

**THE IMPACT OF FINANCIAL LIBERALIZATION  
ON THE ECONOMIC GROWTH OF ETHIOPIA:  
A PANEL DATA APPROACH**

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This is to certify that the project prepared by Belaynesh Bahru, entitled: The Impact of financial liberalization on the Economic growth of Ethiopia: A Panel Data Approach and submitted in partial fulfillment of the requirements for the degree of Masters of Art (Applied Trade Policy Analysis) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.



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The impact of financial liberalization on the Economic Growth of Ethiopia: A panel data Approach

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**ABSTRACT**

*This paper attempts to evaluate the impact of financial liberalization on the banking sector performance and economic growth of Ethiopia , using annual data covering the period 2004-2011. The Hausman test for the random effects regressions is imposed by the RE estimation are valid and the regressors are, uncorrelated with the bank random effect estimator, consistent and efficient . The findings of the study showed that there is a small performance gap between private and public banks. Therefore, if foreign banks were permitted to enter the Ethiopian banking system the result might be the narrowing of the efficiency gap, measured by cost-asset ratio, the interest-rate spread and ROA between public and private banks. However, this might not be creating positive effects on Ethiopia's national economic growth. Because oreign banks with more capital and more experience will take over the domestic financial sector, which is presently, lead by banks that are too small, young and inexperienced to compete.*

**Key words:** Financial liberalization, bank performance, ROA

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## **LIST OF ACRONYMS AND ABRIVATIONS**

|              |                                                       |
|--------------|-------------------------------------------------------|
| <b>CBB</b>   | <b>Construction and Business Bank</b>                 |
| <b>CBE</b>   | <b>Commercial Bank of Ethiopia</b>                    |
| <b>DBE</b>   | <b>Development Bank of Ethiopia</b>                   |
| <b>DTE</b>   | <b>Developing and Transition Economies</b>            |
| <b>FDI</b>   | <b>Foreign Direct Investment</b>                      |
| <b>FE</b>    | <b>Fixed Effect</b>                                   |
| <b>FGLS</b>  | <b>Feasible Generalized Least Square</b>              |
| <b>GATS</b>  | <b>General Agreement on Trade in Service</b>          |
| <b>GATT</b>  | <b>General Agreement on Trade and Tariff</b>          |
| <b>GLS</b>   | <b>Generalized Least Square</b>                       |
| <b>IA</b>    | <b>Intertemporal Approach</b>                         |
| <b>MFN</b>   | <b>Most Fevered Nation</b>                            |
| <b>MLE</b>   | <b>Maximum Likely hood Estimator</b>                  |
| <b>MOFED</b> | <b>Ministry of Finance &amp; Economic Development</b> |
| <b>NBE</b>   | <b>National Bank of Ethiopia</b>                      |
| <b>OLS</b>   | <b>Ordinary Least Square</b>                          |
| <b>RBC</b>   | <b>Real Business Cycle</b>                            |
| <b>RE</b>    | <b>Random Effect</b>                                  |
| <b>ROA</b>   | <b>Return on Asset</b>                                |

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**SAP**

**Structural Adjustment Program**

**WDI**

**World Development Index**

**WTO**

**World Trade Organization**

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# **CHAPTER ONE**

## **1. INTRODUCTION**

### **1.1 BACKGROUND OF THE STUDY**

Financial services liberalization generally refers to the removal of discriminatory quantitative or qualitative regulations that discriminate against foreign and domestic financial services providers by limiting market entry or commercial presence. Thus, to a significantly higher extent than trade in goods, the liberalization of trade in services requires the amendment of domestic legal and regulatory provisions.

Studies on opening markets in financial services nowadays argued that liberalization of financial services resulted in greater competition and specialization, ultimately improving financial intermediation. The benefits include efficiency and stability, improved management, reduced systemic risk, improvement in service quality and transfer of technology. The studies also identify actual and potential risks and costs associated with liberalizing the financial sector. (Abay, Ageba, Derk , Kiyota and Yizengaw ,2007)

The General Agreement on Trade in Services (GATS) was introduced in the Uruguay Round to establish rules governing trade in services. The GATS comprises the framework agreement (with its twenty-nine articles and eight annexes) as well as the schedules of specific commitments and the lists of exemptions to Most-Favored-Nation (MFN) treatment submitted by member countries. It covers four modes of international delivery of services: cross-border supply (for example, international telephony), consumption abroad (tourism), commercial presence (provision of services abroad through a branch, agency, or subsidiary), and

the presence of natural persons (entry and temporary stay of foreign individuals in order to supply a service). (WTO,2008)

GATS in financial services provide a multilateral, rules-based framework for dispute resolution and a systematic process for negotiating liberalization within the four modes defined above. The GATS framework consists both of core principles, such as MFN treatment and transparency and rules for sector-specific commitments negotiated by individual members. Specifically, the extent of financial liberalization content of GATS will result in part from liberalization to come into compliance with the core principles, and in part from negotiation with key trade partners. To a far greater extent than General Agreement on Tariff and Trade (GATT), GATS allows members to take measures including temporary and non-discriminatory restrictions in order to protect financial sector stability. (WTO,2008)

The Ethiopian financial sector is largely limited to conventional banking. It comprises one development bank, the Development Bank of Ethiopia (DBE) and fifteen domestic commercial banks, of which two are public and thirteen private and others are in the pipe line. Public banks of Ethiopia represent 67% of total banking assets. The combined share of the private banks is 33% of the total banking assets. The share of the private sector has increased gradually relative to the public sector. A large share of banking system assets are held as cash, real estate or invested in government paper (treasury bills) or bonds.

