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THE CONTRIBUTIONS OF BANKING SECTOR DEVELOPMENT TO ECONOMIC GROWTH IN ETHIOPIA

A Thesis submitted in partial fulfillment of the requirements for the award of the Degree of Master of Science in Financial Economics

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DECLARATION

I would like to declare that the paper study titled **‘‘The Contributions of Banking Sector Development to Economic Growth in Ethiopia’’**: Evidence from the Time Series Approach is the original work of the investigator.

The Thesis also complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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ABSTRACT

This study examines a contribution of banking sector development on growth of economy in Ethiopia. It makes used time series data of all banks from 1991-2022. The banking sector system mobilized resources in deposit, borrowing, and loan collection, reaching Birr 626.6 billion. Private Banks increased their share in deposit mobilization to 47.7%, with CBE accounting for 53.3%. Reserve mobilization through borrowing remained insignificant. The banking sector's outstanding credit grew by 23.9% to Birr 1.6 trillion, with the number of banks opening 1600 new branches in 2022. Depending on the nature of a banking sector development indicators the researcher selects five independent variables such as Bank size (Asset), Deposit, Loan to deposit ratio, return on asset, Capital accumulations and some Control variables i.e. Export, Investment, Money supply, inflation rate and Labor are employed in the thesis. Dependent variable is a proxy of economic expansion (RGDP). A unit root test satisfies the stationarity of data in the model and Granger causality test has demonstrated there are Unidirectional causes, meaning that all independent variables influence the dependent variable in one direction. The regression results of independent variable coefficients are to have a positive reaction to a dependent variable or to a model of economic growth RGDP. In the same way, within the specified period of time, there was a negative contribution from Loan to deposit ratio, labor and inflation on economic growth. Banking sector is positively contributes to overall economic growth in Ethiopia.

Keywords: *Proxy of economic growth, Banking sector, Macroeconomic variables*

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LIST OF ACRONYMS

RGDP-…… Real Gross Domestic Product

GDP- ……..Gross Domestic Product

NBE- ……..National Bank of Ethiopia

CBE-……Commercial Bank of Ethiopia

DBE-……...Development Bank of Ethiopia

CBB-……Construction and Business Bank

CSA-……Central statistical Authority

SSAC -…… Sub-Saharan African Countries

OECD-…… Organization for Economic Co-operation and Development

ADB-……..…..Asian Development Bank

NPL-……Non performing loan

ROA-…….. Return on Asset

ARDL-……..….. Autoregressive Differenced

ECM -…… Error Correction Modeling

CSA -……. Central Statistics Agency of Ethiopia

LnRGDP-……...….Natural logarithm of Real Gross Domestic Product

LnROA-…….. Natural logarithm of Return on asset

LnLDR-……..…… Natural logarithm of Loan to deposit ratio

lnDEP-…… Natural logarithm of Total Deposit

lnCAP-…… Natural logarithm of Capital accumulation

lnASS- ……Natural logarithm of Total Asset

lnEXP-……...…. Natural logarithm of Export

lnINV-……..…… Natural logarithm of Investment

lnMS-……..…. Natural logarithm of Money Supply

lnLAB-……... Natural logarithm of Labour

lnINFR-……..…. Natural logarithm of Inflation rate

ADF-…….. Augmented Dickey-Fuller

VIF-……..... Variance Inflection Factor

S.E-……. Standard Error

S.D-……..... Standard Deviation

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The primary focus of the financial sector in Ethiopia revolves around the inclusion of formal financial intermediaries, particularly commercial banks that meet the criteria of being a financial depository institution. The financial system plays a crucial role in how financial development impacts growth, with a strong and resilient system characterized by robust financial institutions and well-functioning financial markets. This collaborative approach helps these institutions withstand and recover from negative shocks (OECD, 2010; Estrada, Park and Ramayandi, 2010). It's worth noting that this study doesn't extensively cover access to financial services, which is another important aspect of financial development. However, limited access to finance can present significant obstacles to investment and business expansion, hindering the creation of vital enterprises that drive a dynamic economy. In an inefficient banking system, savings become challenging to mobilize and accumulate outside the banking system, resulting in ineffective utilization for capital formation and growth of economy.

In the fiscal year of 2021/22, the Ethiopian economy experienced a robust growth rate of 6.3 percent, surpassing the previous year's expansion of 6.1 percent in 2020/21. This growth can be attributed to the significant increase of 22.72 percent in industrial output, an 36.56 percent rise in the service sector, and a 37.64 percent expansion in agriculture. As a result, the contribution of the industrial sector to the country's GDP rose from 21.85 percent in 2020/21 to 22.72 percent in 2021/22, while the service sector's share slightly increased from 36.54 percent to 36.56 percent and the share of agriculture in GDP rose from approximately 37.64 percent. This gradual yet consistent shift in the economy's structure reflects the government's strategy of prioritizing the development of the manufacturing sector and fostering export-oriented growth, while also giving due attention to modernizing the agriculture sector, which has historically been the backbone of the country's economy (World Economic Outlook Update, July 2022).

The global focus on stimulating and effectively managing economic growth is a matter of utmost importance in various countries. Though this topic has been discussed before, it has gained even more significance due to ongoing population growth in less developed nations, shifting demographics, increasing income inequalities, advancements in technology, and changes in the banking system. A

particular emphasis has been placed on recognizing the crucial role played by the financial sector in fostering economic growth. This includes mobilizing savings, facilitating transactions and trade of goods and services, and promoting efficient allocation of resources (ADB, 2009).

