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Determinants of Bank Profitability in Ethiopia: A Case Study of Private Commercial Banks

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Abstract
The study was attempted to investigate determinants of bank profitability in Ethiopian private banks using secondary data. The data were obtained from audited financial statements of six sampled private commercial banks for the period of 2004 to 2011 and National bank of Ethiopia. Novel features of the study were the analysis of variables which are missed by other researcher; labor productivity, overhead, liquidity, and market share. The study used return on assets (ROA) as dependent profitability variable. Moreover, the study used both bank specific and external variables as explanatory variables. Both descriptive statistics and econometrics model specifically fixed effects estimation were used to analyze the relationships of dependent variable with explanatory variables. The major findings of the study shows that bank specific determinants were very important in explaining profitability than external variables. The Asset size, capitalization, labor productivity, liquidity and non interest income were positively and significantly related to bank's profitability, while credit risk and overhead efficiency have a negative impact on profitability of bank specific drivers.
Keywords: Determinants, External Factors, Internal Factors, Profitability, Private Banks, and Ethiopia

1. INTRODUCTION

The financial system is an important ingredient in any economic environment of a country (Abebaw and Kapur, 2011). Financial intermediaries as a component of the financial system provide a payment mechanism, match supply and demand in the financial markets, deal with complex financial instruments and markets, provide market transparency, and perform risk transfer and risk management functions.

In the course of the desire to operate profitably, the banking sector acts as an engine in enhancing modern trade and commerce for business firms and individual traders. In view of this, banks have largely become dependent on the competitive marketing strategies that determine their success and growth. Consequently, the modalities of the banking business have changed a lot in the new millennium compared to the way they used to be in the previous years (Hussain and Bhatti, 2010).

A number of factors have influenced profitability of commercial banks ranging from to those which are under the control of bank management and policy objectives (internal factors) to those factors which are beyond bank management level (external factors).

The banking system of Ethiopia demonstrates a vital role in contributing to national economy by intermediating between the savers and productive investors. The financial performance of banks affects the interests of depositors, share holders, regulators, potential investors and corporate owners.

As banks dominate the financial sector in Ethiopia, ensuring the financial health of these institutions is likely going to ensure the health of the performance of the financial system of the country (Abebaw and Kapur, 2011).

The importance of bank profitability at the micro and Macro level has made researchers, academics, bank managements and bank regulatory authorities to develop considerable interest on the factors that determine bank profitability (Athanasoglou, Brissimis and Delis, 2005; Molyneux and Thornton, 1992; and Tesahle, 2011).

Hence, the object of this study was to investigate the determinants of private bank profitability in Ethiopia by Utilizing bank level data for the period of 2004-2011.

2. EMPIRICAL LITERATURE REVIEW

The determinants of banks' profitability are usually assorted into internal and external factors. The internal determinants originate from bank accounts (balance sheets and/or profit and loss accounts) and therefore could be termed as bank-specific determinants of profitability.

The external determinants both industry-related and macroeconomic variables, they are not related to bank management but reflect the economic and legal environment that affect the operation and performance of banks.

Some studies were country specific and few of them considered panel of countries for reviewing the determinants of profitability.

2.1 Panel Country Studies

Molyneux and Thornton (1992) were the first to explores thoroughly the determinants of bank profitability on a set of countries. They used a sample of eighteen European countries during the period of 1986-

1989. They found a significant positive association between the return on equity and the level of interest rates in each country, bank concentration and government ownership. Moreover, they observed positive relationship of bank profitability with bank size, overhead, and the rate of inflation. They argued that positive association of overhead and profitability is due to employee's motivation as result of higher salaries and benefits. On the other hand, they found negative association of bank profitability with liquidity and loans.

In their study Demerguc-Kunt and Huizingha (1999) examined the determinants of bank interest margins and profitability using a bank level data for 80 countries in the period of 1988-1995. The set of variables included several factors accounting for bank characteristics, macro-economic conditions, taxation, regulations, financial structure and legal indicators. They reported that a larger ratio of bank assets to GDP and a lower market concentration ratio lead to lower margins and profits. Foreign banks have higher margins and profits than domestic banks on developing countries, while the opposite prevail in developed countries.

Abreu and Mendes (2000) investigated the determinants of bank's interest margins and profitability for some European countries in the last decade. They indicated that well-capitalized banks face lower expected bankruptcy costs and this advantage "translate" into better profitability. Although with a negative sign in all regressions, the unemployment rate was relevant in explaining bank profitability. The inflation rate was also relevant in their study.

Bashir (2003) examined the determinants of profitability of Islamic banks evidence from some Middle East countries for the period of 1993 to 1998. He found that high capital to asset and loan to asset ratios lead higher profitability in study area. The results also revealed that implicit and explicit taxes affect the bank performance and profitability negatively while macroeconomic conditions impact performance measures positively.

On another study, Falmini et al., (2009) used 389 banks in 41 sub-Saharan African countries to study on the determinants of bank profitability. They found that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Bank returns are affected by macroeconomic variables, suggesting that macroeconomic policies that promote low inflation and stable output growth do boost credit expansion. The results also indicate moderate persistence in profitability. This indeed means that the existence of competition among banks in sub Saharan countries reasonable fair. To carry out the study, they utilized random effect model in estimating the explanatory variables.

2.2 Single County Studies

Berger (1995) observed the relationship between the return on equity and the capital asset ratio for a sample of US banks for the period 1983-1992. Using the Granger causality model, he showed that the return of equity and capital to asset ratio tend to be positively related.

Guru et al., (2002) attempted to identify the determinants of successful deposit banks in order to provide practical guides for improved profitability performance of these institutions. The study was based on a sample of seventeen Malaysian commercial banks over the period of 1986-1995. The profitability determinants were divided in two main categories, namely the internal determinants (liquidity, capital adequacy and expenses management) and the external determinants (ownership, firm size and external economic conditions). The findings of this study revealed that efficient expenses management was one of the most significant factors in explaining high bank profitability. Among the macro-indicators, high interest ratio was associated with low bank profitability and inflation was found to have a positive effect on bank performance.

Naceur (2003) investigated the impact of bank's characteristics, financial structure and macro-economic indicators of bank's net interest margins and profitability in the Tunisian banking industry for the 1980-2000 period. The study found that bank characteristics explain a substantial part of the within-country variation of bank interest margins and profitability. High net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. Other important internal determinants of bank's interest margins bank loans which have a positive and significant impact. The size has mostly negative and significant coefficients on the net interest margins. This latter result may simply reflect scale inefficiencies. Finally, the paper found that the macro-economic indicators such inflation and growth rates have no impact on bank's interest margins and profitability.

Athanasoglou et al., (2005) assessed the effect of bank-specific, industry-specific and macro-economic determinants of bank profitability on a panel of Greek banks that covers the period 1985-2001. The estimation results posited that profitability persists to a moderate extent, indicating that deviations from perfectly competitive market structures may not be that large. All bank-specific determinants, with the exception of size, affect bank profitability significantly in the anticipated way.

