DETERMINANTS OF COMMERCIAL BANKS PERFORMANCE IN ETHIOPIA; PERFORMANCE IN TERMS OF PROFITABILITY; PROSPECTS, CHALLENGES AND POLICY IMPLICATIONS

By

TESFAYE DIRIBA

THESIS

Submitted to

KDI School of Public Policy and management

In partial fulfilment of the requirements

For the degree of

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ABSTRACT

DETERMINANTS OF COMMERCIAL BANKS PERFORMANCE IN ETHIPIA; PERFORMANCE IN TERMS OF PROFITABILITY; PROSPECTS, CHALLENGES AND POLICY IMPLICATIONS

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The aim of this study is to investigate empirical framework of bank specific and macroeconomic determinants of profitability for the period 2005-11 on commercial banks in Ethiopia.

The banking system in Ethiopia passed through different reforms that have impact on Economy in general and the banking industry in particular. The study adopts measures of profitability; ROA as dependent variable that has been used. The independent variables categorized into internal determinants and external determinants. The bank specific determinants are capital adequacy, liquidity risk and credit risk whereas macroeconomic determinants are inflation as well as any policy change from regulator to respond global financial crisis of 2008 that captured by year dummy. The researcher also adopts panel data approach to remove the potential problems from time invariant unobservable bank specific fixed effects on profitability. The study allowed the researcher to conclude that Ethiopian commercial banks profitability is determined by both bank specific determinants as well as macroeconomic determinants in the period under consideration.

***Key words**: Commercial banks, profitability, Determinants, Capital adequacy, panel fixed effect, Ethiopia*

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Key abbreviations

NIM:	Net interest margin
ROA:	Return on asset
ROE:	Return on equity
GDP:	Gross domestic product
NIM:	Net interest margin
EM:	Equity multiplier
GFC:	Global financial crisis
CBs:	Commercial banks
NPLs:	Non performing loans
BIS:	Bank for international settlement
VIF:	Variance inflated factor
NBE:	National bank of Ethiopia

CHAPTER I

Introduction

The financial performance is influenced by many factors such as bank size, capital adequacy, liquidity risk, credit risk, bank structure, inflation, economic growth and others. While some of these have a negative impact on profitability, others could have a more positive impact. Banks profitability can be determined by bank specific factors (Endogenous) while others are exogenous (macroeconomic factors). "Knowledge of the underlying internal and external factors that affect the financial performance of bank is vital for policy makers and bank supervisors as well as regulators in framing future policies aimed at improving the performance of the banking sector" (Kosmidou et al.2008).

According to Alemayehu Geda[1] (2006) one of the main objectives of financial institutions is mobilizing resources, particularly domestic saving and channelling them to the would-be investors. And also Bobakova (2003) wrote that the basic aim of any bank is to achieve maximum profit, to sustain in the market and conduct any business. Total bank assets growth rate, number of branches network, loan loss provision to total loan (credit risk), growth rate of total loan, total loan to total asset (liquidity), capital adequacy, inflation rate, year dummy which represent policy change to respond the GFC, and economic growth (GDP) are some of the common variables that used to measure performance of the banks; performance measured in terms of profitability. In early 2008, in USA financial meltdown was happened which indirectly affect any countries financial system in general. And regulator took different policy measures to respond the change; in the sense that the change on average had had negative impact on commercial banks profitability.

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[1] *Alemayehu is Addis Ababa University professor, on his research paper "The structure and performance of Ethiopian`s Financial sector in the pre and post reform period with a special focus on banking" and he described how gradualism way of Financial sector liberalization affected the performance of the sector from regulator side.*

An assessment of the market in banking sector provides insights to the degree of competition among the banks in the sector will improve (Berger, 2005). Particular to "Ethiopian banking sector" is characterized by the big and has no peer group public bank called commercial bank of Ethiopia totally dominated the sector. Its estimated profit is greater than the aggregate sum of all the remaining commercial banks in the country. The reason is that the competition is not on the same platform. The capital of commercial bank of Ethiopia came from the pre existing banks capital in the country from 1974 onward. And on some issues, regulator will give discretion for public bank (Alemayehu Geda, 2006).

1.2 statement of the Problem

The study of Profitability became necessary not only because profits are key factor for growth but they also provide information about the economy. "Changes in profitability are an important contributor to economic progress via the influence profits have on the investment and savings decisions of companies (Ayanda, 2005)[2]." This the case because improvement in profit leads for cash flow position improvement in the company and help for financing of the other wings in the sector.

"Excess profits of Ethiopian commercial banks is an indication of the underdeveloped nature of the banking sector" (Patrick Honohan,1997).Commercial banks 'profits are excess in the sense that the annual profit of each commercial bank is very high when compared to other peer countries commercial bank profit such as Kenya ,Uganda and Sudan even though it is underdeveloped sector. The private sector`s involvement in the sector was started in 1994,

[2] *Aremu is from University of Ilorin, Nigeria, Department of Business Administration, with his friends considered Structural changes in financial sector in Nigeria and tried to attach financial meltdown of 2008 on Nigeria banking sector*.

under the proclamation “Monetary and Banking proclamation No.83/1994.”. Even though private banks are so young, the growth rate is very high because of no tough competition among domestic banks, no foreign banks involvement in the competition, no well defined pricing for the service provided to public and less accessibility of the banking services to rural society which implies that the unfair service charge in case some banks there. So, one can conclude that the substantial profit of commercial banks in Ethiopia is not from service quality, good management, asset quality and others rather it is from high interest spread in the sense that the large gap between lending rate and deposit rate in the sector (Desta and admassu, 2014).

The banking sector of Ethiopia passed-through different ups and downs starting from (Emperor to Derg Regime[3]) period until the present. There are challenges within the sector that have impeded further performance of the sector. There are different responsible factors. While some of them are endogenous to the sector itself, others are macroeconomic problems in nature, in a sense that it is external to the banks. The financial sector factors includes that the banking sector is not liberalized yet to foreigners that leads to abnormal profits in the sector.