In the fiscal year 2021/22, the banking system saw a significant increase in total resources mobilized through deposits, borrowing, and loan collection, rising by 24 percent to reach Birr 626.6 billion. This growth was supported by a notable expansion of branches, leading to outstanding deposit liabilities of the banking system exceeding Birr 1.7 trillion, marking a 25.7 percent annual increase. Within the deposit composition, saving deposits rose by 24.4 percent, demand deposits by 29.2 percent, and time deposits by 20.5 percent. Saving deposits accounted for 59.6 percent of total deposits, demand deposits for 33.3 percent, and time deposits for 7 percent. Because of the opening of 1,600 additional branches, private banks' participation of total deposit mobilization climbed to 47.7 percent from 45.7 percent the previous year. Due to its wide branch network, CBE alone mobilized 52.3 percent of the total deposits. The banking system's borrowing to mobilize reserves remained minimal because most banks had sufficient liquidity as a result of rising deposit mobilization and loan collection. Due to borrowing by the Development Bank of Ethiopia (DBE), their total outstanding borrowing at the conclusion of the fiscal year increased to Birr 86.1 billion from Birr 84.2 billion the previous year. 77.2 percent of the borrowing came from local sources, and 22.8 percent came from international sources. In 2021–2022, there was a net borrowing of Birr 1.9 billion. Additionally, banks received Birr 276.5 billion in 2021/22, indicating an annual increase of 48.6 percent. Of the total loans obtained, 55.4 percent came from private banks. By the end of June 2022, the banking system's outstanding credit (which includes corporate bonds) had grown by 23.9 percent to 1.6 trillion Birr. About 22.6 percent of the outstanding loans were in the mines, power, and water resource sector, followed by industry (18.7%), international commerce (18.5%), housing and building (10.7%), domestic trade (9.5%), and transport & communication (7.1%). Other economic sectors picked up the remaining balance. With 868.2 billion birr (or 54.6%) of outstanding credit, the private sector held a 35.4% annual growth share (NBE, 2022).

The financial industry in Ethiopia has generally been secure, stable, adequately funded, and successful in terms of profitability. Banks expand their destination by open 1600 branch in 2021/22; there by increasing the total number of branches from 7,344 to 8,944. Several banks have expanded their reach by opening over 100 branches in a year. These banks include Dashen Bank with 252 branches, Awash International Bank with 140 branches, Commercial Bank of Ethiopia with 137 branches, Siinqee Bank with 134 branches, Abyssinia Bank with 128 branches, and Cooperative Bank of Oromia with 121

branches, Abay Bank with 112 branches, and Amhara Bank with 101 branches. The share of private banks in total branch network rises from 72.7 percent to 76.1 percent in the previous year. As a result, number of customers to branches ratio increased to 12 thousand. Simultaneously, the banking sector's total capital showed an annual gain of 31.7 percent, reaching Birr 199 billion (NBE, 2022).

The ongoing discussion about the connection between financial development and economic growth has been a topic of interest since the 19th century. Schumpter (1911) observed financial markets as especially banks play a vital role in the growth of a real economy. They efficiently channel funds from savers to borrowers, facilitating investment in physical capital and driving innovation through a process he called 'creative destruction'. According to Schumpeter, entrepreneurs rely on credit to adopt new production techniques, and banks are crucial in enabling these financial intermediation activities, ultimately promoting economic development. Likewise, Gold smith (1969) argued that the development of a financial system are of utmost importance in promoting economic expansion, highlighting how underdeveloped financial systems can hinder overall economic progress. In contrast, Robinson (1952) contested the idea that finance directly influences economic growth. Instead, Robinson argued that financial development is a consequence of economic growth, driven by the increased demand for financial services. Despite various studies exploring the causal relation among financial development and economic growth, the results remain inconclusive.

Previous studies have emphasized the crucial role of commercial banks in Ethiopia's development. Without their substantial involvement, it would have been impossible to achieve any developmental strategies, as these strategies require financial resources for implementation. Therefore, the contributions of commercial banks are essential for ensuring Ethiopia's progress. Previous research has shown that commercial banks play a significant role in financing industries, trade, agriculture, Micro and small scale manufacturing sectors, facilitating trade, enabling significant revenue collections, and assisting to the implementation of monetary policies and reduce culture of extravagant (NBE).

The banking sector, insurance businesses, microfinance organizations, savings and credit cooperatives, and the unorganized financial sector currently make up Ethiopia's financial sector. But banks control the majority of the financial system in Ethiopia. During this time many banks are established time to time. Banking sectors are more developed rather than other financial institutions as currently conditions of NBE report.

Therefore, the purpose of this study is to investigates the Ethiopia's bank sector, as measured by its development indicators i.e. deposit, Loan to deposit ratio, asset, capital accumulation and return on asset (profitability) needs empirical investigation in the context of just to know when those indicators are affect the growth of Ethiopia. In addition to these indicators, the study will employ some control variables such as export, investment and money supply to investigate their impacts on economic growth in Ethiopia.

1.2 Statement of Problem

An advanced and effective financial system, specifically the banking sector, plays a crucial role in various aspects such as channeling savings and foreign resources, facilitating trade, generating employment opportunities, and directing them towards profitable investments. Unfortunately, the absence of sufficient opportunities for domestic savings offered by private banks, coupled with limited access to bank credit for small businesses, severely hampers economic growth. While public sector banks primarily invest in major development projects like infrastructure, it is the private sector banks, as their deposit base expands, that contribute to more widespread development necessary for sustainable economic growth (Tom, 2014).

In the late 1980s, a new economic theory called Endogenous Growth Theory emerged, which opened up avenues for studying the relationship between economic growth and the development of the financial sector. According to the basic endogenous growth model, the growth of the financial sector can impact the economy in three main ways. Firstly, it can enhance the productivity of investments. Secondly, by reducing transaction costs, an efficient financial sector can increase the proportion of savings directed towards productive investments. And thirdly, the development of the financial sector can either stimulate or hinder savings. When the financial sector operates efficiently, it is more likely to allocate a country's limited resources to their most productive uses, thereby helping to maximize economic growth.

Melkamu (2015), conducted a study to examine the impact of banks on the economic growth of Ethiopia. The researcher utilized OLS analysis to evaluate how the development of commercial banks affects the country's economic growth. The study employed data from eight commercial banks over a span of 14 years. To determine the causal relation among variables, the researcher conducted a granger causality test. So, results indicated that deposits have a causal effect on economic growth, while economic growth has a causal effect on loans and advances. However, no causal relationship was found between economic growth and bank assets. In addition to the granger causality test, the study utilized various estimation techniques, including descriptive statistics and multivariate regression methods. The

findings of the study revealed a positive and significant relation between economic growth, deposits, and loans and advance. Conversely, a negative and significant relation was observed among economic growth and Bank size, specifically the bank's assets.