Aburime (2008) studied company level determinants of bank profitability in Nigeria for the period of 2000 to 2004. The result showed that capital size, size of credit portfolio and ownership concentration significantly determines bank profitability in Nigerian banking sector. Size of deposits liabilities, labor productivity, and state of information technology, control-ownership disparity and structural affiliation are insignificant determinants of bank profitability in Nigeria; and the relation between bank risk and profitability inconclusive. He used ordinary

least square regression in his study to estimates the coefficients of the explanatory variables in explaining bank profitability.

Ramlall (2009) considered many variables of bank specific, industry specific and macroeconomic factors for Taiwanese banks. Results show that the main determinant of profitability for Taiwanese banks rests on credit risk, captured by allowance for doubtful debts, entailing the highest effect not only in terms of statistical but also in terms of economic significance. He also transpired that capital positively impact on profits, though the economic significance is significantly less than that of credit risk. Moreover, the study variables were estimated based on panel model.

Chan and Vong (2010) examined the impact of bank characteristics as well as macroeconomic and financial structure variables on the performance of the Macao banking industry. Utilizing bank level data for the period of 1993 to 2007, they adopted panel data regression to determine the important factors in achieving high bank profitability. Finally, they concluded that a well capitalized bank is perceived to be lower risk. On the other hand, the asset quality as measured by the loan-loss provisions, affects the performance of banks adversely. In addition, banks with a large retail deposit-taking network did not achieve a level of profitability higher than those with a smaller network. Lastly, with regard to macroeconomic variables, only the rate of inflation exhibited a significant relationship with banks' performance. And they analyzed their study by taking ROA as a dependent variable.

On their study, Anwar et al., (2011) concluded that Total Assets, equity to total assets, deposits to total assets, and loans to total assets are the major internal determinants of profitability of banks in Pakistan. They employed ten top banks over the period of 2004-2008 in their study and used pooled ordinary least square method (POLS) to investigate the above internal variables. Moreover, they have used return on Assets as a dependent variable to measure the profitability of Pakistan banks.

Olweny and Shipho (2011) used panel data to investigate the determinants of commercial banks profitability in Kenya for the period of 2002 to 2008 of 38 banks. They ascertained that banks specific factors are the most significant factors influencing the profitability of commercial banks in Kenya than market factors. They indicated that profitable commercial banks are those that strive to; improve their capital bases, reduced operational costs, improve assets quality by reducing the rate of non-performing loans, employ revenue diversification strategies as opposed to focused strategies and keep the right amount of liquid assets. Indeed, they concluded that profitability in Kenyan banking sector is largely driven by managerial decision than market factors.

2.3 Studies in Ethiopia

Few studies were undertaken on determinants of private bank profitability in Ethiopia with varying types and numbers of variables taken into consideration. A number of internal and external factors were used to predict profitability and efficiencies.

Controlling for macroeconomic environment Yigremachew (2008) concluded that interest and non-interest incomes and interest expense are the main determining factor for the profitability of private banks in Ethiopia both in static and dynamic conditions. Other bank level variables like fixed asset investment, and capital adequacy ratio had considerable positive impact on profit. Macroeconomic conditions such as inflation have significant unfavorable impact on operational performances of private banks.

On his study, on determinants of bank profitability in Ethiopia on selected commercial banks, Tesahle (2011) analyzed a number of internal and external factors to predict profitability and efficiencies. Controlling for macroeconomic environment and market concentration the result indicated that inflation has significant impact on profitability of selected banks. Other bank specific factors such as total Assets, non-interest expenses to total assets, ratio of equity to total assets, loan loss provisions to total loans, ratio of loans to total Assets, and ratio of non-interest income to total assets have significant impact on profitability of selected commercial banks for the period of 2003-2009. He tried to incorporate both government banks and private banks in his study.

Belayneh (2011) observed capital, assets size, loan, deposits, noninterest income, non interest expense, and credit risk of bank specific variables have significant influence on profitability of commercial banks in Ethiopia. He utilized seven commercial banks financial data including huge government banks and private banks for the period of 2001-2010. Among macroeconomic variables, GDP growth has positive influence on profitability of Ethiopian bank and market concentration also affect bank profitability in his study. Basically, he applied return on assets (ROA) as a dependent variable to measure profitability in the bank Ethiopia.

Abebaw and Kapuer (2011) concluded that capital strength, expense management, bank intermediation and bank sizes were the main determinants of Ethiopian bank profits covering the period of 2001-2008. They employed eight commercial banks financial data including government and private banks and random effect regression model were used to investigate the determinants of bank profits.

Overall these studies specify return on asset (ROA), return on equity (ROE), and net interest margin (NIM) as the dependent variables and considering the internal and external factors as independent variables.

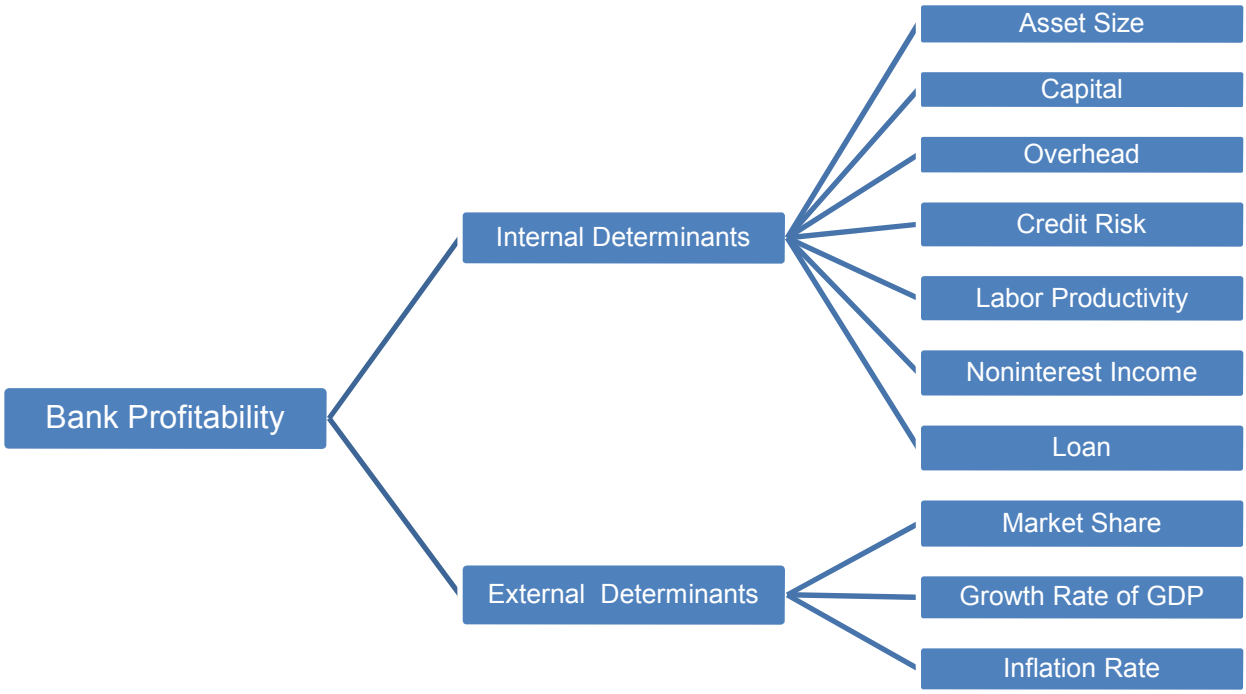
The choice of the profitability ratio will depend on the objective of the profitability measure. The ROA is primarily an indicator of managerial efficiency. It indicates how capable the management of the bank has been in converting the institution's assets into net earnings. The ROE is a measure of the rate of return flowing to the bank's shareholders. This measure of profitability is the most important for a bank's stockholders, since it reflects what the bank is earning on their investment. On the other hand, NIM variable is defined as the net interest income divided by total assets. It focused on the profit earned by on interest activities.