There are significant efforts underway to improve the sector's performance and regulatory capacity in particular. The goal of financial sector reforms is to improve financial intermediation while maintaining economic stability. The National Bank of Ethiopia (NBE) is the central bank and responsible for regulating and supervising the banking sector. In the last twenty years, Ethiopia has implemented many reform measures in

the services sector under the Structural Adjustment Programme. This has resulted a series of changes of legislative, regulatory and administrative regimes of services industries in the country. This has also brought many trade liberalization measures in the services sector required by the reform process with the purpose of increase of the competition of services providers and the move towards a more market-oriented services economy for the country. However, due to the sensitivity and complexity of the issues involved, the reform process in the services sector is progressing strategically. (Alemayehu and Daniel ,2009)

Ethiopia is poorly integrated into the regional and international economy and it has not been able to reap the benefits of the rapid expansion of international trade over the last decade, particularly in sectors where it has potential, such as non-traditional agricultural products, labor intensive manufacturing and tourism.

## **1.2 STATEMENT OF THE PROBLEM**

According to the financial liberalization theory, financial repression through interest rate ceilings keeps interest rates low and this discourages savings with the consequence that the quantity of investment is stifled. Thus investment is constrained by savings. The quality of investment is also low because the projects that will be undertaken under a regime of repression will have a low rate of return with financial liberalization, interest rate deregulation means that the interest rate will raise, thereby increasing savings and also investment. The increased investment results in the rationing out of low-yielding projects and this subsequent undertaking of high-yielding projects. The quantity of investment rises and this will ultimately increase economic growth.

The seminal works of Mckinnon (1973) and Shaw (1973) attributed financial repression as the cause of the unsatisfactory growth performance

of developing countries. Both Mckinnon and Shaw advocated that financial liberalization was needed to remedy the problems caused by the financial repressive policies of developing countries.

Such financial liberalization policies include interest rate liberalization, abolition of directed credit allocation bank denationalization, liberalizing entry into the banking sector and strengthening of prudential regulation.

Mckinnon and Shaw therefore advocated the liberalization of such repressed financial systems so as to promote economic growth.

But , there are other famous economists who are doubtful of the view that finance plays any major role in economic development .Robinson (1952) argues that finance do not bring economic growth, rather it simply responds to economic growth saying “where enterprise leads finance follows.” And Lucas (1988) states, “the importance of financial matters is very badly over-stressed.” Thus, finance is viewed as handmaiden to enterprise by responding to the demand for the particular types of financial services generated by economic development.

The third group of economists claims a bi directional relationship between financial development and economic growth-financial markets develop as a consequence of economic growth that in turn feed back as a stimulant to real growth (Patrick,1966).

Empirical and theoretical literatures are inconclusive on the issues of whether financial liberalization promotes economic growth. Therefore, this study is important to drive policy implications from the empirical analysis for the future and providing such information and recommending impacts of financial trade liberalization in the country.

### **1.3 OBJECTIVE OF THE STUDY**

The general objective of the study is conducting an empirical investigation of the effect of financial liberalization on the economic growth of Ethiopia. The specific objectives of the study are:

- To investigate the impact of financial liberalization on the performance of the banking sector
- To see the Effects of Financial Liberalization on economic growth.

### **1.4 METHDOLOGY OF THE STUDY**

A multiple of data collection and processing method of the required information could have been employed, the research only be limited to secondary data. All the data are from National Bank of Ethiopia (NBE), Ministry Of Finance and Economic Development(MOFED) and from World Development Indicators (WDI) CDROM. And the choice of the period of analysis is based on the availability of the data for all the variables incorporated in the model.

The analyses carried out using statistical and econometric analysis such as multiple regression analysis using Stata and to estimate the parameters corresponding to variables of interest from the secondary data under consideration.

### **1.5 SIGNIFICANCE OF THE STUDY**

Many African countries including Ethiopia have embarked at various times in the past few decades on financial trade reform policies. But existing empirical studies have not adequately measured the gradual institutional changes that financial trade liberalization entails.

Some studies have employed the ratio of liquid liabilities to GDP as a measure of financial intermediation, but this variable does not give any indication of the specific financial trade liberalization policies embarked upon by various countries.

Other studies used the real rate of interest as a measure of financial liberalization but this variable captures only one component of financial trade liberalization -interest rate deregulation. Financial liberalization does not consist solely of interest rate deregulation but involves other policies.

This study is hoped to contribute to the unsettled debate over the finance liberalization in general and after identification of major risks, costs and benefits may give an important recommendation and policy implication.