Hailay (2013) empirically estimate the relation among bank sector development and economic growth through interest rate spread in Ethiopia from 1975 to 2011. Researchers employed Johnson's approach to co-integration and EC models to study the long and short-term effects of financial expansion to economic growth. Inefficiency in the development of the banking sector increases transaction costs and slows economic growth as only a small portion of savings flows into investment. The development of Ethiopia's banking sector remains not efficient as higher interest margins hamper economic growth.

However, some above stated studies have been trying to examine and explain the impact of banking sector development on economic growth with different techniques and variables. So, the problem presence has undoubtedly recognized for a long period of time. This study undertakes the empirical evidence and makes a significant, distinctive enhancement of the collection of expertise already available regarding the investigation on RGDP as dependent variable and deposit, loan to deposit ratio, assets, capital accumulation, and bank profitability with some control variables that are export, investment, labor, money supply and inflation as explanatory variables. The contributions of banking sector development will be good opportunity to boost economic growth through accumulating of mass amount of capital, regulating money supply, encouraging investment and export in addition to expand banks deposit, loan to deposit ratio, asset and bank profitability. So, there is a time gap, determinant variables and analysis techniques gap with other studies to examine the contributions of banking sector to economic growth in Ethiopia.

In generally, the findings suggest the development of a banking sector can play a crucial role in enhancing economic growth by facilitating the accumulation of capital, regulating money supply, promoting investments and exports, controlling inflation, encouraging labor force and expanding various aspects of banking operations like deposits loan to deposit ratio, assets, and bank profitability. It may be address the contributions of banking sector development indicators and impacts of control variables on economic growth through time series data.

1.3 Research Questions

This study will be addressing the following questions: -

a. What is the contribution of banking sector development indicators i.e. asset, deposit, loan to deposit ratio, return on asset, and capital accumulation on economic growth in Ethiopia?

b. What is the impact of export, investment, labor, inflation and money supply on economic growth in addition to banking sector development indicators?

1.4 Objectives of the Study

1.4.1. General Objective

The general objective of this study is to examine the contribution of banking sector to economic growth in Ethiopia.

1.4.2. Specific objectives

The specific objectives of this study are stated as follows:

- To investigate the impact of deposit mobilization to economic growth in Ethiopia.
- To determine the contribution of loan to deposit ratio over time to economic growth in Ethiopia.
- To determine the effect of bank expansion in total assets or bank size in short run and long run on economic growth.
- To determine the contribution of Banks profitability to economic growth in Ethiopia.
- To investigate the impact of capital accumulation to the growth of Ethiopian economy.
- To examine the impact of some control variables such as export, investment, labor, inflation and money supply on economic growth in Ethiopia.
- To put recommendation on the impacts and contributions of banking sector development on growth of Ethiopia’s economy.

1.5 Significance of the study

A bank sector is important to mobilize saving, generate profit and allot as loan and Advance for different investment sector with higher return and capital accumulation. Therefore, the researcher contributes a thorough method to comprehend how the growth of the banking industry affects the Ethiopian economy by taking some control variables in addition to banking sector development indicators. So, the findings of this study could serve as a foundation for developing appropriate policies that guarantee the banking sector's contribution to the rise of a national economy.

1.6 Scope of the Study

The scope of the study is limited to examining on how banks' development indicators contributed to Ethiopia's economic growth from 1991 to 2022. This research is take place in Ethiopia, addressing all banks regulated by central bank of Ethiopia (NBE). By using some indicators such as total asset, total deposit, capital accumulation, loan to deposit ratio, return on asset and some control variables such as export, investment, labor, inflation and money supply as explanatory variables and Real GDP as dependent variable with data from 1991 to 2022G.C and state recommendation at the end.

1.7 Limitations of Study

This study covered data of thirty-two (32), years in regression analysis because of availability of data. The researchers used main variable such as asset, deposit, loan to deposit ratio, capital accumulation and bank profitability and macroeconomic variables i.e. export, investment, inflation, labor and money supply. In generally availability of real data from NBE and other institution is limited.

1.8. Organization of Study

There will be five chapters in this paper. These comprise the first chapter, which provides an introduction of the research topic and includes a problem statement with some study findings. The necessary theoretical and empirical literature is covered in chapter two. Third chapter discussed the research methods. The results and a discussion of the findings are covered in Chapter four. Chapter five concludes with conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

This section discussed literatures concerning the bank sector development and economic growth. The review of literatures established the guidance for the study and describes some findings in the past, which in turn, helps in precisely addressing the gaps between many literatures. Discussion of literatures on bank sector and economic growth stated as follows.

2.1 THEORETICAL LITERATURES

2.1.1 Economic Growth

When an economy's ability to generate goods and services increases over time, it is said to be experiencing economic growth. Presently, economists continue to engage in serious discussions regarding the concept of growth. The shift from exogenous to endogenous growth models represents a significant step forward in providing a more comprehensive justification of reality. But, exogenous growth models primarily focused on capital accumulation, with innovation and technological progress being decided externally to the model, endogenous growth models incorporate these factors in the model itself. As an illustration, Romer's model (1987) introduces the concept of technology being influenced by knowledge spillover effects. This idea builds upon Arrow's earlier work (1962), which argued that investments not only increase physical capital stock but also enhance the technological advancement of firms through the transfer of knowledge. Additionally, Romer (1990) found a novel growth model that combines the simulation of information ripple effect with monopoly power model.

2.1.2. Economic Growth Model

A. Neo-Classical Growth Model

In the past, the predominant model for understanding economic growth was the Solow model. This model emerged another option to the Harrod-Domar model; it suggests that different steady state growth rates are unrelated to the savings rate, even though savings do impact the levels of variables. According to the Harrod-Domar model, any growth rate increase resulting from increased savings is only temporary, and continuous economic growth can only be achieved through technological progress.

The Solow model, on the other hand, proposed that economic growth is driven by exogenous technological improvements and the accumulation of capital. As a result, many people began to think if

a financial market has limited impact on investment in tangible capital, and that shifts in investment results only minor effects to economic growth.

B. Endogenous Growth Model

The other theory that challenged the assumptions of the Solow model is known as endogenous growth model. Though, the initial arguments were on convergence that is the inability of the Solow model to explain the diversity of the observed growth rates across countries. It has been suggested that financial development can impact growth in three ways in an endogenous model of growth: by improving the efficiency of financial intermediation, by enhancing the social marginal yield of capital, and by affecting the rate of private savings. Furthermore, innovative activity is enhanced and broadened by productive financial services. Therefore, those activates are confirmed by some studies launched as stated below.