The other major challenges of CBs in Ethiopia are privatization and modernization process in Ethiopia banking system was that the financial sector including banking sector is seriously underdeveloped. And also financial sector are privatized to only domestic investors; it is not yet liberalized to foreigners. Foreigners are not allowed any kind of investment in

[3] *All commercial banks became nationalized in 1980 under commercial bank of Ethiopia which was government bank. No private bank was allowed to operate in the country at a time and it was the only and single commercial bank in the country until 1994.This past legacy of commercial bank of Ethiopia had its own contribution on the current capital of the bank.*

banking sector. From Regulator side, Supervision system and control is weak comparative to others peer group (BIS report). National bank of Ethiopia still practicing only Basel I which is the indication of weakness and a great modification was made by BIS Basel II.

Azebu (2007) claimed that profitability is determined by internal as well as external factors. Variables included are total assets, loan loss provision, total deposit; GDP and inflation are determinants of profitability by comparative analysis of the three profitability measures ROA, ROE and NIM. But he didn't include some policy aspect in his model and individual time invariant effect variable was not taken into account. And also Dr. Ayanda (2005) claimed that profitability is determined by factors such as total asset, loan loss provision, total loan, total annual non-interest income, money supply based on trend analysis and he didn't consider about those exogenous factors such as GDP growth, inflation rate and others. From 1992, 2000, 2008/9, 2012 reform in banking sector was under taken to encourage the commercial banks performance. But still CBs are complaining as they are no gaining the anticipated profit by commercial banks. So, what are the determinants of profitability for commercial banks in Ethiopia recently? Particularly from 2005-2011? There are different possibilities.

First, there could be internal factors that determine performance of the sector and there are also external factors such such as macroeconomic factors as well as policy.

The researcher tried to fill some gaps that found within the past studies that were made by other researchers in the area. Policy changes to respond GFC of 2008 which had negative impact on ROA had got little attention by other researchers. And also some recent challenges in the sector in relation to the regulatory element as well as the environmental challenges were not included in their study. This study also touches the past and current situation in the sector which was not much taken into account by others. Having these and oth-

ers views and weaknesses (loopholes) derived from those studies, the study proved the following hypothesis: ***Bank size, Liquidity risk, have statistically significant positive impact whereas, Credit risk, inflation rate, capital strength and year dummy have statistically significant and negative impact on commercial banks profitability in Ethiopia.*** The possible research question of the paper:-Which Variables are significantly determining the commercial banks performance in Ethiopia for the period under review? What are the endogenous and exogenous factors that determine profitability? What is the impact of policy response from central bank to global financial crisis on commercial banks performance? And what are the policy implications of the empirical findings?

The main objective of the study is to find out the factors that to put a framework of intrinsic and extrinsic profitability of commercial bank`s asset performance, and then policy recommendations will follow. In other words, it investigates the key determinants of commercial banks` profitability in Ethiopia for the period 2005 to 2011. The research should help to draw some implications for policy maker that improves performance of the sector. Moreover, the specific objectives of the study are as follows:-

To identify which determinant significantly determine profitability in the sector

To find out the endogenous and exogenous drivers of profitability in the industry

Making a policy recommendation regarding performance of the sector.

The study has much Significance. It might be used as feedback for the central bank as well as commercial banks in Ethiopia to improve their area of weaknesses; it would also uses as a reference for anybody who is interested in undertaking research in the area; it might be useful to both the pursuit of knowledge and the identification of the performance measures for the Ethiopian commercial banks in relation to those variables the researcher used in profitability measures.

The paper is organized in four chapters. The second chapter deals with the related literature review and conceptual framework. And the third chapter emphasizes on the Model specification and empirical result discussion. The last part contains the conclusion and policy implications.

CHAPTER II

2. Review of related Literature and conceptual framework

2.1. History of commercial banks in Ethiopia

The economy of Ethiopia has been controlled by the state from the emperor period (1931-1974)[4] through many industrial and service development plans. It was also a soviet - style managed, centrally planned economy from 1974-1991. But from 1991, the government led a transition to a market based-system, and also different reform was introduced. Even though the state role was remained significant, private domestic investment were encouraged significantly following different reforms (Alemayehu, 2006).

The contribution of Informal financial systems in the economic betterment and social well being of the society in Ethiopia was also a long history and has paramount contribution. They are experienced saving and financial management within its cultural context by organizing with the idea of cooperation and risk sharing. "Eqqub"and"Edir"[5] are typical examples of informal financial institutions that shaped the social bond and interaction.

According to Alemayehu (2006), "Modern banking system was introduced in Ethiopia after the agreement contracted in 1905 between Emperor 'Minilik II'of Ethiopia and Mrs. Gillivray, representative of the British owned National Bank of Egypt, the name of the bank was Abyssinia bank(represented central bank as well as commercial bank)" and also the first privately Owned commercial bank, "Addis Ababa Bank Share Company, was established by Ethiopians initiative and started operation in 1964 with 2 million capital in association with

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[4] From 1931-1974 in Ethiopia; there was an imperial period that had no opportunity for private commercial bank. There was only one bank that had the role of both central and commercial purpose.

[5] Aredo, Addis Ababa University, "The informal and semi-formal financial sectors in Ethiopia; A study of Equib, Idir and saving institutions". Equib and Idir are common social associations in both rural and urban areas of the country. Equib is used socio-economic purpose such as financial mobilization and others whereas, Idir is also socio-economic problem especially focused on a kind of Funeral ceremony.

National and Grind lay Bank, London, which had 40 percent of the total share." In 1964 the state bank of Ethiopia also divided into two parts, national bank of Ethiopia and commercial bank of Ethiopia. In 1974, all commercial bank became nationalized by central bank and named under Addis Ababa bank, and its present name changed to Commercial bank of Ethiopia in 1980 under new directives.

The National Bank of Ethiopia has developed a different tool to impose state led development by credit allocation and foreign exchange in the favor of state sector in Derg period. Accordingly, "Credit to the private sector fell from nearly 100 percent of total bank credit under the monarchy to only 40 percent under the Derg." (Di Antonio, 1998). The government covered losses by subvention, for those loans need loan collateral since they are state owned enterprises (SOE). Moreover, the inefficiency in state financial system was created. No private bank at a time.