Rivard and Thomas (1997) suggested that bank profitability is best measured by ROA in that ROA is not distorted by high equity multipliers and ROA represents a better measure of the ability of a firm to generate returns on its portfolio of assets. Moreover, ROA is a substantial performance measure for the reason that it is directly related to the profitability of banks (Kosmidou, 2008). Accordingly, bank performance in this study was measured by ROA since it showed a better measurement as compared to ROE and NIM and consistent with above writers.

2.4 Conceptual frame work

From the literature review mentioned above, the investigator developed the following schematic representation of the conceptual frame work.

Figure 1: Conceptual frame work



Source: Adopted from (Ramlall, 2009)

3. STATEMENT OF THE PROBLEM

Banks play a pivotal role in the economy of a country. This is particularly true in the case of Ethiopia where no capital market exists. Banks are the main providers of funds, and their stability is of paramount importance to the financial system. As such, an understanding of determinants of their profitability is essential and crucial to the stability of the economy.

In banking literature, the determinants of profitability are empirically well explored although the definition of profitability varies among studies. Disregarding the profitability measures, most of the banking studies have noticed that the capital ratio, loan-loss provisions and expense management are important factors in achieving high profitability (Chan and Vong, 2010).

In Ethiopia, few studies have been made on the determinants of bank profitability in case of private banks, with varying types and numbers of variables taken into consideration. Yigremachew (2008) in his study concluded that interest and non-interest incomes and interest expense are the main determining factor for the profitability of private banks in Ethiopia both in static and dynamic conditions. He further stated that other bank level variables like fixed asset investment and capital adequacy ratio have considerable positive impact on profit. Macroeconomic conditions such as inflation have significant unfavorable impact on operational performances of private banks.

Tesahle (2011) in his study on 'Determinants of bank profitability in Ethiopia on selected commercial banks' found that inflation has significant impact on profitability of selected banks for the period of (2003-2009). He examined his study by including the large government banks and private banks.

Belayneh (2011) analyzed the determinants of bank profitability in Ethiopia as whole by taking government as well as private banks in Ethiopia. He concluded that bank specific drivers have immense effect in explaining bank profitability. Besides, Abebaw and Kapuer (2011) concluded that capital strength, expense management, bank intermediation and bank sizes were the main determinants of Ethiopian bank profits covering the period of 2001-2008.

Internal factors (bank specific variables) such as overhead, labor productivity, liquidity, and external factors the effect of market share on profitability of private banks were not empirically well explored in these studies.

Therefore, the novel features of this study were the inclusion of the aforementioned internal and external variables so as to fill the literature gap and to examine sole effects of bank profitability drivers in private banking sector in Ethiopia.

OBJECTIVE OF THE STUDY

The general objective of the study was to investigate the determinants of private bank profitability in Ethiopia utilizing bank level data for the period of 2004-2011.

3. RESEARCH METHODOLOGY

3.1 Data Type and Source:

The types of data that used in this study were balanced panel data and Quantitative in nature. Balanced panel data meaning that each cross sectional units have same number of time series observations. The investigator has collected **Secondary data** from annual reports of each sampled banks to conduct this study. Therefore, the main Secondary data of the study were financial statements of the respective banks and Macroeconomic data which were gathered from National bank of Ethiopia (NBE).

3.2 Method of Sampling:

The investigator has utilized **Purposive** sampling technique for selecting the sample units from population. The rationale behind selecting purposive sampling techniques than others is, it considered more appropriate when the universe happens to be small and a known characteristic of it is to be studied intensively. Therefore, out of fourteen private commercial banks in Ethiopia that are currently in operation (Access capital, 2012); the researcher took **six** of them. The ground behind selecting six banks out of the total population is based on the following criteria's:

- Ownership structure (only private commercial banks are included in the study). Here, cooperative banks are excluded from the study since their purpose of establishment is different from commercial banking business.
- Time establishment (only banks' who have five and above years' experiences in the banking operations included). This indicates reasonable time is necessary to look changes in the business of banking.

Therefore, on the basis of the above criteria; Dashen, Awash, Wegagen, Abyssinia, Nib and United banks' share companies were chosen in this study. According to access capital (2012), these banks hold 85% of the market share of private banks in Ethiopia.

3.3 Data Collection:

The researcher collected financial data from the annual reports of the sampled banks for the period of 2004-2011. Besides to financial data, Macro economic data were gathered from National bank of Ethiopia. The time periods in this study, were characterized by some important changes in the banking industry in Ethiopia especially in terms of change in inflation rate and growth rate of the economy.

3.4 Method of Analysis:

The investigator used both descriptive statistics tools and Econometrics tools to analyze the collected data. Basically, descriptive statistical tools were used to analyze the mean, standard deviation, minimum and maximum values of the study.

On the other hand, an Econometric tool particularly fixed effect model assisted the researcher to verify causes of changes within banks' of the study matter beyond descriptive statistical tools. Moreover, such model was very important in controlling for unobserved heterogeneity when this heterogeneity is constant over time and correlated with independent variables.

LITERATURE DRIVEN HYPOTHESIS

Hypothesis of the study stand on empirical findings related to bank's profitability that has been developed over the years by banking area researchers. Therefore, the followings three general research hypotheses about the determinants of bank profitability are formulated based on theories and past empirical studies related bank's

profitability. Within these general hypotheses, there are sub hypotheses stated. It helps to test the individual effects of determinants properly later on.

