.78294 percent respectively.

The mean and standard deviation of the ten independent variables were clearly seen in the above descriptive statistics table.

4.1.2 Regression
This section presents over all the empirical results of the regressions analysis for banks profitability which is measured by return on asset, return on equity, and net interest margin. They have been regressed to understand the bank specific, industry specific and macroeconomic determinants.

4.1.2.1 Choosing Models
There are broadly two classes of panel data estimator approaches that can be employed in empirical research: fixed effects models and random effects models. The first issue is, therefore, that choosing between fixed effects (FE) and a random effects (RE) model based on the Hausman test where the null hypothesis says that random effects model is appropriate than the fixed effects model.

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. Based on this fact, the p-value for the Hausman test for the model ROA was 0.001, i.e. less than 1%, so running fixed effect model is appropriate. However, for the model ROE and NIM as a dependent variable the p-value is greater than 1%, indicating that the random effects model is preferred to fixed effect specification.

For model ROE & NIM, the p-value for the Hausman test is greater than 1%, indicating that the random effects model is preferred to fixed effect specification. However, the appropriateness of random effect has to be tested by Breusch and Pagan
Langrangian Multipier (LM) test. The LM test reveals that Simple OLS regression is appropriate for ROE & Random for NIM model.

4.1.2.2 Econometric Treatment
In order to determine the validity of the model, the presence of heteroscedasticity, autocorrelation, multicollinearity and normality tests were treated well.

i. Heteroscedasticity
The White’s test is usually used as a test for heteroscedasticity. In this test, a regression of the squares of the residuals is run on the variables suspected of causing the heteroscedasticity, and cross products (Gujarati, 2004).

\[ n*R^2 = \chi^2 (n) \]

If \( n*R^2 < \chi^2 \), heteroscedasticity can not be confirmed. Therefore, no heteroscedasticity problem occurred for all the above calculated amounts of \( R^2 \) are less than the critical \( \chi^2 \).

ii. Autocorrelation Problem
The most celebrated test for detecting serial correlation is the Durbin–Watson d statistic. To see the autocorrelation problem based in the decision rules, significance points of \( dL \) and \( dU \) at 1% level of significance from Durbin–Watson d statistic table. The result exhibited that there is no positive or negative autocorrelation exist in the ROA and there is also no rejection on the null hypothesis of ‘no autocorrelation’ for the supportive models ROE and NIM.

iii. Multicollinearity
Although there is no one unique method of detecting multicollinearity, or measuring its strength, among several indicators variance inflation factor (VIF) and inspection of partial correlations is used for this particular study (Gujarati, 2004).

As a rule of thumb, if the VIF of a variable exceeds 10, which will happen if \( R^2 \) exceeds 0.90, that variable is said be highly collinear. Thus, the model is free of multicollinearity problem as VIF is less than 10.
The other testing of multicollinearity is examination of the correlation coefficients. If correlation between two variables exceeds 0.8, we have to reject the null hypothesis (Gujarati, 2004). Therefore, all correlation coefficients of the study variables are smaller than 0.8 at which the phenomenon of colinearity is pronounced. Then, there is no problem of multicollinearity.

iv. Normality Test

Another third important diagnostic test conducted in this paper is the normality assumption (i.e. the normally distributed errors). Since, the histogram is bell-shaped and the Shapiro-Wilk W test statistic is not significant. The null hypothesis is that the distribution of the residuals is normal, here the p-value is 0.06 we failed to reject the null (at 95%). We conclude then that residuals are normally distributed in the study, concluded that there is no the problem of normality in the models.

Model Summary

Table 4.2 Model Summary

<table>
<thead>
<tr>
<th></th>
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<tbody>
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<td></td>
<td></td>
<td></td>
<td>F Change</td>
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<td>.123</td>
<td>1.642833740</td>
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<td>10</td>
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</table>

As Table 4.2 exhibits the model summary, ROE has the highest F-value, 26.952, followed by ROA, 25.122 and NIM, 2.542. The model fit (“ANOVA”) has to be seen to check the goodness of fit before looking at R-square first. Significance of the model (“Did the model explain the deviations in the dependent variable”) shows the goodness of fit of the model. The lower this number, the better the fit will be. Typically, if “Sig” is greater than 0.05, we conclude that our model could not fit the data. Based on table 4.10 all three models are significant due to the values of sig. are less than 0.05 as 0.000 for ROA and ROE, and 0.009 for NIM which indicates that all
Determinants Of Commercial Banks’ Performance In Ethiopia

models are good models to measure banks profitability because if sig < 0.01, the model is significant at 99%. If the model was not significant (a relationship could not be found) or "R-square is not significantly different from zero."