Following the 1992 banking sector reform, there has been significant progress in the sector especially in the resource mobilization aspect. This can be reflected in different ways: deposit was increased and liquidity increased from 5.02 billion in 1992 to 187.29 billion in 2012."[6] The total loans and advances also increased enormously from 4 billion in 1992 to 81.57 billion June of 2012 in banking sector.

[6] *The official report of national bank of Ethiopia show that the deposit was increased enormously compared with before the reform. Actually this is the result of the reform of the sector. Proclamation of the country allows private investment in the sector.*

2.2 Current Banking sector performance in Ethiopia

In 1991, when the ruling group; national Shengo[7], came off power, the new government declared a liberal economic system. Thus, "The Monetary and banking Proclamation of 1994 established the National Bank of Ethiopia as an independent entity." The Monetary and banking Proclamation No.83/1994 and Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for private investment in the banking sector. Currently, there are 16 commercial banks; fourteen are private and two are public. Except the two public banks, all the other 14 banks are established after the reform of 1992[8].

2.3 Theoretical Frame work for Reviewed Empirical Finding

Since the banking sector performance affects on the profitability is not observable, it is necessary to rely on a number of proxies/indicators as usual in financial sectors. According to Ayanda (2005) "Financial sector performance indicators are likely to affect the proxies of financial performance of banks." The consequence of the financial sector performance would be observed partly through the movement in those proxies. Most often, bank size proxied by total asset and sometime being with branch network. Credit risk represented by loan loss reserve; liquidity risk by total loan to total asset and total loan to total bank deposit. Capital adequacy proxied by equity to total asset.

In theory, Bank size has positive relationship with bank profitability and most often the economy of scale theory applied. But one finding refutes this theory. To be the theory true,

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[7] *From the 1974-1991, there was centrally planned economy and all commercial banks were nationalized by the government. The national Shengo had had the supreme power at a time. Shengo mean national assembly.*

[8] *Proclamation Number .592/2008 again established to provide for banking business and licensing banking business was the base for the existence of present commercial banks in the country…..*

the correlation between profitability and bank size should have positive and highly correlated (Berger and Mester, 1997). At weak correlation, in the sense that the bank is inefficient and the principle of economy of scale no more valid and in this case most often smaller size commercial banks are profitable than large size commercial banks.

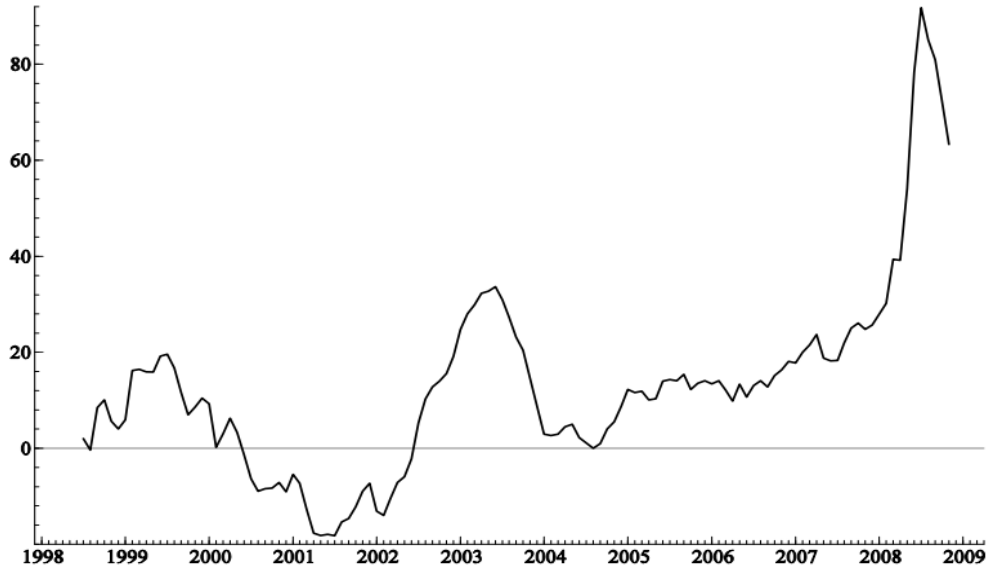
By definition, equity to total asset (capital adequacy) has negative impact on profitability of banks. Banks with more capital adequacy is less risky but less profitable than bank with less capitalized. This theory is supported by the findings of (Berger and Mester, 1997; Christos k., 1999) and (Krama and Tekeste,2012).The more capital adequacy ratio a given bank has, the more probability of write off bad loans as loan loss reserve may be low but less profit. Again, liquidity risk and profitability have negative trade off. The more liquid asset you have on hand to fund the depositors, the less you are profitable (Christos K., 1999). The findings of Christos show that credit risk also have negative trade off which in theory its true.

As far as the Global Financial Crisis is concerned, its impact on profitability is very high. The degree of impact may different from country to country. Global financial crisis resulted in the weak aggregate demand, economic depression often follow. On average, it has negative impact on profitability. The central bank sometimes intervenes to stabilize the sector by using different monetary and fiscal policy changes. The finding of Ashamu and Abiola (2012) support the same on Nigerian banking sector performance.

In relation with global financial crisis of 2008 in Ethiopian context, banking sector was indirectly influenced by the phenomena. Import was higher than export as primary product price on the world market decreased at a time. As a result, there was shortage of foreign currency to import goods from abroad. Inflation was increased twofold than it was before

2008 which implies that there should be a response from central bank to the high inflation and foreign currency shortage in the reserve. Accordingly, many policy changes were taken to address the problem which was on average had negative impact on profitability. Those Policy Instruments taken by central bank: inducing credit ceiling 15 percent to 30 percent on outstanding deposit balance; raising reserve requirement ratio from 10 percent to 15 percent on net deposit; Asset liquidity ratio from 15 percent to 25 percent; Issuance of maturing bills to raise fund frequently in terms of foreign currency from China, Germany, USA and other countries; Zero central bank financing government deficit(tight monetary policy); Required Government bond- 27 percent of outstanding loan balance each month and increased the minimum deposit interest rate 3 percent to 4 percent. All these policy changes have impact on profitability and hence captured by the year dummy.