H1: All else is equal, bank specific determinants significantly affect bank profitability

- $H1_a$: The effect of capital on profitability is positive and significant.
- $H1_b$: Bank size influence bank profitability positively and significantly
- $H1_c$: The effect of liquidity on bank profitability is positive and significant
- $H1_d$: Loan affects banks profitability positively and significantly
- $H1_e$: Labor productivity influence bank profitability positively and significantly
- $H1_f$: The effect of Noninterest income on profitability is positive and significant
- $H1_g$: Provision for loan loss affects bank profitability negatively and significantly
- $H1_h$: overhead influence bank profitability negatively and significantly

H2: Industry structure drivers significantly affect bank profitability

- $H2_a$: Market share positively and significantly affect bank profitability

H3: Macroeconomic factors significantly affect bank profitability

3.5 Model Specification

This thesis used panel model to analyze the collected data. Panel model is a combination of cross sectional and time series observations. For this study, fixed effect model is selected. It is one of panel model which control for unobserved heterogeneity among cross sectional units. The following equation indicates the general model of the study.

$$\pi_{\text{it}} = c + \sum_{m=1} \beta_m X_{it}^m + \sum_{k=1} \beta_k X_{it}^k + \varepsilon_{it}$$

Where π_{it} is the dependent variable and is observation on profitability measures of ROA, for bank i at time t, and c is the constant term. $\sum_{m=1} \beta_m X_{it}^m$ is a vector of m^{th} bank specific variables. While the second set of independent variables $\sum_{k=1} \beta_k X_{it}^k$ is the vector of k^{th} external variables, ε_{it} is the error term.

Dependent Variable

Earlier research works indicated that Return on assets (ROA) is an important measurement used in comparing the operating performance of banks, (Rivard & Thomas,1997; Kosmidou, 2008; Belayneh (2011); Chan & Vong, 2010; Anwar et al., 2011). It is calculated by dividing net income to total assets each banks. In this study, the dependent variable was measured by ROA.

Bank Specific Variables (Internal Factors)

- ***Capital***: capital ratio is measured by total equity over total asset, reveals capital adequacy and should capture the general safety and soundness of the financial institution. Prior research works indicated that capital and bank profitability positive correlated (Anwar et al., 2011; Berger, 1995; Bashir, 2003).
- ***Assets Size***: One of the most important questions underlying bank policy is which size optimizes bank profitability. Generally, the effect of a growing size on profitability has been proved to be positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucratic and other reasons. Bank size is represented by logarithm of total assets (LOGTA) because of the dependent variable in the model can be deflated. Their square root also included in order to capture the possible non-linear relationship. Assets size is expected to have positive relationship with profitability
- ***Loans*****:** Bank loans are expected to be the main source of income and are expected to have a positive impact on bank performance (Abreu & Mendes 2000; Bashir, 2003). The ratio is captured by dividing total loans to total assets.
- ***Liquidity*****:** liquidity ratio measured by cash and cash equivalents to total deposits. It measures the liquidity positions of the bank to meet the amount of total deposits. The higher this percentage the more liquid the bank is. Insufficient liquidity is one of the major reasons of bank failures. However, holding liquid assets has an opportunity cost of higher returns. A positive and significant link between bank liquidity and profitability were examined in the studies of (Olweny & Shipho, 2011)
- ***Labor productivity*****:** posited the rate of change in labor productivity (Real Gross Total revenue over number of employees). Empirical evidence from Athanasoglou et al., (2005) showed that labor

productivity growth has a positive and significant effect on bank profitability.

- ***Overhead*:** The ratio of overhead to total assets is used to provide information on variation in bank costs over the banking system. It reflects the total amount of operating costs other than interest expenses divided by total assets. Overhead is expected to have a negative impact on performance because efficient banks are expected to operate at lower costs (Nacuer, 2003).
- ***Credit Risk*:** To proxy this variable the researcher used loan-loss provisions to loans ratio. Theory suggested that increased exposure to credit risk is normally associated with decreased firm profitability and, hence, it is expected to have a negative relationship between ROA and credit risk (Athanasoglou et al., 2005; Aburime, 2008).
- ***Noninterest Income**:* The importance of fee-based services of commercial banks and their product diversification is captured by non interest income to total income ratio (NII). Although fee based services in general generates lesser income than loans, it is expected to add something on banks profit and have a positive relationship with profitability.

Macroeconomic and Industry Structure Variables (External Factors)

- ***GDP Growth Rate***: This is measured by the real annual GDP growth rate, is expected to impact banking profitability positively. Economic growth can enhance bank's profitability by increasing the demand for financial transactions, i.e., the household and business demand for loans. During periods of strong economic growth, loan demand tends to be higher, allowing banks to provide more loans. Strong economic conditions are also characterized by high demand for financial services, thereby increasing the bank's cash flows, profits and non-interest earnings. Accordingly, fewer loans would be defaulted during strong economic conditions. Thus, it is expected to have positive impact on performance (Belayneh, 2011; Demirguc-kunt & Huizinga, 1999).
- ***Inflation Rate*:** The findings of the relationship between inflation and profitability are mixed. Although the studies of Guru et al., (2002) in Malaysia showed that higher inflation rate leads to higher bank profitability. The study of Abreu and Mendes (2000), nevertheless, reported a negative coefficient for the inflation variable in European countries.
- ***Market Share***: is captured by total assets of a bank to total industry assets at given period of time. Direct relationship between market share and bank profitability is observed in studies of (Berger, 1995; Eichengreen & Gibson, 2001 as cited in Francis, 2006). It is expected that market share and bank profitability positively related.

Table 3.1 Definitions, Notation and Expected Effect of the Explanatory Variables

	Variables	Measure	Notation	Expected sign
Dependent variable	Return on Assets	Net income after tax/total assets	ROA	
Internal(bank specific) variables	Capital	Total Equity / Total Assets	EA	Positive
	Assets size	Natural logarithm of Total Assets	LOGTA	Positive
	Loan	Total Loans / Total Assets	LTA	Positive
	Noninterest Income	Noninterest Income/Total Income	NII	Positive
	productivity	Rate of change in {Real gross total revenue/No. of employees}	PR	Positive
	Liquidity	Cash and cash equivalents / Total Deposits	LQD	Positive
	Credit Risk	Provision for loan loss /Total loans	PLL	negative
	Overhead	Operating expenses / Total Assets	OVRHD	negative
External variables	GDP growth rate	Annual Real GDP growth rate	GDPG	Positive
	Inflation rate	Annual inflation rate (consumer price index, CPI)	INF	Positive
	Market share	Total assets of a bank / Total assets of the industry at given period of time	MKTSH	Positive

Source: Adopted from (Chong and Sufian, 2008)

4. RESULTS, ANALYSIS AND DISCUSSION

4.1 Descriptive Statistics

In this section the results from descriptive statistics are discussed. Generally, the data that were collected for this

study are secondary in nature. The descriptive statistics was used in order to get insight into the variables of the determinants of banks profitability among the sampled banks and it is used as a base to forward recommendations after determining the relationship between the variables from correlation and regression analyses.

Table 4.1 Descriptive Statistics for the study variables

Variable	Observations	Mean	Std. Dev.	Min	Max
ROA	48	2.698125	.6850211	.37	4.01
EA	48	11.81458	2.866668	6.43	18.32
LTA	48	51.59542	10.46674	33.22	69.96
LQD	48	44.70417	14.05244	17.85	70.82
PR	48	14.15875	16.70836	-17.7	69.14
NII	48	41.27042	9.159744	21.18	61.36
PLL	48	1.132083	.8848439	.05	5.56
OVRHD	48	2.1575	.3449669	1.5	2.88
LOGTA[#]	48	22.076	.6849077	20.33	23.41
GDPG	48	11.35417	.7774756	10	12.6
INF	48	17.85625	14.07315	3.3	44.4
MKTSH	48	17.62208	5.016579	11.5	27.78
[#] **This variable is not measured in percentage.**					

Source: (STATA Summary Statistics Result for sampled private banks, 2012)

As shown in the table 4.1 above, the mean value of return on assets (ROA) was around 2.7% for sampled private banks in Ethiopia. This means that a one birr investment in total assets of private banks' generates birr 2.7 average profits for the period of 2004-2011. The standard deviation among banks in terms of profitability was 0.69%; this confirms that there was small variation among banks' during the study period.