## **1.6 WORKING HYPOTHESIS**

In this study the hypothesis to be tested is that financial liberalization improves Ethiopian bank performance variables, that are, the costs divided by total assets; return on asset (ROA), the interest-rate spread and Market share. The Second hypothesis is that, improved bank performance has a positive impact on Ethiopian economic growth. By combining these two relationships, we discuss the effects of financial liberalization on the Ethiopia's long-run economic growth.

## **1.7 ORGANIZATION OF THE PAPER**

The paper is divided in to five chapters. Chapter one deals with introduction part that includes background, statement of the problem, significance of the study, research objective, methodology of the study and working hypothesis. Chapter two overview of Ethiopian banking sector, theoretical and Empirical literature are reviewed following model selection and method of estimation in chapter three data analysis and discussion of estimation results will be presented in chapter four. Finally, the conclusion and recommendation for policy making presented in chapter five.

## **CHAPTER TWO**

### **2. LITERATURE REVIEW**

#### **2.1 OVER VIEW OF ETHIOPIAN BANKING SECTOR**

The banking industry in Ethiopia mainly provides basic commercial banking products such as deposit facilities, loans and advances, local transfers, foreign letter of credit facilities, etc. And credit business is the key income generating activities for many of the banks operating in the country. Most of banks' income is generally derived from credit businesses, although fee based income has been growing.

Using short-term resources available in the form of demand and current account deposits, most of the private banks (and the CBE, to a certain extent) primarily focus on short-term lending to finance trade and working capital. The DBE – the specific purpose of which is to finance long-term development projects – and the CBB – which is engaged in real estate financing – are providing medium and long term financing. The CBE is partly engaged in financing long-term projects as it has excess liquidity of long-term deposits of public enterprises and social security funds.

Lending is essentially determined based on the availability and quality of collateral. Most banks lack the capacity and information base to assess the profitability of projects, which would allow them to take project based credit decisions. This constitutes an impediment to development as good business entities and project ideas may not be financed unless they are well backed up by collateral. In effect, whole sectors of the economy –

including agriculture, which is dominated by small farmers – have very limited access to finance due to lack of collateral.(Abay, Ageba, Derk , Kiyota, and Yizengaw April 2007)

Economic reform in Ethiopia began in 1992. Since liberalization the share of private banks both in deposit mobilization in lending has shown a sustained increase. Similarly the share of disbursed credit to the private sector jumped from 45 to 87% during 1991-2001. Meanwhile the public sector's share declined from 42% to 1% privately owned banks come in to the financial since after the 1992 reform, on the average, the CBE alone comprised more than 90% of total deposited(while DBE's share was 1.3%) and 71% of the total loans advanced (DBE's share being 16%) During that period the NBE was actively involved controlling all financial institutions by (a) fixing interest rate ,(b) directly controlling the foreign exchange and credit allocation in a discriminatory manner, favouring the public sector and (c) directly financing the government deficit.(Alemayehu and Daniel ,2009)

A decade after the opening of the banking sector to the private sector the banking sector has developed considerably and thirteen new private banks have been established, with several more currently in formation. Coverage of the banking sector has also increased considerably. Nevertheless, a number of issues remain: By international (and including regional) comparison, coverage of banking services still is low, Availability of banking services in rural areas remains particularly limited, The portfolio of banking products remains restricted to basic services. Although private banks have increased their market shares, the state-owned CBE remains the dominant player which is able to set prices. It is also the only bank large enough to serve large firms.

## **2.2. THEORETICAL LITERATURE**

The theoretical underpinnings of the conventional view were laid out by the maximizing models that took over the field of international economics in the early 1980s. These models were designed to study the pattern of capital flows and their macroeconomic consequences, and sprang from two sources: (i) the so-called intertemporal approach (IA) to the current account studied the case in which the costs of international risk sharing are prohibitive; and (ii) the open-economy versions of the Real Business Cycle (RBC) model went to the other extreme and studied the case in which these costs are negligible.

In the case of industrial countries, Ventura (2003) shows that the IA models perform quite well empirically. Instead, RBC models predict much more international risk sharing than observed in the data. This is why a lot of the recent research in the field has focused on explaining why risk sharing is so low among industrial countries.

In the case of emerging markets, it was recognized early on that neither the IA nor the RBC models would prove appropriate. These models were being developed against the background of the worst sovereign debt crisis since the 1930s. Consequently, a new class of models was developed emphasizing the role of strategic default on foreign debts also called sovereign risk (Eaton and Gersovitz 1981)

It is widely believed that the predictions of these models for financial liberalization are essentially the same as those of the IA models. Strategic default reduces the size of the effects, but it does not change their nature. This is the view that we label conventional and that we Challenge here. Taking as starting point a prototype model of strategic default, we show that this view hinges on the unrealistic assumption that domestic debts are unaffected by default on foreign debts.

Once this assumption is removed, the effects of financial liberalization can be quite different from those predicted by the IA models. That shows there is much more to the models of strategic default than what it has been uncovered so far, and that the classic research strategy of extending the IA models to include strategic default has not been exhausted yet.

This is not to say that this is the only useful research strategy, of course. A number of papers have challenged the conventional view by shifting the focus away from macroeconomic or sovereign risk and towards microeconomic frictions in financial markets.