From inflation side, theory says that there is negative relationship between inflation and profitability. It has negative impact on economy, on profit as well. But if it managed/forecasted very well by the management of the bank, it is possible inflation can have positive impact on profit. In Ethiopian case, it showed ups and downs in the sense that the trend was not consistent for the period 2005-2011. Considering the trend of inflation, the degree of increment is enormous. Especially in 2008 and 2011, it was skyrocketed. In 2005, inflation was low, close to zero which was had negative impact on real interest rate. In 2007/8, because of different factors, inflation rate was more than twice of 2006/7 inflation rate. This had negative implication on profitability.Fig.2.1 shows inflation trends.



Source: World Bank (2011)

2.4. Reviewed Empirical Finding

Reviewing Empirical finding is the way of relating ones work with others previous work on the specific topic of study to prove or disprove with one's own empirical findings. Some best reviewed empirical finding of this specific topic; then gaps noticed from this findings analyzed.

Pasiouras and Kosmidou (2006) under their paper, "*Factor influencing profitability of domestic and foreign commercial banks in European Union"* by taking 15 countries` commercial banks sample and pointed out that equity to total asset was significant and positive; total cost to income significant and had negative coefficient; Liquidity had significant and negative relationship with profitability; bank size was significant and had negative impact. Bank size negative sign show that economies of scale for smaller bank and diseconomies for larger banks. So, European Union banks should focus on other determinants of profitability of banks than bank size to increase their profit. GDP growth and inflation rate significant and positive relationship with profitability for domestic bank, which mean that in that period,

bank could anticipate inflation properly and GDP was significant for both. It is true for foreign banks significance but relationship with profitability is different for some variables; R^2 is higher for domestic banks than foreign banks, it mean that some variables that explain foreign bank profitability are not incorporated in the model. Concentration has no impact on profitability.

Madishetts and Rwechungura (2013) under research paper, *"Determinants of banks profitability in developing economy: Empirical Evidence from Tanzania"* concluded that internal determinants: liquidity risk, credit risk, bank size (Total bank asset), capital adequacy had significant impact on profitability for the period (2006-2012).And external determinants: Growth Rate of Real GDP and Inflation rate had no impact on banks profitability.

Ayanda (2012) on his Research paper, *"Determinants of commercial banks profitability in Developing country: Evidence from Nigeria banking Industry,"* annualized time series data from 1980-2010 concluded that: capital adequacy proxied by equity to total asset has significant negative impact on profitability, its implication is that well-capitalized bank is less risky but lower profit compared to less capitalized banks; Liquidity risk represented by total loan to total asset and total loan to total bank deposit had significant negative and positive impact respectively; growth of money supply has positive significant impact; Credit risk proxied by loan loss provision to total loan had significant negative impact; whereas bank size proxied by total asset and number of branches network; income to cost; inflation as well as growth rate of real GDP had no impact on profitability of banks.

Alexious and Sofokils (2009) on their paper, *"Determinants of bank profitability: Evidence from Greece banking sector," for the period 2000-2007;* ROE as dependent variable

concluded that Inflation had positive impact, which showed that management of the bank forecasted the future inflation properly so that bank could adjusted interest rate to achieve maximum profit; capital strengthen had positive impact; bank size proxied by log total asset had positive impact implies economies of scale; Credit risk proxied by loan loss provision to total loan had negative impact .i.e. Bank implemented risk averse strategies to maximize profitability (the more bank risk appetite, the more defaulted risk); bank liquidity risk represented by total loan to total asset had negative impact; GDP had no impact on profitability.

Panayiotis et al… (2005) on research paper, "*Industry specific and macroeconomic specific determinants of bank profitability in Greece bank*" found that capital was very important variable to explain profitability and also credit risk represented by provision for loan loss had significant negative impact on banks` profit. Bank size had no impact on profitability; even exclusion of bank size from the model has no effect. Inflation rate also found that positive impact on profitability. It indicates that bank management able to forecast future inflation in Greece commercial banks so that it could correctly estimate real interest rate to maximize profit. GDP was also positively and significantly affect profitability.

Azebu (2007) on his paper, "*Determinants of banking performance in Ethiopia*" utilized panel data, ROAA as dependent variable that operational efficiency represented by cost to income; capital adequacy represented by equity to total asset had positive impact implies that the more capital; higher loan risk assumption, more profit. Bank-size proxied by log total asset also significant. The theory of economies of scale applied. Larger banks are profitable than small banks. Total loan had positive impact on profitability. Liquidity risk proxied by total loan to total bank deposit had negative impact; but total loan to total asset had positive impact on profitability. And growth rate of real GDP were significant key factors that influ-

ence commercial banks profitability where as credit risk and inflation rate had no impact on profitability of the sector.

Kiyota, peitsch and M.Stern (2007) in their discussion paper, "The case of financial liberalization in Ethiopia impact on profitability" raised the issues of banking sector under performance. They discussed the comparison with neighbouring countries such as Tanzania, Uganda and Kenya, which had already liberalized banking systems, with non-liberalized nature of banking sector in Ethiopia in that there are no foreign commercial banks, no fair priced competitive market structure, and strong capital controls in place. Interest Spread is high which is the main factor for less competitive nature in the sector. And they concluded that sector is under developed and profitability is high comparatively. Policy from regulator has its own impact on performance of banks.

Krama and Tekeste (2012) under their paper, "*Determinants of Profitability of commercial bank in developing Economy: Evidence from Ethiopia* "of data from 2000-2009 used fixed panel regression. The researchers concluded that internal factors: Equity to total asset, non-interest income to total income, bank size proxied by log total asset had significant and positive impact on profitability and liquidity risk was had significant negative impact on profitability. Whereas loan loss provision had negative relationship but no impact on profitability. The profitability is measured in terms of ROAA. Of external factors, both inflation and GDP were insignificant but had positive relationship with ROAA. Also forwarded that commercial banks of Ethiopia should use assets in more productive area than holding them in their reserve account (lowering liquidity position). And spread is Very high which indicates the lending rate is far higher than deposit rate and this implies that competition in banking sector is weak in Ethiopian commercial banks.