Levine (1997) highlighted the importance of financial intermediation in providing information in a model of endogenous growth. He argues that the function of financial intermediation is closely tied to the growth of capital productivity. In a related study, Benciveng and Smith (1991) emphasized that powerful financial intermediation, by reducing liquidity risk, encourages savers to invest their output in productive assets. This, in turn, contributes to efficient investment and overall economic growth. St.Paul (1992) also emphasized the significance of a productive stock market in stimulating economic growth, particularly in terms of sharing risks among entrepreneurs. The endogenous growth model offers insights into the crucial role played by financial development in driving economic growth.

2.1.3 Theories of financial intermediations

Resources can be transferred from owners to borrowers through a process known as indirect finance, which includes a financial intermediary acting as a middleman between the two parties. The financial intermediary obtains funds from lenders or savers and then lends these funds to borrowers. For instance, a bank may obtain funds by accepting savings deposits from the public. This concept of financial intermediation was initially developed by McKinnon and Shaw in 1973, who believed a financial market play a crucial role to economic development. They argued a variation in economic growth among countries can be attributed the quality and quantity of financial services supplied by institutions. In contrast, Robinson (1952) held the view that financial markets primarily support domestic industries and react idly to external factors that made across country differences in growth. He confirmed a positive correlation among financial sector development and a level of RGDP.

Furthermore, growth generates incentives for additional financial development, which has a feedback impact on the financial markets. The complimentary hypothesis that differ from the neoclassical growth theory and contends a complementarity between money and tangible capital that is represented in money demand, is the foundation of McKinnon's (1973) statements. According to Shaw's (1973) debt intermediation hypothesis, raised financial intermediation between investors and savers as a result of development and financial liberalization (higher real interest rates) increases the incentive to save and invest, encourages investment due to an increase in credit availability, and improves average investment efficiency. According to this perspective, successful financial intermediation requires both free access into and competition within the financial markets (Shaw, 1973).

2.1.4. Functions of Financial Sector

Primary purposes of financial system are to enable the direct or indirect facilitation of lending and borrowing by offering the means through which monies can be moved from units with excess funds to units with insufficient cash. Therefore, the purposes of financial sectors are stated as follows.

A. Mobilization and saving allocation

The mobilization of resources is certainly one of the most visible and crucial activity of the financial industry. By allowing households to save their money in a safe location and use it for productive purposes, such as lending it to people or businesses to finance investments, savings facilities and transaction bank accounts foster capital accumulation and the growth of the business community.

Lack of secure savings facilities leads to people saving in physical assets or at home, which can be productively utilized in the financial sector, contributing to growth and increased savings. Better technology development and acceptance may also be aided by it. According to McKinnon (1973), financial intermediation promotes investment in new technologies throughout the economy by mobilizing savings and expanding loan availability, hence enhancing overall productivity and income for farmers who cannot afford specific investments.

B. Financial risk managing

Many businesses or projects need a medium to long term financial commitment, but most savers like their savings to be "liquid," meaning they can easily be accessed or transferred to another investment opportunity when necessary. Financial intermediaries can provide medium to long term capital for investments and liquidity for savers at the same time because banks and other financial intermediaries pool the savings of numerous households and because savers typically don't want to take their money all at once (Levine, 1991).

It is riskier to invest in a single project than in a variety of unconnected ventures with varying predicted returns. Since most savers don't like taking on risk, financial institutions that help spread that risk, like bank and stock exchange, enable investment to be made in risky ventures that have greater overall expected returns (St.Paul, 1992, and Obstfield, 1994). Risk diversification increases investment returns, optimizes capital allocation, and influences growth. It also accelerates technological development, as innovation is risky and often fails. Nonetheless, investing in a variety of innovative businesses might allow for the diversification of risk, which would otherwise be unfeasible for such ventures. Therefore, financial intermediaries that support diversity and make more capital available to innovators may spur technology advancement and, consequently, economic growth (King and Levin, 1993).

C. Gathering pure Information

Before deciding where to invest, individual savers are unlikely had the time or ability to gather, interpret, and evaluate information on numerous various organizations, managers, and market circumstances. High information costs therefore have the potential to stop money from going to its highest value use. Furthermore, they won't be as eager to invest in endeavors with which they know little. Hence, the establishment of financial intermediaries like banks and fund managers, who will gather this data on behalf of numerous investors and split the associated costs among them, will enhance resource distribution and spur investment (although in developing nations, financial institutions might possess restricted data on investment prospects due to the informal nature of the economy). The intermediators can help choose among projects based on well-informed assessments of predicted returns, eliminating the least promising ones and guaranteeing that capital is spent as efficiently as possible (Grenwood and Jovanovic, 1990).

D. To Monitor borrowers and exerting corporate control

The capability of financial intermediaries are to exercise corporate control (e.g., lenders meeting with borrowers to discuss business strategy) and monitor the outcome of businesses for numerous investors. Therefore, through better capital allocation, financial structures that enhance company control typically encourage quicker capital accumulation and growth (Bencvenga and B. Smith 1991).

E. Facilitation of Exchange

The financial industry lowers communication costs in the manner mentioned above and physically facilitates payments by offering the means to send and receive money. Thus, the financial sector lowers transaction costs and makes it easier for people and businesses to trade goods and services by offering financial intermediation in this way. By doing this, the financial industry promotes higher specialization,

which promotes increases in productivity as well as increased growth and innovation in technology. Therefore, growth will be aided by anything that lowers transaction costs and enhances the exchange of goods and services, such as quicker payment systems, more bank branches, or better remittance services.

2.1.5 Bank Sector and Economic growth

According to Samson & Abass (2013), an expansion of contemporary economies and the advancement of banking appear to be inextricably linked. Neither the current developed economy nor any contemporary banking institution existed globally until the late seventh century. An economy's degree and rate of development are influenced by a variety of factors. It includes natural resource endowment, the availability of trained labor and capital.