Gertler and Rogo (1990) showed that, if wealth plays a role as collateral when borrowing autarky interest rates might be lower in capital-scarce countries than in capital-abundant ones, even if the marginal product of capital is higher. This might reverse the predictions of the IA models regarding the pattern of capital flows.

Boyd and Smith (1997) used this insight in related dynamic models to show that financial liberalization can reduce investment and growth in capital-scarce countries. These models have the ability to explain why capital flows towards countries that are already somewhat rich and have developed financial markets.

Of course, sovereign risk and microeconomic frictions are both important features of real economies. Caballero and Krishnamurthy (2001) and Tirole (2003) analyze the problem of sovereign risk in the presence of frictions that affect private transactions, and explore various externalities. While Caballero and Krishnamurthy emphasize excessive private risk taking, Tirole focuses on the problems that arise when individuals do not internalize how their actions affect government policy. And this recent papers have proposed models in which non-discriminatory defaults on

sovereign debt reduce the net worth of investors and thus create turmoil in domestic financial markets.

## **2.3 EMPIRICAL LITERATURE**

During the last few decades, many emerging markets have lifted restrictions on cross-border financial transactions. The conventional view was that this would allow these countries to: (i) receive capital inflows from advanced countries that would finance higher investment and growth; (ii) insure against aggregate shocks and reduce consumption volatility; and (iii) accelerate the development of domestic financial markets and achieve a more efficient domestic allocation of capital and better sharing of individual risks. However, the evidence suggests that this conventional view was not always true.

Countries probably take into account the potential effects of liberalization when deciding whether to liberalize or not. As a result of data limitations, there is no strong consensus regarding the effects of financial liberalization.

Regarding level effects, there are some cross-country studies that have shown that financial liberalization in developing countries has not led to an increase in investment, growth, or even net capital inflows. Rodrik (1998) and Edwards (2001) argues that liberalizations do increase investment and growth, but that the effects are temporary.

Fernando A. Broner Jaume Ventura (2011) shows that financial liberalization might lead to different outcomes: (i) domestic capital flight and ambiguous effects on net capital flows, investment, and growth; (ii) large capital inflows and higher investment and growth; or (iii) volatile capital flows and unstable domestic financial markets. The model shows

how these outcomes depend on the level of development, the depth of domestic financial markets, and the quality of institutions.

In addition, other studies result in the literature is that the effects of financial liberalization depend on country characteristics. In particular, Arteta, Eichengreen, and Wyplosz (2001), Edwards (2001), show that liberalization in developing countries leads to larger capital in flows, and higher investment and growth in countries with stronger institutions, more developed domestic financial markets and higher initial income.

Regarding volatility effects, there is some evidence that financial liberalization increases macro-economic volatility. This was argued for the case of Latin America by Díaz-Alejandro (1985), and in cross-country evidence by Kose, Prasad, and Terrones (2003).

On the other hand, Bekaert, Harvey and Lundblad (2006) argue that stock market liberalizations low consumption volatility. As in the case of level effects, there is robust evidence that the effects of liberalization depend on country characteristics it shows that both consumption volatility and the volatility of capital flows is higher in countries with weak institutions and underdeveloped domestic financial markets.

Reinhart and Rogo (2009) show that the frequency of financial liberalization crises is a persistent characteristic of countries and it provide evidence that countries that are subject to crises grow on average faster than countries that follow a more cautious development strategy.

Against the background of the significant acceleration of the pace of financial globalization, examines Obadan, Mike I. (2006). the features of the phenomenon and the challenges they pose for national financial sector development. Although financial globalization confers notable benefits, it also entails huge costs including financial crisis. The factors of weak banking system and poor regulation helped to exacerbate the financial

crises of the 1990s. The paper, therefore, stresses the need for sound macroeconomic policies, orderly liberalization of capital accounts, adequate preparation of national financial systems and meeting other preconditions for countries to reap the benefits of financial globalization at minimum costs.

Wyplosz, Charles. (2002) looks at the effect of domestic and external financial liberalization. The results show that developing and developed countries differ in many respects. By and large, the effects are significantly stronger in developing countries. Exchange market pressure seems to be strongly positive as capital flows, but reversals seem to follow systematically. Similarly, the behavior of the output gap corresponds well to boom and bust cycles. The Paper concludes with a discussion of policy measures desirable to make liberalization safer than it has been so far.

Mohieldin, M. and S. Nasr. (2007) discusses the controversy regarding the privatization of the banking sector in Egypt. And the authors indicate that the financial sector reform currently adopted is comprehensive; however it is confronted with various political, social and economic risks, which raise concerns regarding its sustainability. The paper then draws on the existing literature to provide guidance to policy makers, regarding effective and successful implementation of bank privatization.

Lensink, Robert, Neils Hermes, and Victor Murinde. (1998).assess the effects of financial liberalization on capital flight in African economies. The estimation results suggest that financial liberalization induces a reduction in capital flight. After augmenting the model with sub models for the banking sector, the government sector and the external sector, the authors conduct simulation experiments involving an interest rate deregulation, a decrease in reserve requirements and a change in exchange rate policy. The simulation results show that capital flight is reduced by all the three financial liberalization measures.