The explanatory power of the model, the R square, for ROA, ROE and NIM models are 0.715, 0.729 and 0.203 respectively, which means that 71.5% of the variance in ROA and 72.9% of variance in ROE are explained by the given ten independent variables considered in this paper. For NIM model, the independent variables explain only 20.3% of NIM and the remaining 79.7% are unexplained in the model which means there are another additional variables that are important in explaining NIM that have not been considered in this study. Therefore, ROA and ROE models are better reliable than NIM to measure profitability in Ethiopian commercial banks in relation to the ten explanatory variables used in this paper due to the fact that the higher R square the better explained by the independent variables in the model.

4.1.2.3 Regression Results
Table 4.9 Regression on ROA, ROE and NIM Models

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<tr>
<th>Factors</th>
<th>ROA</th>
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<th>ROE</th>
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<th>NIM</th>
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<td>size</td>
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<td>.5016612</td>
<td>0.024**</td>
<td>9.751418</td>
<td>1.061193</td>
</tr>
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<td>car</td>
<td>6.030426</td>
<td>2.204647</td>
<td>0.008***</td>
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<td>cir</td>
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<td>Liq</td>
<td>-0.0428816</td>
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<td>0.016**</td>
<td>0.0045314</td>
<td>0.131806</td>
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<tr>
<td>div</td>
<td>.8192006</td>
<td>.1153962</td>
<td>0.000***</td>
<td>2.58318</td>
<td>0.5245933</td>
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<td>ldr</td>
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<td>.0129713</td>
<td>0.148</td>
<td>1606946</td>
<td>0.0827579</td>
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<td>hhi</td>
<td>5.801168</td>
<td>2.375026</td>
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<td>37.68209</td>
<td>14.82393</td>
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<td>sbs</td>
<td>-119.3277</td>
<td>48.90794</td>
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<td>98.13226</td>
<td>215.4319</td>
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<td>inf</td>
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<td>.010249</td>
<td>0.075*</td>
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<td>4.719008</td>
<td>0.064*</td>
<td>96.64622</td>
<td>22.40418</td>
</tr>
</tbody>
</table>

Source: Computed using Stata

ROA suggested that all the bank specific variables: the bank size, capital adequacy (CAR), cost income ratio (CIR), income diversification (DIV), and liquidity (LIQ) except loan to deposit ratio (LDR) have significant relationship with bank
profitability. Among them Size, CIR, and LIQ are significant at 5% and CAR, DIV are significant at 1% level that shows they are the most critical determinants in the ROA model. In the same way, industry specific determinants: concentration and bank size system are both significant at the same level of significant (0.05). However, macroeconomic variables: inflation is significant at 10%. And real GDP growth rate is insignificant in the ROA model.

ROE model revealed that some of the bank specific factors can determine, with different significant level, the profitability in terms of earnings from average equity. Bank size and diversification are significant at 1% level of significance and loan to deposit ratio is significant at 10%. However, capital adequacy, cost income ratio, and liquidity are insignificance at ROE model. Concentration has impact on ROE at 5% and GDP at 10% level of significance, but size bank system (SBS) from the industry specific factors, and Inflation from macroeconomic factors are not significance when we measure bank profitability by ROE.

In the third model, among bank specific determinants, bank size and capital adequacy are significant at 5%. All other bank specific determinants are insignificant. Inflation has impact on NIM with a probability of 1% and bank size system also has effect on the net interest margin of the bank at significant level of 10% However, others such as concentration from industry specific and GDP from macroeconomic factors are insignificant.

4.2 Discussion

According to the descriptive statistics reported in Table 4.1, the Ethiopian commercial banks earn on an average positive profit over the last decade. However, the difference between minimum and maximum clearly shows that there are large differences in profitability among the Ethiopian commercial banks. That means, the most profitable commercial bank in Ethiopia earned 6.72 cents of net income from a single birr of asset investment and 77.71 cents per birr from the banks equity. In proportion to this the bank has a margin of 10.78 percent. And the maximum losses incurred are a loss of 3.95 and 20.2 cents on each birr of asset investment and on each birr of shareholder equity respectively with the margin of 0.51 percent. On the
other hand, the revenue earned throughout the study years is an average of 2.48 cents from each birr invested by the bank and 22.85 cents from their equity with the margin of 4.28 percent.