One of the key elements needed for the process of economic development is capital. This comprises both financial and actual capital, such as machinery and equipment. The amount of financial capital needed before any significant economic growth was possible further emphasizes the significance of banks. Typically, a person's funds are insufficient to cover all of his development-related expenses. It's possible that the saver lacks the aptitude and drive required for investing. As a result, the banks pool everyone's little savings and keep them separate from consumption so they are ready for investment. A large scale physical project investment is therefore made feasible by qualified investors' access to the huge stock of funds kept in temporary residency with the banks.

The banks use their ability to increase or decrease credit to accomplish a sufficient fund. In a modern economy, the greater proportion of the money supply is deposit money created in a bank. As a result, banks together provide the majority of the medium of exchange (Somson and Abas, 2014).

2.1.6 Indicators of Bank sector development

The bank sector development indicators have been used to evaluate the economic growth progress and determine the connection between banks and economic expansion. The list of some indicators is stated as follows: -

i. Total assets

The ultimate goal of the financial industry, according to most people, should be to help the actual economy. The size of a nation's financial sector is critical to actual economic activity since it can lead to economic development in addition to influencing output through more effective allocation of productive capital (Levine, 2005). The total assets of a bank are linked to the number of the enterprises and individuals who want credit. However, according to Arcand et al. in 2012, there may be unfavorable consequences if the financial sector grows too big and that increased finance is not always a good thing.

Therefore, some economic growth theory states their theoretical implication on financial sector development, so in this study the endogenous growth model takes place to estimate the impacts of banking sector development indicators on Ethiopian economic growth. According to an endogenous growth theory, financial development can drive growth by boosting efficiency, social marginal productivity, and private savings. A financial system that works properly improves human and tangible capital efficiency, which boosts creativity and development.

ii. Deposit

Any nation's saving rate is a crucial sign of its level of economic growth since it has a direct correlation with investment rates and the ability of the banking system to lend money. Banks create credit in the economy by using the money deposited by the public and other private depositors, which raises RGDP. According to Depti and Mamta (2014), two important macro factors with micro foundations that are crucial to economic growth are saving and investing.

The endogenous growth theory contributes confidence to this line of reasoning by arguing that increased savings rates promote increasing economic growth. Furthermore, one of the main duties of financial organizations is the mobilization of savings. Millions of depositors' savings can be mobilized and directed toward deficit spending units in an economy, which increases the amount of capital available to economic growth and development (Somson and Abas, 2013). According to Crockett in 1970, commercial banks' abilities as the economy's growth engine are best understood in the context of their primary duties, which include accepting deposit from the several public and offering account keeping and money transfer services. The capacity of banks or any other financial intermediaries to draw in capital or competing with other institutions determines how big their business may grow in an effectively run financial system. This capability will be based on how appealing the services it provides as a package are to depositors. This package will include the interest rate paid, the level of security provided, account administration capabilities that are convenient, and financial guidance (Crockett, 1970).

iii. Loan to deposit ratio

The term LDR refers to the relationship between the total loans and total deposits of a bank, expressed as a percentage. It provides valuable insights into the proportion of assets a bank can generate from its liabilities. Additionally, the LDR serves as an indicator of the potential income or profit a bank can generate. It is generally expected that a bank with larger deposits (liabilities) will be able to create a

greater amount of assets (loans). However, this outcome is subject to various financial factors and the overall state of the economy (Rengasamy, 2014).

Commercial banks are the most significant organizations for saving, mobilizing, and allocating financial resources, as Facilia (2011) pointed out. As a result, they play a significant role in the expansion and development of the economy. The industrial revolution increased the pace of commercial and production activity, which led to the necessity for significant financial outlays for projects. This is when lending practices originated worldwide. During this time, a lot of business leaders turned to banks for support since they were unable to keep up with the abrupt increase in demands for money. Therefore, one of the services provided by commercial banks to its clients is lending, which can be done on a short-, medium-, or long-term basis. Stated differently, banks provide loans and advances to individuals, business organizations, and governments to facilitate their investment and development endeavors. This helps to support individual growth or the overall economic development of a nation (Facilia, 2011). Ibiru (2008) emphasized a contribution of banks to the economy using a similar line of reasoning. According to her, the economy reaps the advantages of banks' engagement by supplying capital at various stages of economic activities.

According to Bhosale (2014), if the economy is to flourish, capital is one crucial component that must increase, and enterprise is another crucial component that must grow and support economic growth. This necessitates the growth of the risk-taking, challenge-taking entrepreneurial class. It frequently happens that there are persons who possess the traits of a potential entrepreneur, but lack the funds or capital to carry out their ideas. Therefore, banks have a crucial role to play. They are able to carefully consider and pick the plans of driven business owners and provide funding for them. Thus, banks can aid in the quick development of the economy by encouraging industry.

The two main tasks carried out by commercial banks are to make sure that the money supply is sufficient to meet the demands of the economy and to make it easier for money to move between different economic entities. Usually, this shift occurs from surplus to need or deficit sectors (Samson and Abass 2013).

iv. Return on asset (Profitability)

Some empirical finding shown that both internal and external factor has an impact on the profitability of financial sector, particularly banks. According to Andrias and Gabriel (2009), referenced by Habtamu (2012), the return on assets serves as a common indicator of bank profitability. There are variables

unique to each bank among the internal determinants. The environmental factors that are anticipated to have an impact on banks' profitability are reflected in the external variables. The analysis of the factors that determine bank profitability primarily looks at internal.

v. Capital accumulation

Capital is a measurement of a bank's financing strength, indicating its ability to withstand losses and meet regulatory requirements. It also reflects the bank's capacity to take on additional business. Studies by Indranarin (2009), Imad et al. (2011) and Bergre (1995) suggested a bank with higher capital ratios tend to generate more profit by leveraging the safety advantage. The size of capital provides financial flexibility for banks and determines the available financing options. Based on the research conducted by Abebaw and Depaack (2011), it has been found that the financial stability of commercial banks in Ethiopia is significantly influenced by their capital strength. Having a sufficient amount of capital is crucial for banks as it enables them to support their risk assets, as per the risk-weighted capital ratio framework. In simpler terms, a strong capital base positively impacts the profit of banks in Ethiopia.

2.2 EMPIRICAL LITERATURES

To begin, let's explore the empirical discussions presented by some scholars. They utilized an endogenous growth model to investigate the impact of financial systems on economic growth. Their findings suggest that well-functioning financial systems enhance the likelihood of successful innovation and, consequently, accelerate economic growth. Conversely, distortions within the financial sector hinder economic growth by impeding the rate of innovation. In summary, their study highlights the significance of financial systems in driving productivity, growth, and overall economic development (King and Levine, 1993).