The various possible explanations and analyses from writers on the banking sector performance are: The very important point from here above all is that there is no consistent finding on each variable's significance and relationship as well as model selection on performance measured in terms of profitability. Those differences might mostly came from difference in Financial market system of different country, the Regulation framework from regulator, Economic policy of the country, sample time horizon, as well as type of variables incorporated in the model and what type of model they used. Some of the gaps noticed from those above literatures reviewed; Inconclusive on determinants of profitability across country. This specific paper different from those reviewed academic journals by considering any policy change to respond the global financial crisis of 2008 impact on profitability and year dummy variable incorporated in the model to capture this policy changes impact on profitability other than the change in the variables incorporated in the model for the period under consideration.

CHAPTER III

3. Methodology and Data Analysis

3.1. Determinants of profitability and variables selection

Different scholars used different models to measure profitability. The most popular measures are return on asset(ROA), return on equity(ROE) and net interest margin(NIM) were identified by Ahmed (2003) widely used in literatures to measure profitability. Others were used these models as comparative measure of one model to another, and then choose the best measure of performance. The return on asset (ROA) is the widely used profitability measures ratios. This paper used ROA model to identify determinants of Profitability. ROA best measures of how bank manage its asset to generate revenue than any profitability measures tool (Rivard and Thomas, 1997)[9]. According to these scholars, there are possibly two primary reasons why we should use ROA than others measure of performance: *First* unlike ROE, movement in equity multiplier less distort ROA. Whereas ROE by using only equity of bank`s shareholder, measures how banks` management generate return for each equity. NIM is also a ratio of earning asset that show the degree to which the bank`s earning is profitable. And the *second* reason is that ROA represent a better measures of ability of banks generate returns from its portfolio asset. Depending on the finding of the empirical review, the paper developed the model considering return on asset as a dependent variable. ROA ratio not incorporates Equity multiplier ratios. The simple basic idea in terms of formula will be:

ROA= profit margin x asset turn over; EM=TA/TE

ROA= (Net income/Total Revenue) x (Total Revenue/Total Asset)

ROA=NI/TA, but ROE=EM*PM*TAT=NI/TE

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[9] *Journal of Economics and Business "The effect of interstate banks on large bank holding company profitability and risk." Explained how return of holding company related to risk of that company. They took ROA as best measure of profitability compared to ROE and NIM. 1997, 49; 61-76,*

NIM= (Interest earned-Interest expense)/Total asset

Determinants are selected based on experiences and the literature review. It incorporated Bank size, credit risk, liquidity risk, capital strengthen, GDP, inflation, total loan and year dummy. But GDP and total loan are control variables in this case because, from the review as well as the time horizon of the sample; trend of GDP and total loan may have little influence on the bank's performance in Ethiopian context.

3.2 Methodology and Data source

This study makes use of panel data.The Sources of data are mainly from the Audited annual financial reports of commercial banks through central bank of Ethiopia and Macroeconomic variables are from WB for the period 2005-2011.

3.2.1 Sample selection

Sampled on the top ten senior commercial banks in Ethiopia based on their size, in terms of total asset; and regressed performance measured in terms of profitability on determinant variables of profitability.

Table 3.1: List of top 10 senior public and private banks in Ethiopia.

No	Name of Banks	Establishment Year	Numbers of Banks
1	Commercial bank of Ethiopia	1971	1
2	Construction and Business bank	1983	2
3	Awash International Bank S.C.	1994	3
4	Dashen BankS.C.	1995	4
5	Abyssinia BankS.C.	1996	5
6	Wegagen Bank S.C.	1997	6
7	United BankS.C.	1998	7
8	Nib International BankS.C.	1999	8
9	Cooperative Bank of OromiaS.C	2004	9

10	Lion International Bank S.C.	2006	10

http://www.nbe.gov.et/financial/banks.html [10]

3.2.2. Model specification

Model is a representation of the basic economic phenomena; it is an abstraction of the real world (Fonta et al, 2009)[11]. The specification of a model is based on the available information relevant to the study in question.

According to (Obamuyi, 2013) the Performance of commercial bank modelled as:

$$ROA_{it} = \alpha + \frac{1}{N}\sum_{q=1}^{Q}(\beta yq)t + \frac{1}{N}\sum_{p=1}^{P}(\beta yp)it + \varepsilon \text{ it} + \text{ui}$$

Whereas Y^P bank specific variables, Y^q external variables

Equation:

Table 3.2. Variables Description

[10] *For detail,visit the web site:http://www.nbe.gov.et/financial/banks.html*

[11] *Fonta model is the basic that he developed model for earthworm and applied to many social science school since then. It is a guide to proper finishing and concluding of a given economic/econometric model. He also developed different model on his different papers.*

Variable	Description	Expectation
ROA_{it}	Return on asset, at time t, %	….
$GRTA_{it}$	growth rate of total asset, at time t,%	Positive
$GRTL_{it}$	growth rate of total loan, at time t ,%	Positive
$TLTA_{it}$	total loan to total asset, at time t,%	Positive
$EQYTA_{it}$	equity to total asset, at time t,%	Negative
$LLPTL_{it}$	loan loss to total loan, at time t,%	Negative
$RGDPGR_{it}$	growth rate of real GDP, at time t ,%	Positive
Inf_t	inflation rate, at time t,%	Negative
$BRCH_{it}$	number of branches network, at time t,	Positive
$TLTBD_{it}$	total loan to total bank deposit ,%	Negative
U_{it}	error terms, at time t	…
Year Dummy	Dummy variable that takes 1 if after 2008; zero otherwise	Negative

Table 3.3. Descriptive Panel data summary

Variables	level	Mean	Std Dev.	Min.	Max.	Observation
ROA	Overall	3.288	1.163	.24	7.45	N = 67
	between	-	.604	2.37	4.566	n = 10
	within	-	1.02	-1.03	6.172	T-bar = 6.7
GRTA	Overall	20.60	43.18	-97.00	115.78	N = 67
	between	-	18.00	5.65	64.367	n = 10
	within	-	40.48	-114.42	100.97	T-bar = 6.7
GRTL	Overall	78.67	504.88	-99.55	4133.33	N = 68
	between	-	188.26	-.782	610.25	n = 10
	within	-	470.18	-631.13	3601.75	T-bar = 6.8
LLPTL	Overall	5.01	4.18	0	21.17	N = 68
	between	-	3.41	1.302	11.72	n = 10
	within	-	2.63	-2.66	16.66	T-bar = 6.8
EQYTA	Overall	14.53	12.21	4.2	86.82	N = 68
	between	-	8.50	6.95	32.79	n = 10
	within	-	9.28	-8.42	68.55	T-bar = 6.8
TLTA	Overall	49.89	14.35	2.33	83.33	N = 68
	between	-	10.03	30.11	62.73	n = 10
	within	-	10.75	10.31	70.50	T-bar =6.8