The discussion and conclusion of the study stick on the result of ROA model whenever there is discrepancy among their results. This is because of that ROA is not distorted by high equity multipliers (ROE disregards the risks associated with leverage), and it reflects a better measure of a bank’s ability to generate returns on its assets as well as it considers the disparity in the absolute magnitude of the profits that may be related to size. Since around 80% of the independent variables are unexplained in the NIM model, it should not be taken as a major model in the discussion. Moreover, based on the reasons stated in the methodology part that fixed model is most common technique in the literature, and more plausible when the entire population are considered so the discussion has to focus on the results of the fixed effect model (ROA model).

Bank size, natural log of total assets, is found to have statistically significant and positive impact on Ethiopian commercial banks’ profitability as depicted in the regression result tables. ROA and NIM are significant at 0.05 and ROE at 0.01 significance level. The Hypothesis number 1 that states there is positive significant relationship between bank size and performance of Ethiopian commercial banks is consistent with the result of regression. The positive coefficient indicates that larger commercial banks tend to earn higher profits than smaller commercial banks, and vice versa. It supports the earlier studies (Sufian and Habibullah, 2009; Kosmidou, 2008; and Kosmidou et al, 2006). This positive association between bank size and profitability of commercial banks may conform that larger banks are advantageous in making profit.

The finding of the study also shows that equity to asset ratio (CAR) is positively and highly significant to bank profitability that measured by ROA and NIM as witnessed in the regression results which agree with Hypothesis number 2 that said there is positive significant relationship between capital adequacy and performance of Ethiopian commercial banks. The relationship between capital adequacy and
profitability indicates that Ethiopian commercial banks in the study period were focusing on making sound lending decisions which reaffirms that banks with more capital tended to engage in higher loan risk lending for higher profits. On the contrary, the study implies that banks that are relatively poorly capitalized were so conservative in extending loans and thus their profitability would be adversely affected. This empirical finding is consistent with the findings of other researches which are conducted by Berger (1995), Demirguc-Kunt and Huizinga (1999), Staikouras and Wood (2003), Goddard et al. (2004), Pasiouras and Kosmidou (2007), and Kosmidou (2008). These studies point out that those well-capitalized banks face lower risks of going bankrupt, building their credit worthiness, and reducing their cost of funding which will ultimately enhance their profit margin. However, capital adequacy ratio (CAR), in this study, shows insignificant to explain bank profitability which measured by ROE. This shows the effect of the bank capital on profitability is different depending on whether the study considered the profitability of assets or of equity. In the first case, when ROA is considered as the dependent variable, the effect is positive and highly significant, as expected. On the other hand, the negative effect of banks' capital on the ROE is explained when it is taken as a product of the ROA and equity multiplier (the inverse of the ratio of equity-to-total assets). i.e., \( \text{ROE} = \text{ROA} \times \frac{1}{(\text{Eq}/\text{TA})} \). In consequence, the decreases of the ROE resulting from increases in this ratio cannot be interpreted as decreases in the wealth created using the capital invested; rather, they can be seen as a consequence of the decreased level of indebtedness or leverage of the banks.

Expense management or operational efficiency of the bank, measured by cost to income ratio (CIR), is statistically significant in the first model (ROA) and is negatively correlated with profitability as measured by ROA and NIM. The negative sign of the CIR variable in the equations of the ROA and NIM, and its significance coincide with the 3rd Hypothesis which is about the negative relationship between operational efficiency (cost income ratio) and performance of Ethiopian commercial banks. Even though CIR is not significant for the model of NIM, its negative sign has an implication of cost income ratio is inversely proportional to profitability. The result of the study implies that more operationally efficient commercial banks
reported higher profits than those commercial banks that have poor expense management over the study period. Therefore, one of the factors that negatively affect the banks’ profitability is the failure of management to control cost. The result of the study is consistent with Pasiouras and Kosmidou (2007), and Kosmidou (2008), among others.