Now, let's shift our attention to the supply-leading hypothesis. Choe and Moosa (1999) conducted a study examining the relationship among financial system development and economic growth of Korea. Their research concludes that financial expansion precedes and contributes to economic growth, with financial dealers playing a more pivotal role than capital market. In other words, Choe and Moosa's findings suggest that a development of financial systems play a crucial role in fostering economic growth (Choe and Moosa, 1999).

In relation to the concept known as the demand-following hypothesis, a study conducted by Favara (2003) utilized a panel estimation technique to explore the relationship among financial development

and economic growth. The findings of the study indicated that this relationship is, at best, weak. In fact, for certain specifications, the relationship was unexpectedly negative, which puzzled the researcher. Consequently, the impact of financial expansion to economic growth was deemed complex and not consistently supported by optional justification. He argued that this lack of consistency may be assigned the financial development does not have a significant direct impact to economic growth. Another study by Gurya and Şafkali in 2007 focused on examining a relation among financial development and economic growth specifically in Northern of Cyprus, spanning the years 1986 up to 2004. They employed the OLS for their analysis. The results of their study revealed a negligible positive effect of financial development on economic growth in that particular region.

In a specific study conducted by Aurangzeb (2012), the focus was on exploring the contributions of the banking sector to the economic growth of Pakistan. The researcher analyzed various factors such as deposit, investment, advances, profitability, and interest earning of commercial banks between 2001 and 2010. The statistical findings of the study revealed that all these factors had a significant and positive impact on the economic growth in Pakistan. Furthermore, Aurangzeb's study employed a granger causality test to determine the causal relationships between profitability, deposit, loan and advances, and economic growth. The results indicated a bidirectional causal link between profitability, deposits, loan advances, and economic growth, as well as a unidirectional causation association between investment and interest earnings.

Within the Ethiopian setting, Roman (2012) examined the long-term relationship between financial development and economic growth in Ethiopia using a CVAR approach and the Granger causal test, assessing the financial sector's contribution to growth. Therefore, the results confirmed that there is a unidirectional causal relation among economic growth and financial development. Empirical evidence also shows that there is a positive and significant relation among financial development and economic growth in the long run, with a small effect in the short run.

Melkamu (2015), conducted a study to examine the impact of banks on the economic growth of Ethiopia. The researcher utilized OLS analysis to evaluate how the development of commercial banks affects the country's economic growth. The study employed data from eight commercial banks over a span of 14 years. To determine the causal relation among variables, the researcher conducted a granger causality test. So, results indicated that deposits have a causal effect on economic growth, while economic growth has a causal effect on loans and advances. However, no causal relationship was found between economic growth and bank assets. The study found a positive relationship among economic

growth and deposits, loans, and advances, while a negative relationship was observed between economic growth and bank size.

Hailay (2013) empirically estimate the relation among bank sector development and economic growth through interest rate spread in Ethiopia from 1975 to 2011. Researchers employed Johnson's approach to cointegration and EC models to study the long and short-term effects of financial expansion to economic growth. Inefficiency in the development of the banking sector increases transaction costs and slows economic growth as only a small portion of savings flows into investment. The development of Ethiopia's bank sector is not efficient as higher interest margins hamper economic growth.

2.3 BACKGROUND AND CHARACTERISTICS OF BANKING SECTOR IN ETHIOPIA

The history of modern currency uses in Ethiopia is dates back over 2,000 years. It reached its heyday during the so called Aksumite period, which lasted 1000 before Christ to 975 AD. In 1931, an Ethiopian government acquired the leading bank, Bank of Abyssinia, and renamed as Bank of Ethiopia, a first state owned bank on the African continent.

During the five years of Italian occupation, banking activities expanded. After independence from the brief occupation of Italy (1933-1941), during which strategic considerations in World War II made Britain's role paramount, Barclays bank established in Ethiopia, around 1941 to 1943. The Ethiopian government founded the National Bank of Ethiopia during that period. The bank functioned as both a commercial bank and a central bank until its dissolution in 1963 as the current National Bank of Ethiopia (newly established Central Bank in 1976), which then became the "Ethiopian Commercial Bank" CBE for short. After this, many more banks were established.

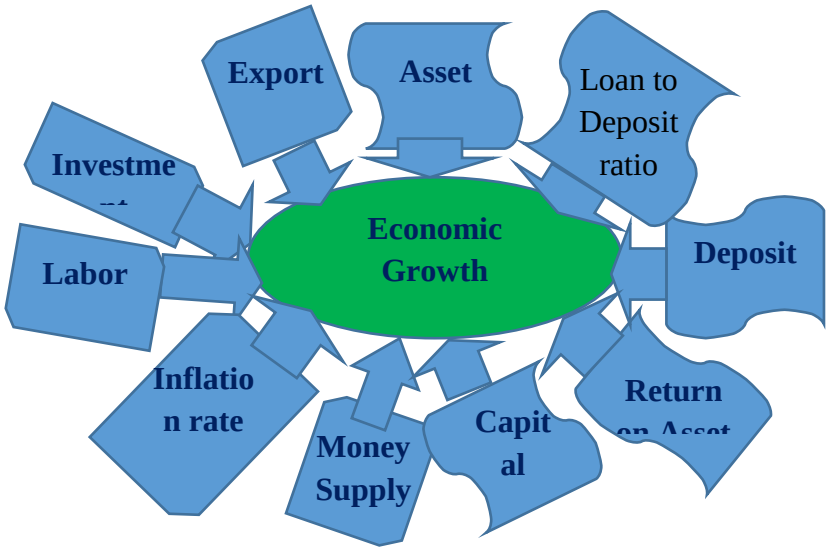
All financial institutions that were privately owned were nationalized on January 1, 1975. The reorganization of nationalized banks in Ethiopia resulted in the formation of several commercial banks, specialized banks, and an insurance company, including the CBE, DBE, CBB and the Ethiopian Insurance Company. These financial institutions underwent an organizational restructuring to focus on a market-oriented policy framework in the wake of the regime transition in 1991 and the liberalization program in 1992. The first private bank was established in 1994 is Awash bank (AB) (Alemayehu, 2006).