Knight, Malcolm. (1998) assesses the impact of the globalization of financial markets on Developing and Transition Economies (DTEs). Imperfectly competitive banking sectors can react perversely to adverse economic shocks. While nonbank financial markets and institutions can enhance the competitiveness of the banking sector, there are gaps in the institutional and market structures of DTEs. Eliminating these gaps may reinforce financial market discipline in DTEs. These emphasize the complementary roles of market discipline and official oversight in an environment of globalized markets.

Kireyev, Alexei. (2002) explores empirically the links between the WTO-driven liberalization of trade in financial services and the stability of national financial systems. Econometric testing of indicators intended to proxy financial sector stability subdivided into exchange rate and banking sector stability suggests that opening of the financial sector is an efficient policy instrument at the disposal of the authorities for achieving a variety of macroeconomic goals. While liberalization is found to be broadly conducive to stability, the outcome of liberalization on exchange rate stability is less predictable than on banking sector stability.

Efficient financial services are vital to the functioning of modern industrial economies. Gillespie, James. (2000 ) provide intermediation between lenders and borrowers, allow firms to diversify and manage risk, ration capital across the economy, and provide many of the technical services necessary for both domestic and international commerce to operate. In weak economies, the development of a strong financial sector is now recognized as one of the key ingredients to sustainable development. As international trade in goods and services assumes a more important role in the global economy, the international financial service providers are increasingly important as facilitators of transactions in the primary economy. The integration of financial institutions across borders serves to

allocate capital more efficiently between national markets, stimulating real economic development.

Collins, Daryl and Mark Abrahamson. (2006) are divided over whether financial liberalization and the associated increase in global financial market integration, leads to economic growth. Increased global integration should lead to a lower cost of equity, thus reducing the hurdle rate for the acceptance of capital projects within firms and ultimately manifesting in increased growth. This paper adds to the empirical evidence by measuring the cost of equity in a sample of African equity markets on a sector-by-sector basis. Sectors with the largest market capitalization in each market are shown to enjoy the lowest costs of equity and have experienced the largest declines in cost of equity over time. The results suggest that analysis using sector level data reveals important attributes in emerging financial markets that may determine whether those economies benefit from financial liberalization.

Although a large and growing literature shows that privatization can improve the performance of non-financial enterprises, there is less evidence on how it affects the performance of the banking sector. Clarke, George R.G., Robert Cull, and Mary m. Shirley. (2005) summarizes the results from the papers in the special issue of the Journal of Banking and Finance on bank privatization. It concludes that although bank privatization usually improves bank efficiency, gains are greater when the government fully relinquishes control, when banks are privatized to strategic investors, when foreign banks are allowed to participate in the privatization process and when the government does not restrict competition.

While institutional differences have been found to affect country growth patterns, much has remained unexplained, including how economic actors

“overcome” institutional weaknesses and how internationalization helps or hinders development

Specifically, Claessens, Stijn and Neeltje Van Horen. (2007) examine whether banks seek out those markets where institutional familiarity provides them with a competitive advantage over other foreign competitor banks. Using bilateral data on banking sector FDI in all developing countries and controlling for other factors, the authors find that competitive advantage is important in driving foreign banks’ location decisions. The findings suggest that high institutional quality is not necessarily a prerequisite to be able to attract foreign direct investment in banking and that there are specific benefits, as well as risks, to international financial integration between developing countries

As in many other countries, foreign participation in low-income countries’ banking systems has increased in the last decade, although from a low level. Claessens, Stijn and Jong-Kun Lee. (2002).show that the increased foreign bank participation combined with a commitment to open markets has improved the efficiency and competitiveness of these countries’ financial systems. Foreign banks have also introduced improved risk management practices and “imported” supervision from parent country regulators, thereby helped strengthen banking systems. At the same time, increased competition may lower franchise value of incumbent banks and can lead to financial instability. While adequate regulation and supervision would be the natural policy response, many low-income countries have had great difficulty

Claessens, Stijn, Asli Demirgüç-Kunt, and Harry Huizinga. (2001) investigate how net interest margins, overhead taxes paid and profitability differ between foreign and domestic banks. They find that foreign banks have higher profits than domestic banks in developing countries, but the opposite if the case for developed countries. Estimate results suggest that



an increased presence of foreign banks is associated with a reduction in profitability and margins for domestic banks.

Boubakri, Narjess., Jean-Claude Cosset, and Klaus Fischer. (2005). examine the postprivatization performance of banks from developing countries. The results suggest that: (i) On average, banks chosen for privatization have lower economic efficiency, and lower solvency than banks kept under government ownership. (ii) In the post privatization period, profitability increases but, depending on the type of owner, efficiency, risk exposure and capitalization may worsen or improve. However, (iii) Over time, privatization yields significant improvements in economic efficiency and credit risk exposure. (iv) They also find that newly privatized banks that are controlled by local industrial groups become more exposed to credit risk and interest rate risk after privatization.