TLTBD	Overall	67.27	23.53	12	129.59	N = 68
	between	-	16.15	40.13	97.61	n = 10
	within	-	17.77	13.35	130.94	T-bar =6.8
RGGDPR	Overall	10.71	.962	8.83	11.78	N = 68
	between	-	.116	10.38	10.74	n = 10
	within	-	.957	8.80	11.75	T-bar =6.8
INF	Overall	35.67	18.38	2	64	N = 68
	between	-	2.294	35.14	42.4	n = 10
	within	-	18.28	2.53	64.53	T-bar =6.8
BRCH	Overall	55.97	65.06	6	417	N = 68
	between	-	61.16	20.6	226.71	n = 10
	within	-	27.41	3.26	246.25	T-bar =6.8
DUMMY	Overall	.57	.498	0	1	N = 70
	between	-	0	.571	.571	n = 10
	within	-	.49	0	1	T-bar = 7

Table 3.3 above showed that the mean, standard deviation with minimum and maximum at different level. For example, overall Growth rate of total asset on average contribute to banks performance by 20.60 percent; return on total asset deviate by 43.18 percent; and between banks and banks return on total assets deviate by18 percent; and within bank, total asset return deviate by40.48 percent.

Table 3.4. Test for Multicollinearity

vif

Variable	VIF	1/VIF
tlta	7.58	0.131961
tltbd	5.59	0.178953
inf	3.73	0.268403
rgdpgr	3.55	0.282028
eqyta	2.95	0.338955
ydummy	2.51	0.398187
grta	2.30	0.435361
brch	2.02	0.495691
grtl	1.81	0.552647
llptl	1.56	0.639109
Mean VIF	3.36	

As the two tables above about variables relationship showed that the pair wise as well as average variance inflation factor correlation indicates there is no severe problem of multicollineraity between independent variables in the model. According to (Kennedy,2008)[12], multicollinarity mean vif less than 0.80 is tolerable, by which in this case vif is 3.36 on average. Since Bp test result show that chi^2 p-value is statistically significant at 5%, the model has heteroskadisticity problem. So, original pooled OLS regression is no more efficient.

3.3.1 Robust Pooled OLS regression result

Furthermore, the result in the table above shows that there are changes in significance of variables in result of pooled OLS under robustness standard error checks. It indicates that

[12] *In 2008, Kennedy mentioned that if sample correlation>0.8 then there will an evidence of severe problem of colinearity. But, he proposed do nothing, if the variable is significant and decisive to your model. If possible, try to introduce instrumental variables or two stage least square/2SLS.*

OLS is sensitive to relaxation of assumptions. Overall, growth rate of total loan and branch network were significant under pooled OLS; but, of variable of interest, only Loan Loss Provision to total loan was significant compared to fixed effect regression result.

3.3.2 Hausman result

Time invariant regressors are variables that could not vary with time and fixed in the model but might have impact on the regression result. To avoid such a problem in the model, fixed panel model is chosen than OLS.

	Coefficients (b) re	(B) fe	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
grta	.0009354	-.0032593	.0041947	.0010968
grtl	-.0003935	-.0000995	-.000294	.000076
eqyta	-.0494194	-.0685886	.0191692	.0043206
llptl	-.1251687	-.1394765	.0143078	.
tlta	-.0102989	-.0007031	-.0095958	.0070879
tltbd	-.0076227	-.0228475	.0152248	.
rgdpgr	.0048278	.1927108	-.187883	.0396304
inf	.0101241	.019845	-.0097209	.003351
brch	-.0050589	-.000901	-.0041579	.
ydummy	-.347162	-.5773193	.2301574	.099799

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(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 39.67
Prob>chi2 = 0.0000

Table 3.5 Hausman test

Following Housman test result, the fixed effect model is chosen. Individual time invariant variable fixed effect characteristics on profitability disappeared from regression.

According to Housman test, the hypothesis test was given as:

H_0: Random effect is appropriate model (Consistent and efficient)

H_a: Fixed effect is appropriate model (consistent)

On the table above, the result of Housman test show that the p-value of chi^2 is statistically significant at one percent means that rejects the null and accepts the alternative. So, fixed effect is the appropriate model for this specific statistics.

The R^2 within, between and overall in the fixed effect regression on the above table showed (54.19, 1.08, 10.41) percent respectively. Within R^2 is interpreted as the variables considered in the study explained about 54.19 percent of the variation within a given bank's profitability.

3.3.3.Pooled OLS regression result

```
. reg roa grta grtl eqyta tltbd llptl tlta rgdpgr inf brch dummy
```

Source	SS	df	MS		
Model	27.3179953	10	2.73179953	Number of obs	= 67
Residual	53.936543	56	.963152554	F(10, 56)	= 2.84
				Prob > F	= 0.0064
Total	81.2545384	66	1.23112937	R-squared	= 0.3362
				Adj R-squared	= 0.2177
				Root MSE	= .9814

roa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
grta	.0064417	.0042396	1.52	0.134	-.0020512	.0149346
grtl	-.0007564	.0003219	-2.35	0.022	-.0014012	-.0001117
eqyta	-.0274892	.0181065	-1.52	0.135	-.0637609	.0087824
tltbd	.0123965	.0120508	1.03	0.308	-.0117441	.0365371
llptl	-.085467	.0360438	-2.37	0.021	-.1576715	-.0132626
tlta	-.0330952	.0234075	-1.41	0.163	-.079986	.0137956
rgdpgr	-.1337467	.2350772	-0.57	0.572	-.6046628	.3371695
inf	.0004978	.0125924	0.04	0.969	-.0247279	.0257234
brch	-.0053963	.0026268	-2.05	0.045	-.0106584	-.0001343
dummy	-.1367177	.387373	-0.35	0.725	-.912719	.6392837
_cons	6.706793	2.839065	2.36	0.022	1.019463	12.39412