Deloite (June 2016), states that, in currently 16 private banks and 2 public banks in Ethiopia's banking industry. According to the IMF, the CBE dominates it, holding 70% of all assets in the nation. The other private banks are in charge of the remaining 30%. The government-run CBE bank offers a certain level of security and is a fairly well-run and efficient bank, which accounts for its success. It should be mentioned that Ethiopia's banking industry is heavily controlled and off-limits to international businesses. There are now less prospects for competition in the banking sector due to the total closure of the industry to foreign businesses. Loans of various terms are available from the DBE for feasible development initiatives, such as those in the fields of agriculture and industry. It also offers its customers other banking services, including check and savings accounts. It offers long-term financing to real estate development, schools, home buying or upkeep, and building facilities. It also provides businesses with all other commercial banking services.

2.4. CONCEPTUAL FRAMEWORK OF THE STUDY

The conceptual structure relies on a survey of empirical studies on the banking sector's contribution to economic growth throughout economies. In a sense, the relations among banking sector development indicators, i.e. accepting deposits, loan to deposit ratio, total assets, capital accumulation of banks and profit, and macroeconomic control variables, i.e. export, investment labor, inflation and money supply are explanatory variable. RGDP is depending on above main and macroeconomic variables and some studies justified such structure. Among them, Maruis Niba (2011) assessment of the role played by commercial banks in Cameroon's economic growth and Abraham Desta (2018) study on the subject, with minor adjustments made to fit Ethiopia's particular area. So, the theoretical framework used in the research is found to be consistent with similar investigations were done across numerous countries

Figure 2.1: Conceptual framework of banking sector development on economic growth



CHAPTER THREE

METHODS OF THE STUDY

3.1 Research design and methods

Quantitative research enables inferences to broaden the sample by following well-organized, standardized protocols for data selection, instrument design, execution, and analysis, which improves dependability and reduces investigator and subject biases. In case, this paper designed by quantitative research method.

On other hand, in this paper a Unit-root test and granger causality test conducted with long run linear regression model to investigate contributions of bank sector development on economic growth in the period from 1991 to 2022 in Ethiopia.

3.1.1 Population of the study

In statistics, the population refers to the particular population about which data is sought. Ngechu (2004) defines a population as a precisely defined group of individuals, services, objects, occasions, gatherings, or households that are the subject of an investigation. Therefore, all banks in Ethiopian banking industry are included in the population of this study.

3.1.2 Sources and Types of data

The study uses secondary data from 1991-2022, sourced from NBE, World Bank, and International Monetary Fund depending on time series data. Therefore, all main variables data are obtained from NBE and compared with the report by each banks at the end of their annual reports.

3.2 Model specification

To find out the relation among banking sector development and economic growth, the investigator may employ a Granger causality analysis. Real gross domestic product (RGDP) is a key dependent variable, which measures economic performance or growth. The major determinants banking sector development indicator on economic growth are banks deposit, loan to deposit ratio, banks size (assets), profitability (ROA), capital accumulations and some control variables such as export, investment, labor, inflation rate and money supply are included in the model.

The model constructed from banking sector development indicators and some macroeconomic variables with economic growth (RGDP) as follows:

RGDP = f (Asset, Loan to deposit ratio, *Deposit, Profitability, Capital, Export, Investment, Money Supply, labor, inflation rate)*

$$lnRGDP = \beta 0 + \beta 1\, lnDEP + \beta 2 lnLDR + \beta 3 lnASS + \beta 4 lnROA + \beta 5 lnCAP + \beta 6 lnEXP + \beta 7 lnINV + \beta 8 lnMS + \beta lnLAB + \beta lnINFR + \varepsilon$$

Where*:*

RGDP= Real Gross domestic product

DEP*:* Total deposit of banks

LDR: Loan to deposit ratio of banks

ASS*:* Asset owned by banks

ROA: Return on asset or Profitability of banks

CAP: Capital accumulated by banks

EXP: Export

INV: investment

MS: Money Supply

LAB: Labor

INFR: Inflation rate

ε= Error term

ln: natural logarithm

- ✓ **β_0** is Constant number that Intercept at initial point, ***β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9 and β_{10}*** are coefficients of the independent variables, that are indicating the slopes.

3.3 Description of variables

This study has single dependent variable (i.e. real GDP) and eight explanatory variables named as banks deposit, loan to deposit ratio, banks size (assets), profitability (ROA), capital accumulations and some macroeconomic or control variables such as export, investment, labor, inflation rate and money supply. The above variables are briefly described in the following sections:

3.3.1 Dependent variable

Real gross domestic product (RGDP): is a macroeconomic statistic that measures the value of the goods and services produced by an economy in a specific period.

3.3.2 Independent variables

A. **Total asset**

Total assets include a variety of fiscal resources, including incomes, money, property, inventory, service, and other intangible goods. A domestic banking assets divided by its GDP is frequently used as a broad benchmark to quantify the size of the bank sector and determine when it is too large (Levine, 2005).

B. **Deposits**

The ratio illustrates an expansion of payment and saving functions along with the extent of the financial sector's penetration and the economy's level of monetization. Therefore, deposit indicates a volume of money held at a financial sector on behalf of an account holder for safe keeping.

C. **Loan to deposit ratio**

An effective measure for evaluating banks' funding performance is the LDR. It is primarily used to ascertain a bank's liquidity status and offers information on risk tolerance, fund usage, and intermediation operations (Rengasamy, 2014). The LDR is calculated by dividing the total amount of loan facilities issued by the total amount of deposits mobilized (Kurotamunobaraomi et al., 2017).

D. **Return on asset (profitability)**

Profitability is Return on assets (ROA) is a financial figure that compares a company's profitability to its total assets, assisting business leaders, experts, and shareholders in creating profits.

E. **Capital accumulation**

Capital accumulation is the process of increasing wealth via earnings or investments. Rent, interest, capital gains, and appreciation are some ways to increase wealth. An indicator of capital accumulation is the appreciation of assets brought about by savings and investments.