## **CHAPTER THREE**

### **3. MODEL SELECTION AND METHOD OF ESTIMATION**

#### **3.1 MODEL SELECTION AND VARIABLE DESCRIPTION**

We will exploit the cross section and time series dimension of our data by using panel data estimation techniques. We have also employed Random effect estimator and the original specification of the linear model for panel data in the random effects model is based on the assumption that the unobserved bank specific effects,  $\mu_i$ , are uncorrelated with the included variables,  $X_{it}$ . This assumption is a major shortcoming of the model. However, the random effects treatment does allow the model to contain observed time invariant Characteristics, such as demographic characteristics. Hausman and Taylor's (1981) estimator for the random effects model suggests a way to overcome the first of these while accommodating the second.

The model is similar to the one used in Berger, Clarke, Cull, Klapper, and Udell (2005). The rank, return on equity (ROE), interest rate, cost-efficiency rank, cost-asset ratio, loans-total assets ratio, and non-performing-loans (NPL). The right-hand-side variable is a dummy variable ( $D_{it}$ ) that takes the value one for public banks and zero for private banks. Other control variables ( $Z_{it}$ ) such as the scale of banks are also included in their regression.

Following Berger, Clarke, Cull, Klapper, and Udell (2005), for our purpose to examine the differences between public and private banks we focus only one variable, that is a performance variable that includes: (1) the cost divided by total assets; (2) return on asset (ROA), defined as interest and non-interest expenses divided by total assets; (3) and the

interest-rate spread, defined as lending rates minus deposit rates and for other factors such as market share and last year's asset, which is defined as the share of assets while the last year's assets are included taking natural logs, Market share and the scale of last year's assets as control variables. The model is that:

$$\ln PFM_{it} = \beta_0 + \beta_1 \ln COA_{it} + \beta_2 \ln ROA_{it} + \beta_3 \ln INTSPREAD_{it} + \mu_{it} + \varepsilon_{it}$$

where  $\mu_i$  is a bank-specific random factor and  $\varepsilon_{it}$  is an error term.

Unobserved bank heterogeneity is controlled for by the bank-specific random factor. And all data come from the annual reports of the individual banks.

### **3.2 ESTIMATION TECHNIQUE**

The random effects model was developed by Balestra and Nerlove (1966). Their formulation included a time-specific component as well as the individual effect. A full set of results for this extended model, including a method for handling the lagged dependent variable, has been developed this is Housman's specification test for the random effect. The specification test devised by Hausman (1978) is used to test for orthogonality of the random effects and the regressors. The random effects treatment, therefore, may suffer from the inconsistency due to this correlation between the included variables and the random effect.

#### **3.2.1 HAUSMAN TEST**

The Hausman test for the random effects regressions is based on the null hypothesis the extra Orthogonality conditions imposed by the RE estimation are valid. Or If the regressors are correlated with the  $\mu_i$  the fixed estimator is consistent but the RE estimation is not consistent. If the regressors are uncorrelated with the  $\mu_i$  the Fixed effect still consistent whereas the RE estimator is consistent and efficient.

Similarly, the test is based on the idea that under the hypothesis of no correlation, both OLS in the LSDV model and GLS are consistent, but OLS is inefficient, whereas under the alternative, OLS is consistent, but GLS is not.

Therefore, we may consider these two alternatives in the Hausman test framework both models and comparing their common coefficients in a probability sense. If both FE and RE models generate consistent point estimates of the slope parameter. They will not meaningfully differ if the orthogonality assumption is violated. If the inconsistent RE estimates will significantly differ from their FE counterparts.

In addition to Hausman's test, Breusch and Pagan (1980) have devised a Lagrange multiplier test for the random effects model based on the OLS residuals. And Wallace and Hussain (1969), Maddala (1971), Fuller and Battese (1974), and Amemiya have focused thus far strictly on generalized least squares and moments based consistent estimation of the variance components. At this point, we can say that the classical regression model with a single constant term is inappropriate for these data. The result of the test is to reject the null hypothesis in favor of the random effects model.

### **3.2.2 GENERALIZED LEAST SQUARES (GLS)**

To compute GLS by transforming the data using Ordinary Least Square (OLS) with the transformed data, that is the partial deviations of  $Y_{it}$  on the same transformation of  $X_{it}$ . The GLS estimator is like the OLS estimator a matrix weighted average of the within and between units estimators. OLS places too much weight on the between unit variation. It includes all in the variation in  $X$ , rather than exclude some of it to random variation across groups attributable to the variation in  $\mu_i$  across units.

FGLS can be also used to estimate the parameters of the model. This model satisfies the requirements for the use of the iterated FGLS

procedure to obtain the MLEs if desired. The initial consistent estimators can be based on least squares residuals.

To compute the FGLS estimator, we require estimates of the variance components. The unbiased estimator of  $u_i$  is the residual variance estimator in the within-units (LSDV) regression.

Even if, different random effect estimators have been proposed we focus only GLS and Hausman test .

## CHAPTER FOUR

### 4. DATA ANALYSIS AND DISCUSION OF ESTIMATION RESULTS

#### 4.1. DESCRIPTIVE ANALYSIS

This subsection examines the differences between public and private banks, using data from the annual report of each bank.