Table 3.6 Robust Panel fixed effect regression

Variables name	Coefficients	Robust Stand-	p-value

		ard errors	
Growth rate of total asset	-.00326	.00339	0.341
Growth rate of total loan	-.00011	.00027	0.710
Equity to total asset	-.0686***	.01548	0.000
Total loan to total bank deposit	-.0228*	.0124	0.071
Loan loss provision to total loan	-.1395***	.0408	0.001
Total loan to total asset	-.0007	.01997	0.972
Growth rate of real GDP	.1927	.1893	0.314
Inflation rate	.0198**	.00976	0.048
Branches	-.0009	.0041	0.825
year dummy	-.577*	.308	0.068
constant	4.273	2.229	0.061
R^2(within)	0.5419		
N	67		

*, **,*** significant @10%, 5% and 1% respectively; H_0 :(u_i) = 0. The null hypothesis is that all the fixed effect intercepts are zero. If the null is rejected, then we need to use fixed effects method than OLS.

ROA= 4.273 - 0.0033grta - 0.0001grtl - 0.0007tlta - 0.1395llptl - 0.0686eqyta

(2.229) (0.0034) (0.0003) (0.0199) (0.0408) (0.0155)

-0.0228tltbd + 0.1927grrgdp + 0.0198inf - 0.0009brch-.5773dummy

(0.0124) (0.1894) (0.0098) (0.0040) (.3088)

3.4. Functional form Misspecification test

```
. estat ovtest

Ramsey RESET test using powers of the fitted values of roa
       Ho:  model has no omitted variables
                   F(3, 53) =      0.04
                   Prob > F =      0.9886
```

Table 3.7. Test for Pair Wise correlation between independent variables.

	Grta	grtl	eqya	llptl	tlta	tltbd	rggdp	inf	brch	Ydummy
grta	1									
grtl	.226	1								
eqya	-.045	.4290	1							
llptl	-.203	-.146	-.3580	1						
tlta	-.087	.061	-.326	.056	1					
tltbd	-.087	.323	-.043	.118	.8322	1				
rggdp	-.266	.121	.113	.163	.315	.355	1			
inf	.6110	.019	-.072	-.122	-.073	-.111	-.691	1		
brch	.079	-.079	-.301	.212	-.447	-.426	-.198	0.112	1	
ydummy	.395	-.125	-.185	-.191	-.358	-.426	-.675	0.496	0.165	1

*, **,*** significant @10%, 5% and 1% respectively.

3.3.4 Empirical result discussions

One of the key findings of variables of interest is capital adequacy. Capital adequacy which proxied by Equity to total asset; holding all else constant found to be key determinants of banks profitability of CBs in Ethiopia for the period under consideration. The result shows that capital strength of CBs has negative impact and statistically significant on performance of banks measured in terms of return on asset. The result is consistent with hypothesis. Based on the theory of Capital, a good explanation for the negative sign is that Commercial Banks in Ethiopia did not efficiently utilize or manage their capital. The finding is consistent with

(Berger, and Mester, 1997) and (Ayanda, 2012) findings, refute with the positive impact of findings of (Pasiouras and Kosmidou, 2006), (Madishetts and Rwechungura, 2013), (Alexious and Sofokils, 2009), (Panayiotis et al…, 2005) and (Azebu, 2007). According to Berger and Mester finding, well capitalized Bank is better in risk absorption than less capitalized banks; but on profitability, well capitalized banks` has a less probability of earning per share. The ECBs case also follows the same logic of Berger and Mester finding.

The other key determinant of profitability in Ethiopian CBs found to be credit risk which proxied by Loan loss provision to total loan. With regards to this variable, the study found a statistically significant and negative association with profitability and it is consistent with the hypothesis. This negative association implies that the more risky customer included into the portfolio by the banks; the higher the loan defaults (NPL), the less chance of profitability will be. The findings of (Alexiou and Sofoklis, 2009); (Ayanda, 2012) and (Alexious and Sofokils, 2009) studies in banking sector show that the effect of loan loss provision to total loan on profitability was negative. In Ethiopian banking context, the implication of negative coefficient is that bank management should put its efforts on implementation of credit risk management to evaluate credit risk more effectively to avoid problems associated with loan default risk.

Liquidity risk is also another key determinant of profitability of commercial banks in Ethiopia. It is proxied by total loan to total asset and total loan to total bank deposit. Total loan to total bank deposit had negative impact on profitability where as total loan to total asset unfortunately had no impact. Total loan to total bank deposit finding is inconsistent with the claim of the hypothesis. The finding brings to light the trade-off between liquidity (total loan to total bank deposit) and profitability that the more resources are tied up to meet future liquidity demands (lower liquidity risk), the lower the bank's profitability (bank loss interest income). The more the ratio (higher liquidity risk), the less bank get profit (liquidity trap).

This May be because of the large proportion of the loan defaulted (NPL).It is supported by the findings of (Krama M. and Tekeste B., 2012), Azebu (2007), and (Pasiouras and Kosmidou, 2006). The empirical result showed that there is less liquidity risk (higher ratio) in the sector and commercial banks in Ethiopia should manage its liquidity so that they can improve their profit level. The findings of (Madishetts and Rwechungura, 2013) and (Ayanda, 2012) refutes this finding.

Unfortunately, Bank size which was proxied by growth rate of total asset and number of branches network found to be statistically insignificant and negatively associated with profitability. Even though it is insignificant, it was one of variables of interest of the researcher. Therefore, the result is inconsistent with the hypothesis and supports the findings of Berger at al (1997), Ayanda (2012), and Panayiotis et al… (2005), no relationship between bank size and profitability. This result indicates that commercial banks in Ethiopia had not benefited from economies of scale or it is diseconomies of scale arising as a result of ownership of large assets and increasing branch networks. This implies inefficiency in terms of large asset ownership and large number of branches network; conceptually, the smaller size banks are profitable than larger size banks in Ethiopia.