As far as liquidity ratio (LIQ) is concerned, it is found to be statistically significant, particularly on ROA model and negatively correlated with profitability measures of all model that coincide Hypothesis number 4. The negative correlation between liquidity and bank profitability reveals that the more liquid a bank is the less profitable it will be. Here one has to interpret the result with caution. Of course, a bank should be liquid enough to meet its depositors’ demand of withdrawing money at any time they want to withdraw. The lower ratio of this reveals that the bank will face difficulty in meeting payments in the right time. A lower ratio of this would also mean that the bank will not effortlessly get funds or else at an extremely high rate of interest which will mount the cost of funding and eventually invade profitability of the bank. On the other hand, if the bank is excessively liquid, it means that the bank is in ‘liquidity trap’ and is keeping its productive assets idle. This ultimately put the bank’s profitability at risk because an extremely higher ratio of this would mean that the bank has kept excess liquid assets inactive and hence losing interest income.

The study also agrees with Hypothesis number 5 that there is a positive significance relationship between income diversification and profitability of banks. The ratio of non-interest income to total income, which measures the level of diversification of a bank’s activities, is found to have statistically significant at 1% and positive impact on bank profitability particularly when it is measured by ROA and ROE. A positive and significant association between this variable and profitability reveals that commercial banks in Ethiopia earned a considerable proportion of their income from sources other than interest over the study period. The result of the study suggests that commercial banks in Ethiopia need to diversify their line of business activities to meet their objectives of profit maximization.
Concerning loan to deposit ratio the study result failed to match with Hypothesis number 6 that deals with the significance of loan to deposit ratio on the profitability of the banks, the study finding indicates that there is no statistically correlation between loan to deposit ratio and profitability of the bank.

With regard to the set of exogenous variables, the result suggests a positive relationship between bank concentration and profitability in Ethiopia banking industry (both ROA and ROE are significant at 5%) in line with Hypothesis number 7 (there is a positive significant relationship between concentration and performance of Ethiopian commercial banks). The positive significant correlation of this variable could indicate a high degree of concentration.

With regard to the size bank system (SBS) which reflect the importance of bank financing in the economy and it is measured by the ratio of total assets of banks to GDP. The result reveals that the increase of size bank system has negative and significant correlation with profitability as measured in ROA model that agree in significance to Hypothesis number 7 (There is a positive significant relationship between bank size system and performance of Ethiopian commercial banks), but the result disagreed with its negative sign. Therefore, whenever the contribution of Ethiopian commercial banks total asset to GDP is higher, the bank’s profitability become lesser as it’s negative. The result is supported by different studies (Demirguc-Kunt and Huizinga, 1999).

For macroeconomic factors, the study result shows that there is no a direct relationship between GDP growth and bank profitability for the variable is found to be statistically insignificant which contradict Hypothesis number 10 which assumes there is a positive relationship between growth of GDP and profitability. However, the positive sign of the variable supports the argument that economic growth positively affects bank profitability mainly through the effect that the economic cycle exerts on demand for credit by firms. Inflation is also found to be statistically insignificant except for the model of NIM. The result is, therefore, contrary to the expectation (Hypothesis number 9) but it is positively related to bank profitability.
CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This section provides the conclusion that inferred from the result of empirical exploration of determinants on Ethiopian commercial banks’ profitability

The positive and significant relation between bank size and profitability, as depicted on all measures (ROA, ROE and NIM), indicates larger banks tend to earn higher profit than smaller banks, and vice versa. Therefore, in Ethiopian commercial banks context, larger banks could be benefited from economies of scale.

The association between capital adequacy and profitability imply that banks with more capital engage in higher loan risk lending for higher profit. On the contrary banks that are relatively poorly capitalized were so conservative in extending loans and thus their profitability would be adversely affected. The result of having more capital to asset ratio (and, therefore, better solvency) point out that those well-capitalized banks face lower risks of going bankrupt, building their credit worthiness, and reducing their cost of funding which will ultimately enhance their profit margin.

The negative relationship of cost income ratio and profitability, and its significance on earning on asset shows that more operationally efficient commercial banks reported higher profits than those commercial banks that have poor expense management over the study period. Therefore, one of the factors that negatively affect the banks’ profitability is the failure of management to control cost.