**Table: Total banking assets and ROA 2004 – 2011 (Value in ETB million)**

| Year | Total banking assets |               | % of total banking assets |               | (ROA)        |               |
|------|----------------------|---------------|---------------------------|---------------|--------------|---------------|
|      | Public banks         | Private banks | Public banks              | Private banks | Public banks | Private banks |
| 2004 | 46359.9              | 11439.2       | 85                        | 15            | 2.09         | 3.1           |
| 2005 | 54894.1              | 15849.9       | 76                        | 24            | 1.51         | 3.0           |
| 2006 | 56426.5              | 18819.3       | 75                        | 25            | 2.07         | 3.6           |
| 2007 | 60750.0              | 27119.2       | 69                        | 31            | 2.61         | 3.7           |
| 2008 | 71052.8              | 35580.5       | 67                        | 33            | 2.58         | 3.3           |
| 2009 | 99503.9              | 45580.0       | 69                        | 31            | 2.94         | 3.0           |
| 2010 | 100511.9             | 57414.0       | 64                        | 36            | 3.17         | 3.7           |
| 2011 | 152448.9             | 73456.3       | 67                        | 33            | 1.91         | 4.0           |

Source: Computed from NBE data

Note <sup>1</sup> :

Table 1 presents the differences of total assets and return on assets (ROA) between public and private banks. The major findings are two-fold. First,

<sup>1</sup> public banks including commercial Bank of Ethiopia; Construction and Business Bank and Development Bank of Ethiopia and Private banks including :Awash International Bank; Dashen Bank; Bank of Abyssinia; Wegagen Bank; United Bank; Nib International Bank; Cooperative Bank of Oromia; Lion International Bank; Oromia Internatinal Bank; Zemen Bank; Buna Internatinal Bank; Berhan Internatinal Bank; Abay Bank; Addis International Bank

the share of assets of private banks grew from 15 percent in 2004 to 33 percent in 2011.

Second, private banks show generally better performance than public banks. During the period 2004 -2011, private banks have higher ROA than public banks. Even if the ROA of the private banks has not continuous increase there is an improvement for the last eight years.

Table 2 shows the differences in interest-rate spreads between public and private banks. There are two findings in this table. First, interest-rate spreads constantly from 2004 to 2008 and decrease from the year 2009 to 2011 for public banks and interest rate spreads increased from 2004 to 2010 and decrease in 2011 for private banks . Second, private banks have higher interest-rate spreads than public banks. Note that the deposit rate and lending rate also higher than public banks. It is also interesting to note that lending and deposit rates relatively increase.

**Table 2: average deposit rate and average lending rate of the Banking System 2004 – 2011 (in %)**

| Year | Average deposit rate |               | Average lending rate |               | Interest rate spread |               |
|------|----------------------|---------------|----------------------|---------------|----------------------|---------------|
|      | Public banks         | Private banks | Public banks         | Private banks | Public banks         | Private banks |
| 2004 | 3.00                 | 4.22          | 8.00                 | 10.50         | 5.00                 | 6.33          |
| 2005 | 3.00                 | 3.98          | 8.00                 | 10.50         | 5.00                 | 6.52          |
| 2006 | 3.00                 | 4.12          | 8.00                 | 10.50         | 5.00                 | 6.38          |
| 2007 | 3.00                 | 4.43          | 8.00                 | 10.50         | 5.00                 | 6.07          |
| 2008 | 4.00                 | 4.29          | 9.00                 | 11.50         | 5.00                 | 7.21          |
| 2009 | 4.00                 | 6.04          | 8.75                 | 12.25         | 4.75                 | 6.21          |
| 2010 | 4.00                 | 5.76          | 8.75                 | 12.25         | 4.75                 | 6.49          |
| 2011 | 5.06                 | 5.92          | 8.50                 | 11.88         | 3.44                 | 5.96          |

## 4.2 REGRATION ANALYSIS

### 4.2.1. HAUSMAN TEST RESULTS

The general idea of a Hausman test is that two estimators are compared. One that is consistent under both the null and alternative hypothesis and one that is consistent and typically efficient under the null hypothesis only. A significance difference between the two estimators indicates that the null hypothesis is unlikely to hold. So that the fixed effect estimator  $B_{FE}$  is consistent whether  $X_{it}$  and  $\alpha_i$  are uncorrelated, while the random effects estimator  $B_{RE}$  is consistent and efficient only if  $X_{it}$  and  $\alpha_i$  are not correlated. And to evaluate the significance of the difference between  $B_{FE}$  and  $B_{RE}$  we need its covariance matrix.

The Hausman test thus tests whether the fixed effect and random effects estimators are significantly different. An important reason why the two estimators would be different is the existence of correlation between  $X_{it}$  and  $\alpha_i$ , although other sorts of misspecification can also lead to rejection. The result in table 3 shows that the difference between coefficients of fixed and random effect estimators.