Total assets of each bank were proxy to their natural logarithm values (LOGTA). The average value of this variable was 22.08 birr during the study period with standard deviations of 0.68 birr. This shows that there was moderate discrepancy between banks in terms of total assets when their natural logarithms values have taken. The minimum and maximum values were 20.33 and 23.41 birr respectively.

The ratio of equity capital to total assets (EA) was a proxy measure of bank capital with mean value of 11.8%. This described that sampled private banks in this particular study utilized 11.8% of their fund needs through equity capital while 88.2% was financed by deposits liabilities. The high leverage is not surprising since the business of banking is to mobilize more deposits from customers. The standard deviation the ratio was 2.89% with 6.43% and 18.32% as minimum and maximum values respectively.

The mean of operating expenses to total assets ratio (OVRHD) was 2.16%, minimum value of 1.5% and maximum value of 2.88%. Hence, there was a bit more variations among private banks concerning operating expenses to total asset ratio during the study time.

The average ratio of loan to total assets (LTA) was 51.48% for sampled banks; this indicates that 51.48% of combination of total assets was held by loan and advances disbursed to customers. The standard deviation was 10.55% with 33.22% and 69.96% of minimum and maximum values respectively. This clearly shows that there was a higher deviation among banks in terms loan disbursement during the study period.

Labor productivity (PR) is another means of bank specific determinants which shows the employee's efficiency in terms of generating high total income. To examine whether the observed improvements in productivity growth have benefited bank profits, the rate of change in labor productivity was estimated. During the period 2004-2011 labor productivity of Ethiopian private banks grew at annual average rate of 14.16% with standard deviation of 16.71%. Further, it had -17.7% and 69.14% of minimum and maximum values. This describes there was a bit more deviations among sampled banks concerning of a rate of change in labor productivity.

The ratio of Liquidity (LQD) is measured by cash and bank balances to total deposits ratio. The mean value of liquidity ratio was 44.70%; it shows that the sector was very liquid, two times more than the minimum statutory liquidity ratio of 20% set by NBE. The standard deviation was 14.05%, while 17.85% and 70.82% observed as minimum and maximum values respectively. As shown from the result, there were higher discrepancies among banks regarding liquid management.

Other internal determinant of bank profitability was noninterest income to total income of each banks (NII) ratio. This ratio revealed that how much a bank generates fee based income other than interest income as proportion to total income. On average, sampled banks have obtained 41.27% non interest income with standard deviation of 9.16% during the study period. The minimum and maximum values of this ratio were 21.18% and 61.36% respectively. This is still showed that there were higher variations among banks' in terms of non interest income generation capacity.

Provision for loan loss relative to total loans (PLL) is an indicator for the quality of the credit portfolio. Accordingly, the mean value was 1.13% as compared to the total loan and advances. The minimum and maximum

values were 0.05% and 5.56%. This ratio indicates that variations between banks were high throughout the study.

The change on external factors also specified on the above table. The first one was Growth Domestic Product growth rate (GDPG). On average, the Ethiopian economy was increased by 11.35% during the study time. This helps banks in providing necessary loan for financing different investments. The minimum and maximum values of GDPG were 10 and 12.6 respectively.

Inflation (INF) was also another macro economic indicator, which had a mean value of 17.29% with standard deviation of 13.66% during the study period. The minimum and maximum values were 3.3% and 44.4% respectively. This clearly shows that there was a bit more variations in terms of cost of living as it measured by consumer price index (CPI).

Market share (MKTSH) is captured by total assets of a bank to the total assets of the industry at given period of time. This variable is termed as industry structure variable. The mean value was 17.63% with standard deviations of 5.02%. The result varies from 11.5% and 27.78% as of minimum and maximum values. It showed that there were high variations among banks pertaining to market share controlling capacity throughout the study time.

4.2 Panel Model Regression

This section of the study presents the results and discussions of the regression /econometrics analysis. To shed more light on the determinants of bank profitability linear panel data (analysis of cross sectional and time series) regression models have been run.

Before running the regressions, the data sets were checked for certain tests. Normality, multicollinearity, heteroskedasticity, and model specification tests have been made to fit the Classical Liner Regression Model (CLRM) assumptions and to undertake reliable estimations.(See **APPENDIX A**). Overall, the tests have been in line with the CLRM.

The estimation technique was carried out on the basis of balanced panel data regressions. Balanced panel data has equal cross-sectional and time series observations for the study entities. The model was estimated using **Fixed Effects** regression. The choice a fixed effects model over a random effects model was based on the use of the **Hausman test**. (See **APPENDIX B**). Accordingly, the result from **Hausman** test shows in favor of fixed effect model than random effect. The regression results focusing on the relationship between bank's profitability and the explanatory variables are presented in table 4.8 below.

Table 4.8 Regression Analysis of the determinants of Ethiopian Private Banking profitability with ROA using Fixed -effects regression Model

		Robust		
ROA	Coef.	Std. Err.	t	P>t
EA	.1585856	.0317921	4.99	0.004 *
LTA	.0273977	.0165656	1.65	0.159
NII	.0246174	.0100418	2.45	0.058 ***
PLL	-.3807888	.0443457	-8.59	0.000 *
OVRHD	-.7569992	.2221773	-3.41	0.019 **
PR	.0147068	.001741	8.45	0.000 *
LQD	.0210786	.0053532	3.94	0.011 **
LOGTA[#]	10.35263	4.113345	2.52	0.053 ***
$LOGTA^2$	-.2292056	.0938901	-2.44	0.059 ***
MKTSH	.0064515	.0093879	0.69	0.523
GDPG	.1203639	.0737035	1.63	0.163
INF	-.0011133	.0016321	-0.68	0.525
_cons	-118.8877	45.08064	-2.64	0.046

*,** and ** = significant at 1 %, 5%, and 10% confidence level
No. of observations = 48
Over all R^2 =48.32%
Prob > F = 0.0000
F(12, 29) = 12.45
[#] indicates the variable is not measured in percentages

Source: (STATA regression results based on annual reports of sampled banks, 2012)

Table 4.8 presents the regression result of panel data using fixed effect model. The model was established based on the conventional methods of panel data model which is known as Static panel model.

Basically, 48.32% of the variation in the dependent variable is explained by explanatory variables. The rest 51.68% is not explained by the above explanatory variables.