As far as macroeconomic variable is concerned, inflation had a positive relationship and statistically significant impact on banks profitability in the period under review. The result is inconsistent with the claim of the hypothesis in terms of relationship between the two variables. This finding is consistent with the finding by Panayiotis et al., (2005); Pasiouras and Kosmidou (2006); and Alexious and Sofokils (2009). The reason why the profitability and inflation had positive relationship is that the effect of inflation on bank profitability depends on the ability of inflation forecasting by the bank's management. The other possible justification is that as inflation increase, borrower will increase and banks profitability also

increases because with high inflation rate, real interest rate will decrease which attract borrowers at least in the short run. In the long run, it may fall/rise depending on supply of fund. And the case may true for Commercial banks in Ethiopia.

On the policy side, policy change to respond global financial crisis of 2008, year dummy is incorporated in the model to capture any policy change impact on profitability because of global financial crisis. Dummy is found to be statistically significant and had negative relationship with profitability. The result is consistent with the hypothesis. In Ethiopian context, many policy measures were taken to address the problem of Global financial crisis since 2008 which on average had negative impact on profitability. Policy Instruments that were taken by central bank: credit ceiling; raising reserve ratio requirement from 10-15 percent on net deposit; Asset liquidity ratio from 15-25 percent; Issuance of maturing fund frequently in terms of foreign currency to Chinese, Germany, USA and other countries; Zero central bank financing government deficit (tight monetary policy); increased the minimum deposit interest rate 3 percent to 4 percent. Again in 2010/11, NBE took different Monetary Policy Measures which were responsible for decreasing of profitability as represented by dummy. Of policy measures; All commercial banks were forced to purchase government Bonds (27 percent of outstanding loan balance each month). Deposit interest rate which is exogenous, increased from 4-5 percent, to attract depositors and it implies commercial banks have to buy more government bonds by the corresponding increment of deposits.

Table 3.8. Robustness check

Variables	ROA		NIM		ROE	
	Coeff.	Rob.stnrd. Error	Coeff.	Rob.stnrd. Error	Coeff.	Rob.stnrd. Error
Growth rate of total asset	-.00326	.00339	.003745	.0041	-.0447	.02856
Growth rate of total loan	-.00011	.00027	-.00106**	.0003	.0017	.00224
Equity to total asset	-.0686***	.01548	.0754***	.0194	-.5914***	.13050
Total loan to total bank deposit	-.0228*	.0124	-.00161	.0155	-.0657	.10430
Loan loss provision to total loan	-.1395***	.0408	.0123	.0475	-.4432	.34430
Total loan to total asset	-.0007	.01997	.0239	.025	0.2878*	.16830
Growth rate of real GDP	.1927	.1893	.0537	.223	2.7346*	1.59650
Inflation rate	.0198**	.0097	.0074	.0119	0.1689**	.08220
Branches	-.0009	.0041	-.0018	.005	.0669**	.03420
year dummy	-.577***	.308	.7093*	.391	-8.9262**	2.60270
Constant	4.273	2.229	1.8147	2.823	22.5924	18.7922
R^2(within)	.542		.425		0.407	
N	67				67	

*, **,*** significant @10%, 5% and 1% respectively.

As it is clearly seen from robustness check of panel data above, some of the determinant variables show movement with relaxations of some assumptions. Only Equity to total asset that is proxy for capital adequacy and year dummy which is dummy for any policy change by regulator (policy tightness) because of global financial crisis of 2008.Even the sign of both consistent variables is changed under NIM. Other variables showed movement and

sign change in some cases. This indicates that the model is more or less not conservative with different model regardless of the theory. Within R^2 which indicate variation that explained by the model of total variation is reduced to 42.5% and 40% under NIM and ROE regression respectively.

CHAPTER IV

4. Conclusion Remarks and policy implications

4.1. Conclusion Remarks

This chapter has presented about prospective of commercial banking sector in Ethiopia and their performance depends on the empirical results on determinants of performance. Various sources of empirical review were used to support the determinants in the paper. The result showed that equity to total asset proxy of capital adequacy, loan loss reserve proxy for credit risk, loan to deposit proxy for liquidity risk, inflation rate and year dummy became key determinants of profitability in Ethiopian commercial banks in the period under consideration. But some variables such as capital adequacy, liquidity risk and inflation rate should have been positive in theory but had negative impact on profitability. From financial stability perspective, regulator concern mainly about stability, safe and soundness of the banking sector where as the commercial banks mainly interested in maximizing their own profit for their existence in both short and long run. The sector is stable as tight monetary policy of regulator. Here, it implies that it has negative impact on performance of commercial banks. The commercial banks management would also able to manage the asset ownership and number branch network so that their asset will be used in productive area. The capital adequacy of the bank was also high which mean that there is high provision and that implies there are loan that are not performing well. Whereas bank size and total loan to total asset did not have any significant impact on profitability. From macroeconomic factors, inflation has positive impact on profitability of commercial banks. Robust regression test was almost not conservative; it is done to check weather a change in model or some assumptions relaxation may lead to lost for some variables significance or not.

4.2. Policy implications

The result indicates different implication for investors and banking industries. More importantly, banks should know which factor is boosting profitability of banks. Then banks compete on that point and this increase competition among commercial banks that leads to low pricing of loan and it has great inputs for investors. From banks side, Overall empirical findings provide evidence that profitability of Commercial banks are influenced by bank-specific factors that might have a direct relationship with bank management and macroeconomic factors that might have no the direct result of a bank managerial decision such as inflation and year dummy of any policy change.

In general, there is existing challenges that were not yet solved by this paper and left for the future researchers on the area. Access to credit for private business activities is very low in the country. Government favours some sectors and not others. In some rural areas, commercial banks couldn't open branches as to the impediment of infrastructure. In Rural, one might find a lot of informal credit market (usury), and as usual interest rate for informal sector is higher than formal sectors and this has so many impacts on rural people economy and commercial banks profits as well. The issues of Corruptions, loopholes of policy of regulator, and poor legal institutions in the cases of borrowers' failure to fulfil obligations (NPL); loan write off (CBs report), are the major current challenges. This implies that educating and building competence within the commercial banks and regulator staffs is necessary.

Policies would probably need to be directed at:-

Prudent credit risk management and technology

Strong internal resource management strategy

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