The negative and significant correlation between liquidity and bank profitability disclose that the more liquid a bank is the less profitable it will be. Here one has to interpret the result with caution. The lower ratio of liquidity reveals that the bank will face difficulty in meeting payments in the right time and it may force to
borrow with extremely high rate of interest and eventually invade profitability of the bank. On the contrary, if the bank is excessively liquid (liquidity trap), it means that the bank is keeping its productive assets idle and hence losing interest income.

- A positive and significant relationship of income diversification and profitability shows that commercial banks in Ethiopia earned a considerable proportion of their income from sources other than interest over the study period. The result of the study suggests that commercial banks in Ethiopia need to diversify their line of business activities to meet their objectives of profit maximization.

- The positive significant correlation of HHI could indicate a high degree of concentration in Ethiopian banking industry. Banks in highly concentrated markets tend to earn monopoly profits. Thus, the positive sign of concentration characterized that the nature of Ethiopian banking sector may need for more competition and more entry into the banking market.

- The negative and significant association between size bank system and profitability exhibits whenever the contribution of Ethiopian commercial banks total asset to GDP is higher, the bank’s profitability become lesser.

- Even if there is no correlation between GDP and profitability, the positive sign of the variable supports the argument that economic growth positively affects bank profitability mainly through the effect that the economic cycle exerts on demand for credit by firms. Inflation is also found to be statistically insignificant except for the model of NIM.

Generally, the study found that almost all internal factors are the most determinant factors of the profitability of Ethiopian commercial banks.
5.2 Recommendation

Overall the empirical results of this study provide evidence that, there is a large difference in profitability among Ethiopian commercial banks. Their profitability is mainly dominated by bank-specific factors which are on the hands of the management of the banks. So, the study suggests to the banks’ managers and policy makers to give high concern on the internal factors of profitability and set direction to manage the most determinant factors of performance.

- There is a possibility for banks to be benefited from economies of scale through expanding their market share in Ethiopian banking industry. So the study suggests the managers to look at the benefit of enlarging their asset size.

- The Ethiopian banking capital structure provides promising profit for well capitalized banks; therefore, stake holders are advised to build large capital to asset ratio through, for instance, selling their share for better solvency and reducing fund costs, and ultimately to succeed their objectives of maximizing profits.

- Efficiency on cost minimizing has a great contribution in profitability Ethiopian commercial banks. Therefore, the study provides suggestion for managers to focus on properly managing the level of non interest expenses like reducing general expenses are recommendable.

- Income diversification is the one of income generating area that positively and significantly affects the bank’s profitability. Therefore, the paper proposes to the management bodies to expand their non interest earnings by collecting each and every service charges and commission incomes attentively.

- Finally, the researcher would like to recommend future researchers to include the impact of non- financial determining factors of banks profitability such as management quality and efficiency.
Reference


Beyond Roe – How to Measure Bank Performance. European Central Bank, 2010


www.nbe.gov.et
Appendix A

Table 3.1 Variables Description

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<thead>
<tr>
<th>Variables</th>
<th>Abbreviation</th>
<th>Description</th>
<th>Expected Sign</th>
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<tr>
<td>Return on average assets</td>
<td>ROA</td>
<td>Net Income after Tax / Average Asset</td>
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<tr>
<td>Return on average equity</td>
<td>ROE</td>
<td>Net Income after Tax / Average Equity</td>
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<tr>
<td>Net Interest Margin</td>
<td>NIM</td>
<td>Net Interest Income / Total Earning Assets</td>
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<td>Bank Size</td>
<td>Size</td>
<td>Natural Log of Total Asset</td>
<td>+/-</td>
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<tr>
<td>Capital Adequacy</td>
<td>CAR</td>
<td>Average Equity / Average Asset</td>
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<td>Operational Efficiency</td>
<td>CIR</td>
<td>Non Interest Costs / Interest Income + Non Interest Income</td>
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<td>Liquidity Risk</td>
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<td>Income Diversification</td>
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<td>Non-interest Income / Average Assets</td>
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<td>Total Loan / Total Deposit</td>
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<td>Bank Concentration</td>
<td>HHI</td>
<td>The sum of the squares of market share of the sample banks (Herfindahl-Hirschman Index)</td>
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<td>Size Bank System</td>
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<td>Total Assets of All Banks to GDP</td>
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### Appendix B

**Correlation Matrix**

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