The impact of bank size was proxy to natural logarithm of total assets (LOGTA) revealed that, it had a

positive magnitude and significant relationship with profitability measurement. Bank size is generally used to capture potential economies or diseconomies of scale in the banking sector. The positive coefficient of size was significant at the 10 % confidence level, indicates that banks' in this study utilized their assets in economies of scale fashion. The result has shown a one birr additional investment in total assets of banks increase profitability of banks by10.35 birr holding other variables constant. The positive and significant coefficient of the size variable gives support to the economies of scale Efficient Structure hypothesis. Larger firms can obtain lower unit cost and higher profits through economies of scale.

Square of natural logarithms of assets ($LOGTA^{2)}$ was also incorporated in the model so as to measure whether a change in LOGTA was at decreasing or increasing rate. The negative coefficient of size square was significant at the ten percent level, indicates that this relation might be non-linear due to possible bureaucratic bottlenecks and managerial inefficiencies suffered by banks as they become too large. Therefore, the positive effect of bank size goes up to certain limit beyond that the size variable would shows negative results.

The coefficient of the variable representing equity to total assets ratio (EA) showed a positive coefficient and significant at 1% level of significance on profitability as it measured by ROA. It indicates the ability of a bank to absorb losses and handle risk exposure with shareholders. Thus, a 1% change in equity fund, derived from shareholders, increases profitability of bank's by 15.86% holding other variables constant (*ceteris paribus*).

The ratio of cash and bank balances to total deposits (LQD) was positive and had significant relationship with profitability. Insufficient liquidity is one of the major reasons of bank failures. However, holding liquid assets has an opportunity cost of higher returns. The ratio was significant at 5% level of confidence.

Holding other variables constant, a one percent increase in liquidity is expected to raise bank profitability by approximately 2.11%. The implication of this finding is that investing in short-term, less risky securities like government treasury bills leads to increased profitability. Nevertheless, the coefficient was small implying a small impact.

Turning to other explanatory variables, the magnitude of loan to total assets ratio (LTA) was positive but insignificant effect on profitability either at five or ten confidence level.

Concerning to labor productivity, as captured by a rate of change in labor productivity, affects profitability of private banks in Ethiopia positively and significant at 1% level. A 1 unit change in labor productivity (PR) expected to enhance profitability of banks' by 1.47% holding other variables constant. Banks target high levels of labor productivity growth through various strategies that include keeping the labor force steady, ensuring higher quality of newly hired labor, reducing the total number of employees, and increasing overall output via increased investment in fixed assets which incorporate new technology.

The importance of fee-based services of commercial banks and their product diversification is caught by non interest income to total income ratio (NII). The result showed that there was a positive relation with bank profitability and statistically significant at 10% confidence level. For one unit increase in NII ratio, bank profitability is expected to increase by 2.46% *ceteris paribus*.

The coefficient of the variable representing credit risk is measured by loan loss provision to total loan. As it can be shown on the above fixed effect estimations, loan loss provision (PLL) has a negative coefficient and statistically significant effect on profitability of private banks in Ethiopia at 1% significance level. Holding other variables constant (*ceteris paribus*), a 1% percent raise in loan loss provision is expected to reduce bank profitability by 38.08%. Banks would improve profitability by improving screening and monitoring of credit risk and such policies involve the forecasting of future levels of risk.

OVRHD ratio was used to provide information on variation in bank costs over the banking system. The result exhibited a negative coefficient and statistically significant impact on bank profitability at five percent confidence level. For 1% increase in OVRHD entails to decrease profitability by 75.7% *ceteris paribus*. Efficient banks are expected to operate at lower costs, so the result revealed that the indirect relation between bank profitability and OVRHD.

On the other hand, growth rate of gross of domestic product (GDPG) and annual inflation rate (INF) showed insignificant effect. During periods of strong economic growth, loan demand tends to be higher, allowing banks to provide more loans. Strong economic conditions are also characterized by high demand for financial services, thereby increasing the bank's cash flows, profits and non-interest earnings. But this is not the case under this particular study.

Inflation measures the overall percentage increase in Consumer Price Index (CPI) for all goods and services. Inflation affects the real value of costs and revenues. Negative association inflation and profitability entails that banks in the study could not adjust their prices such as interest rate on loans and deposits, according to the inflation rate during the study time. However, the result revealed insignificant effect on bank profitability.

At the end, the ratio Market share (MKTSH) was estimated in this study so as to investigate whether having high market share leads to high profitability or not. The ratio is captured by total assets of a bank to total assets of the industry at given period of time and it determines the industry structure factors. The result of market share indicated no significant impact on bank profitability, providing no evidence in support of the RMP hypothesis.

4.4 Hypothesis Testing

The study had three general hypotheses. Indeed, the study had sub hypothesis within the general hypothesis.

H1: All else is equal, bank specific determinants significantly affect bank profitability

$H1_a$: The effect of capital on profitability is positive and significant

As shown on the above fixed effects estimations, the impact of capital on bank profitability was positive and significant at 1% level of significance. Accordingly, the null hypothesis is accepted as expected. This positive association of capital and bank profitability is in line with earlier endeavors of (Abreu & Mendes, 2000; Bashir, 2003; Belayneh, 2011; Berger, 1995; Teshale, 2011).

$H1_b$: Bank size influence bank profitability positively and significantly

The effect of bank size on profitability showed positive and significant at 10% level of significance. However, the positive effect of bank size goes up to certain limit beyond that limit the size variable would shows negative results. Therefore, the above null hypothesis was consistent to the investigator expectation and null hypothesis is accepted. This finding is consistent with earlier works of (Molyneux & Thornton, 1992).

$H1_c$: The effect of liquidity on bank profitability is positive and significant

Under this study, liquidity affects bank profitability positively and significantly at 5% level of confidence. Hence, the null hypothesis is accepted as expected. The finding is coincided with previous undertaking by Olweny and Shipho (2011) in Kenya.

$H1_d$: Loan affects banks profitability positively and significantly

The result revealed that the impact of loan on bank profitability was insignificant in this study. But the magnitude of loan on bank profitability is observed a positive relation. This variable is deviated from the general hypothesis. Therefore, the null hypothesis that has been postulated by the investigator is rejected.

$H1_e$: Labor productivity influence bank profitability positively and significantly

The findings depicted that Labor productivity positively and significantly influence bank profitability at 1% significance level. So, the stated null hypothesis is accepted as expected. This positive association of productivity of labor and bank profitability is consistent with former works of (Athanasoglou et al., 2005).

$H1_f$: The effect of Noninterest income on profitability is positive and significant

Noninterest income also affects bank profitability positively at 10% level of significance. Therefore, the aforementioned null hypothesis is accepted as expected. This positive association of NII and bank profitability is consistent with previous endeavor of (Belayneh, 2011).

$H1_g$: Provision for loan loss affects bank profitability negatively and significantly

The impact of provision for loan loss was negative and significantly impact bank profitability at 1% of confidence level. Based on the result, the null hypothesis is accepted as expected. Negative association of this variable and bank profitability is in tune with many earlier works (Aburime, 2008; Athanasoglou et al., 2005; Belayneh, 2011; Teshal, 2011).