This test is based upon estimating the following equations.

$$\ln PFM_{it} = \beta_0 + \beta_1 \ln COA_{it} + \beta_2 \ln ROA_{it} + \beta_3 \ln INTSPREAD_{it} + \mu_{it} + \epsilon_{it} \dots \dots \dots (1)$$

Table 3. hausman Fixed Vs Random effect summery

|        | Coefficients |            |                     |                                 |
|--------|--------------|------------|---------------------|---------------------------------|
|        | (b)<br>fix   | (B)<br>ran | (b-B)<br>Difference | Sqrt(diag(V_b-<br>V_B))<br>S.E. |
| Ln COA | -.6690069    | -1.20096   | .5319534            | .3311151                        |
| Ln ROA | -.0151519    | .1003494   | -.1155013           | .1273189                        |

b = consistent under  $H_0$  and  $H_a$ ; obtained from xtreg

B = inconsistent under  $H_a$ , efficient under  $H_0$ ; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned}\chi^2(2) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 3.09\end{aligned}$$

$$\text{Prob}>\chi^2 = 0.2132$$

( $V_b-V_B$  is not positive definite)

(where, fix= fixed, ran= random and V denotes estimates of the true covariance matrices. under the null hypothesis ,which implicitly says that  $\text{plim}(B_{FE} - B_{RE})=0$ )

As we might expect from the different point estimates generated by the RE estimator the Hausman tests null hypothesis that the RE estimator is consistent is soundly rejected. The state level individual effects do appear to be correlated with the regressors.

#### **4.2.2 GLS RESULTS**

The GLS estimator matrix –weighted average of the between estimator and the within estimator, where weight depends upon the relative variance of the two estimators ,the more accurate one gets the higher the weight.

The between estimator effectively discards the time series information in the dataset. The GLS estimator, under the current assumptions is the optimal combination of the within estimator and the between estimator, and is therefore more efficient than either of these two estimators. The OLS estimator is also a linear combination of the two estimators, but not the efficient one. Thus GLS will be more efficient than OLS and, if the explanatory variables are independent of all  $\mu_{it}$ , and all  $\alpha_i$  the GLS estimator is unbiased and consistent.

Table 4 indicates the regression results of equation (1) for the bank performance variables. Three findings stand out from this table. First, the costs of public banks are 2.1 percentage points higher than those of private banks. Second, the interest spread is 1.9 percentage points smaller for

public banks than private banks. Third, the ROA of public banks are 2.5 percentage points lower than private banks. This finding shows that there is a gap between private and public banks in Ethiopia.

**Table 4 : Differences of Performance between Public and Private Banks**

| Public bank dummy | Coef.                                      | Std. Err. | z          | P> z      | [95% Conf. Interval]  |
|-------------------|--------------------------------------------|-----------|------------|-----------|-----------------------|
| lnCOA             | 0.02090069                                 | 0.4066279 | 1.65       | 0.100     | 1.465983<br>.1279692  |
| lnINTSPREAD       | -.0189467                                  | 0.5110692 | -0.68      | 0.495     | -1.350624<br>.6527306 |
| lnROA             | -0.0251519                                 | 0.1474259 | -.<br>0.10 | 0.918     | -.3041013<br>.2737975 |
| _cons             | 5.59462                                    | 1.149965  | 4.87       | <br>0.000 | 3.34073<br>7.848509   |
| sigma_u           | .04717821                                  |           |            |           |                       |
| sigma_e           | .02127902                                  |           |            |           |                       |
| rho               | 83095641 (fraction of variance due to u_i) |           |            |           |                       |
| R-sq: within      | 0.8597                                     |           |            |           |                       |
| : between         | 0.0878                                     |           |            |           |                       |
| :overall          | 0.1058                                     |           |            |           |                       |

## **CHAPTER FIVE**

### **5. CONCLUSION AND POLICY IMPLICATION**

This study shows the impact of financial liberalization on the performance of the banking sector using annual data for the period 2004-2011. Both the descriptive and regression analysis suggests that there is a performance gap between private and public banks. And the interesting question is that, what might happen if foreign banks were permitted to enter the Ethiopian banking system. The result might be the narrowing of the efficiency gap, measured by cost-asset ratio and ROA between public and private banks. This is because the cost efficiency and ROA of public banks may improve because of the competition with foreign banks. Similarly, the interest-rate spread might be narrower because competition would reduce the excess margins from the current market structure of Ethiopian banking sector.

But, the improvement of efficiency and the decline in the excess margin of public banks might not be creating positive effects on Ethiopia's national economic welfare. Because, foreign banks with more capital and more experience will take over the domestic financial sector, which is presently, lead by banks that are too small, young and inexperienced to compete.

According to Stiglitz (1993) there is considerable "learning by doing" in the financial services sector, which makes protection in this industry more important than in others and new domestic banks may be put at a disadvantage because depositors may feel greater confidence in the security provided by a large international bank.

Therefore, before opening up the sector for foreign competition being ready is a necessary condition for success and government officials must be negotiating in the WTO and other regional negotiations by extending transitional periods to strengthening domestic financial institutions.

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## DECLARATION

I, the undersigned declare that this project work is my original work and has not been presented in other university or college. All sources of the material used for this project have been dully acknowledged.

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