$H1_h$: Overhead influence bank profitability negatively and significantly

At last to bank specific drivers, overhead efficiency affects bank profitability negatively and significantly at 5% level of significance. Accordingly, the null hypothesis is accepted as excepted. The inverse relationship of OVERHEAD and profitability is in line with the study of (Naceur, 2003)

H2: Industry structure drivers significantly affect bank profitability.

$H2_a$: Market share positively and significantly affect bank profitability

The result showed that having higher market share did not give guarantee for potential profitability. Market share did not affect bank profit significantly. The effect market share has deviated from the general hypothesis. Therefore, the above null hypothesis is rejected on the ground.

H3: Macroeconomic factors affect bank profitability significantly.

Generally, none of the macroeconomic variables affect bank profitability significantly. Both GDP growth rate as well as Inflation rate had not important effect on profitability, as measured by ROA. Therefore, the result is deviated from the investigator expectation and rejected the general hypothesis accordingly. Table 4.9 below, has shown the summary of the test of hypotheses.

Table 4.9 Summary of Test of Hypothesis

Null Hypotheses	Accepted	Rejected
H1: All else is equal, bank specific determinants significantly affect bank profitability		
$H1_a$: The effect of capital on profitability is positive and significant	✓	
$H1_b$: Bank size influence bank profitability positively and significantly	✓	
$H1_c$: The effect of liquidity on bank profitability is positive and significant	✓	
$H1_d$: Loan affects banks profitability positively and significantly		✓
$H1_e$: Labor productivity influence bank profitability positively and significantly	✓	
$H1_f$: The effect of Noninterest income on profitability is positive and significant	✓	
$H1_g$: Provision for loan loss affects bank profitability negatively and significantly	✓	
$H1_h$: Overhead influence bank profitability negatively and significantly	✓	
H2: Industry structure drivers affect bank profitability significantly		
$H2_a$: Market share positively and significantly affect bank profitability		✓
H3: ***Macroeconomic factors affect bank profitability significantly***		✓

Source: (own design, 2012)

5. CONCLUSION AND RECOMMENDATION

It is generally agreed that a strong and healthy financial system is a prerequisite for the sustainable economic growth of a given country. In order to survive negative shocks and maintain a good financial stability, it is important to identify the determinants that mostly influence the overall performance and profitability of private banks. For that matter, the study specified the empirical framework to investigate the effect of bank specific and external variables of Ethiopian private commercial banks for the period of 2004-2011. Novel features of the study were the analysis of variables which are missed by other researcher such as; labor productivity, liquidity, overhead, and market share. The study also used an appropriate methodology for the estimation of variables coefficient using fixed effect model. The following sections confirmed about the final concluding remarks of the study and possible recommendations.

5.1 Conclusion

- The coefficient of the variable Asset size (LOGTA) showed a positive magnitude and significant at 10% confidence level. It supported the economies of scale efficient structure hypothesis. Nevertheless, the magnitude of $LOGTA^2$ has shown negative coefficient, thus, negative quadratic effect of size indicates that there is point after which the increase in a bank's size provides diseconomies of scale. This is due to possible bureaucratic bottlenecks and managerial inefficiencies suffered by banks as they become too large.
- The result of Capital (EA) revealed a positive coefficient and significant at 1% level of significance on profitability, as it measured by ROA. Such result may indicate private banks that increase their equity have a lower cost of capital and thus are more profitable. It showed the ability of a bank to absorb losses and handle risk exposure with shareholders.
- Concerning to labor productivity (PR), it affects profitability of private banks in Ethiopia positively and significant at 1% level.
- The coefficient of the variable liquidity (LQD) was positive and had significant relationship with profitability. It measures the liquidity positions of the bank to meet the amount of total deposits. Insufficient liquidity is one of the major reasons of bank failures. The ratio was significant at 5% level of confidence. The implication of this finding is that investing in short-term, less risky securities like government treasury bills leads to increased profitability. Nevertheless, the coefficient was small implying a small impact.
- The importance of fee-based services of commercial banks and their product diversification is caught by non interest income to total income ratio (NII). The result showed that there was a positive relation with bank profitability and statistically significant at 10% confidence level.
- The finding of credit risk (PLL) is associated with significant inverse relationship with profitability on Ethiopian of private banks at 1% level of significance. The magnitude of this ratio was high, so it had higher impact on bank profitability.
- OVRHD ratio is used to provide information on variation in bank costs over the banking system. The result exhibited a negative coefficient and statistically significant impact on bank profitability at 5% confidence level.
- All external factors of were not significant to explain bank profitability in this study.

Generally, all hypotheses of the bank specific variables were significantly impact bank profitability

except loan variable as expected. On the other hand, all external variables were deviated from their general hypotheses, so their hypotheses were rejected. Therefore, the study concluded that most of bank profitability drivers are explained by bank specific determinants rather than external determinants.

5.2 RECOMMENDATION

Based on the above findings the researcher forwards the following possible recommendations.

- Banks should target at increasing their equity capital and labor productivity so as to boost their profitability. Equity capital can be raise through issuing new shares to potential investors.
- Moreover, to enhance labor productivity, private banks are advisable to consistently utilize electronic banking technology and provide training on customer satisfaction to their employee's. These suggestions accelerate profitability of private banks.
- Banks should strive to increase their fee based services and assets size to raise their profitability. The banks could raise fee based services through incentives mechanisms such as, preparing lottery schemes for money transfer services and international banking operations. On the other hand, it is recommendable for the banks to increase their assets size up to optimum level so as to enhance their profitability.
- Banks also should strive to reduce their provision for loan loss and efficient cost control to optimize their resources. The banker could minimize default borrowers through improving, screening and monitoring of credit risk and such recommendation involve the forecasting of future levels of risk. The management should also focus in efficient management of their costs to their tolerable limit in order to enhance profitability.

5.3 LIMITATION AND SUGGESTION FOR FURTHER RESEARCH

The absence of active secondary market in Ethiopia impaired the study to measure the stock market capitalization. Hence the effect of market capitalization was not included in this particular study. These may limit the findings of the research.

Further research should be done on the factors influencing the liquidity position of commercial bank in the country. It could add great value to the performance of local banks and academic literature. Since having the exact knowledge of liquidity limit helps banks to maximize their profitability and prevent the problem of liquidity by holding the necessary cash so as to meet the demand raised by customers of the banks.

6. REFERENCES

Abebaw, K. and Kapur, D. (2011) What drives the performance of commercial banks in Ethiopia?, Journal *of Research in Commerce and Management*, 2(7), pp. 38-43.

Abreu, M. and Mendes, V. (2002) Commercial bank interest margins and profitability: evidence from E.U countries, *Porto Working Paper Series*.

Aburime, U. (2008) *Determinants of bank profitability: company-level evidence from Nigeria*. Available at: http://ssrn.com/abstract=1106825 [Accessed 3 March 2012].

Access capital. (2012) Banking sector review. Available at: http://www.accesscapitalsc.com/components/com_acymailing/upload/banking%20sector%20review%20jan%2011%202012.pdf [Downloaded: 27 January 2012].

Anwar, J, Gafoor, A, Javaid, S, and Zaman, K. (2011) Determinants of bank profitability in Pakistan: internal factor analysis, *Mediterranean Journal of Social Sciences*, 2 (1), pp. 59-78.

Athanasoglou, P, Brissimis, N, and Delis, D. (2005) Bank-specific, industry-specific and macroeconomics determinants of bank profitability, *Bank of Greece, Working Paper*, 25.

Bashir, A. (2003) Determinants of profitability in Islamic banks: some evidence from the Middle East, *Islamic Economic Studies*, 11(1).

Belayneh, H. (2011) *Determinants of commercial banks profitability: an empirical study on Ethiopian commercial banks.* Published Master project. Addis Abeba University.

Berger, A. N. (1995) The relationship between capital and earnings in banking, *Journal of Money, Credit and Banking*, 27(2).

Chan, H. and Vong, A. (2010*) Determinants of bank profitability in Macao*, University of Macau.

Chong, R. and Sufian, F. (2008). Determinants of bank profitability in a developing economy: empirical evidence from the Philippines, *Journal of Accounting and Finance*, 4(2).

DemirgucKunt, A., and Huizinga, H. (1999) Determinants of commercial bank interest margins and profitability: some international evidence, World *Bank Economic Review*, 13, 379-408.

Guru, B, Shanmugam, B, and Staunton, J. (2002) Determinants of commercial banks profitability in Malaysia, University of Multimedia, *Working Papers.*

Hussain, H. and Bhatti, G. (2010) Evidence on structure conduct performance hypothesis in Pakistan commercial banks, *International Journal of Business and Management*, 5(9), pp. 174-187.

Kosmidou, K. (2008) The determinants of banks profits in Greece during the period of EU Financial integration, *Journal of Managerial Finance*, 34 (3) pp. 146-159. Available at: http://www.emeraldinsight.com [Accessed 25 April 2012].

Molyneux, P. and Thornton, J. (1992) Determinants of European bank profitability: A note, *Journal of Banking and Finance,* 16, pp. 1173-1178.

Naceur, S. (2003) The determinants of the Tunisian banking industry profitability: Panel evidence, University Libre de Tunis, *Working Papers*.

Olweny, T. and Shipho, T.(2011) Effects of banking sectoral factors on the profitability of commercial banks in Kenya, *Journal of Economic and Finance*, 1(5), pp. 01-30. Available at: http://wwww.businessjournalz.org/efr [Accessed 11 February 2012].

Ramlall, I. (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*, 34, 1450-2887.

Rivard, R. and Thomas, C. (1997) The effect of interstate banking on large bank holding company profitability and risk, *Journal of Economics and Business*, 49, pp. 61–76.

Tesahle, B. (2011) *Determinants of bank profitability in Ethiopia: on selected commercial banks*. Unpublished Master thesis. Mekelle University.

Yigremachew, B. (2008) Determinants of private bank profitability in Ethiopia, Research Abstract. Available at: http://www.oppapers.com/essays/Determinants-Of-Private-Bank Profitability/227089 [Accessed 3 January 2012].

Appendix A

Table 4.2 Correlation Matrix of Study Variables

	EA	LTA	NII	PLL	OVRHD	PR	LQD	LOGTA	MKTSH	GDPG	INF
EA	1.00										
LTA	-0.11	1.00									
NII	0.23	-0.57	1.00								
PLL	0.07	0.16	-0.19	1.00							
OVRHD	0.35	-0.16	0.43	0.15	1.00						
PR	-0.09	-0.10	0.2	0.03	0.28	1.00					
LQD	0.16	-0.57	0.28	-0.17	0.23	0.05	1.00				
LOGTA	-0.12	-0.58	0.40	-0.34	0.11	-0.04	0.32	1.00			
MKTSH	0.03	-0.08	0.07	0.058	0.12	0.22	0.10	0.06	1.00		
GDPG	-0.15	0.54	-0.27	0.17	-0.30	0.002	-0.50	-0.57	0.02	1.00	
INF	0.19	-0.07	0.14	0.039	0.10	-0.11	0.07	0.40	0.07	0.15	1.00

Source: (STATA result for the study variables, 2012)

Table 4.3 Skewness /Kurtosis tests for Normality

Skewness/Kurtosis tests for Normality					
			-------	joint ------	
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adjchi2(2)	Prob>chi2
error_term	48	0.1110	0.0902	5.25	**0.0726**

Source: (STATA result for normality, 2012)

Table 4.4 Shapiro-Wilk W test for normal data

Shapiro-Wilk	W test for normal data				
Variable	Obs	W	V	z	Prob>z
error_term	48	0.96587	1.554	0.939	**0.17398**

Source: (STATA result for normal data, 2012)

Table 4.5 Variable Inflation Factor (VIF) Technique to detect Multicollinearity

Variable	VIF	1/VIF
LOGTA	5.19	0.192559
GDPG	3.68	0.271746
LTA	2.95	0.339164
INF	2.65	0.377339
NII	2.11	0.473492
LQD	1.89	0.528562
OVRHD	1.82	0.549253
EA	1.79	0.558292
PLL	1.40	0.713886
PR	1.26	0.793563
MKTSH	1.10	0.910906
Mean VIF	2.35	

Source: (STATA result for study variables, 2012)

Table 4.6: Cameron & Trivedi's decomposition of IM-test

Cameron & Trivedi's decomposition of IM-test			
Source	chi2	df	p
Heteroskedasticity	48.00	47	0.4321
Skewness	11.92	11	0.3697
Kurtosis	1.68	1	0.1945
Total	61.60	59	0.3831

Source: (SATA result, 2012)

Table 4.7: Table 4.7: Link test for model specification error

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
_hat	1.532824	.4046327	3.79	0.000	.717852	2.347796
_hatsq	-.1025151	.0760965	-1.35	0.185	-.2557812	.0507511
_cons	-.6562196	.5411991	-1.21	0.232	-1.746251	.4338113

Source: (STATA result, 2012)

APPENDIX B

.Hausman fe re

---- Coefficients ----

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
EA	.1585856	.1507674	.0078182	.
LTA	.0273977	.0154243	.0119734	.
NII	.0246174	.0229772	.0016402	.
PLL	-.3807888	-.2638214	-.1169674	.
OVRHD	-.7569992	.1785242	-.9355234	.
GDPG	.1203639	.2052259	-.084862	.
INF	-.0011133	-.0075828	.0064694	.
LQD	.0210786	-.0037639	.0248425	.0020096
LOGTA	10.35263	7.035907	3.316721	.
$LOGTA^2$	-.2292056	-.1488656	-.0803401	.
PR	.0147068	.0080304	.0066764	.
MKTSH	.0064515	.0106959	-.0042445	.

b = consistent under Ho and Ha; obtained from xtreg

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

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 203.55

Prob>chi2 = **0.0000**

Note: According to hausman test, if the Prob. chi ^{2}< 0.05, fixed effect model is preferred.