3.3.3. Control variables

A. Export

Exports refer to the goods and services that are sold by one country to other countries. The flow of exports from a country can have a significant impact on its own economy as well as the global economy as a whole. In international trade, an export can be a product that is manufactured in one country and sold in another, or it can be a service provided by one country for the citizens or residents of another country. Examples of services that are included in international trade are financial and accounting services, various professional services, tourism, education, and even the rights related to intellectual property.

B. Investment

Investment involves allocating resources such as money, effort, and time into a venture with the intention of generating a profit or gaining an advantage. It can encompass various forms, including foreign capital flowing into a country as desired by the government. Stocks are commonly seen as favorable options for long-term investments. Furthermore, investments can encompass a wide range of strategies aimed at generating future income. This may involve acquiring bonds, stocks, or real estate properties, among other possibilities. Additionally, purchasing a property that can be utilized for production purposes can also be considered a form of investment.

C. Money Supply

The money supply is the sum total of all of the currency and other liquid assets in a country's economy and the total volume of money held by the public at a particular point in time. It includes all cash in circulation and all bank deposits that the account holder can easily convert to cash.

D. Labor

The labor force, or currently active population, includes individuals who work for pay or profit. People who are unemployed are those who do not currently have a job but are actively looking for one and are

ready to start working. This indicator is seasonally adjusted and expressed according to the number of individuals.

The study's basic premise is that certain value chain interventions in designated nations can have proven impacts and outcomes that can have direct or indirect effects on business behavior, which in turn affects labor market outcomes. These effects can be both positive and negative, as well as unintended. The logic behind this assumption is expounded upon by Ham (2014), who notes that the concept of employing a value chain development intervention strategy as a means of reducing poverty and/or creating or improving the quality of jobs is not new it dates back to the 1980s and is currently well-liked in the field of development cooperation (OECD, 2013).

E. Inflation

Inflation, or the steady loss of buying power, is calculated as the average price increase of a certain basket of goods and services over a given time period. Both more expenses and higher income are linked to rising inflation. Profitability is predicted to benefit from inflation if a bank's revenue increases faster than its expenses. Numerous economists have discovered that inefficiently tiny banking and equity markets are present in nations with high rates of inflation. The high rate of inflation prompts banks to restrict credit, and this impact implies that inflation lowers bank lending to the private sector. Notice that the theory we're have been discussing maintains that inflation in sufficiently large dosages sets off a series of events that ultimately leads to poor economic growth. They also demonstrate the influence of inflation on asset returns and bank profitability. When real return on assets is reduced by excessive inflation, the chain starts. They discovered that real money market rates, real Treasury bill rates, and real time deposit rates are all negatively correlated with inflation; as a result, the real rate of return on these instruments decreases as inflation rises. There was no statistically significant correlation discovered between inflation and the actual bank lending rate. On the other hand, it seems that inflation has a detrimental effect on indicators of bank profitability (John H. B. and Bruce C. (2006).

3.4 Estimation techniques, test of significance and analyze of data

The secondary data were collected from different sources depending on empirical and descriptive analyzes. A unit root test and Granger Causality tests was takes place to examine the association among bank sector development indicators and growth of Ethiopia’s economy. The descriptive and empirical analyzes were employed to estimate a relation result among bank sector and economic growth.

3.4.1 Unit Root Test

Unit root method is a stationary data generation process, and a unit root test is used to verify whether a particular time series is aligned with this method of data generation. Certain stochastic processes have a property called unit root, which can lead to issues with statistical inference in time series models to the presumptions of statistics and probability theory. The unit root test has gained widespread popularity as a means of determining stationary or non-stationary. As a result, the unit root test serves as the foundation for time series variable analysis. Tests for stationary in a time series are known as Unit root test.

3.4.2 Granger Causality Test

A Granger causality test is a quantitative prediction test used to assess whether a time series is an influential variable and is able to forecast a different variable. It is possible that event A is the cause of event B if event A occurs before event B. That being said, B cannot be the cause of A. To put it another way, things that happened in the past can still happen now. In other words, it illustrates causation among two variable Y and X as follows: Y causes X if the predicted outcome of x rises when y is taken into account (Gujarit, 2004).

The study used it to predict a casual between RGDP and explanatory factors i.e. asset, deposits, profit, loan to deposit ratio, capital accumulation and control variables i.e. export, investment, money supply, inflation and labor.

3.5 Result expectation

The researcher expects relationship among RGDP and bank development indicators i.e. asset, deposits, profit, loans to deposit ratio, capital accumulation and control variables i.e. export, investment, money supply, inflation and labor be a positive. On other hand, the magnitudes of $\boldsymbol{\beta_{1\text{-}10}}$ are expected a positive value.

3.6 The privacy of data

Keeping confidentiality and privacy are the main activities in thesis to observe reliable and appropriate data. In case of this, the researcher assured the purpose of research paper and confident of any information gathered was kept honestly and secured in the study. The researcher allowed any data or information gathered only for fulfilling of a given finding in this thesis.

CHAPTER FOUR

DATA ANALYSIS, TESTING AND DISCUSSIONS OF RESULTS

4.1 DESCRIPTIVE STATISTICS AND DISCUSSIONS OF RESULTS

Table 4.1 Descriptive Analysis

Variable	Mean	Std. Dev	Minimum	Maximum	Obs.
lnRGDP	27.20953	.7260227	26.23635	28.44131	32
lnASS	25.31294	1.729095	22.87462	28.42482	32
lnLDR	3.877	0.224726	2.956376	4.161861	32
lnDEP	25.0358	1.768028	22.19896	28.17357	32
lnROA	2.577584	1.389839	-0.758319	4.004843	31
lnCAP	22.43616	2.115432	18.46056	25.70554	32
lnEXP	23.75563	1.970406	19.44682	26.95314	32
lnLAB	17.38298	.3235704	16.84873	17.9103	32
lnMS	24.40511	1.427359	22.53724	27.10002	32
lnINV	25.62227	1.277343	23.9226	28.07592	32
lnINFR	2.221028	1.251452	-2.258609	4.011711	28

Table 4.1 displays an overview of the descriptive statistics regarding the variables in the data collection. The mean, standard deviation, minimum and maximum of RGDP and variables such as asset, deposit, loan to deposit ratio, capital, profit, and control variables export, investment, money supply, labor, and inflation are included in the summary of the descriptive statistics. It includes information on Ethiopia's banking sector development indicator and control variable for the 32-year period between 1991 and

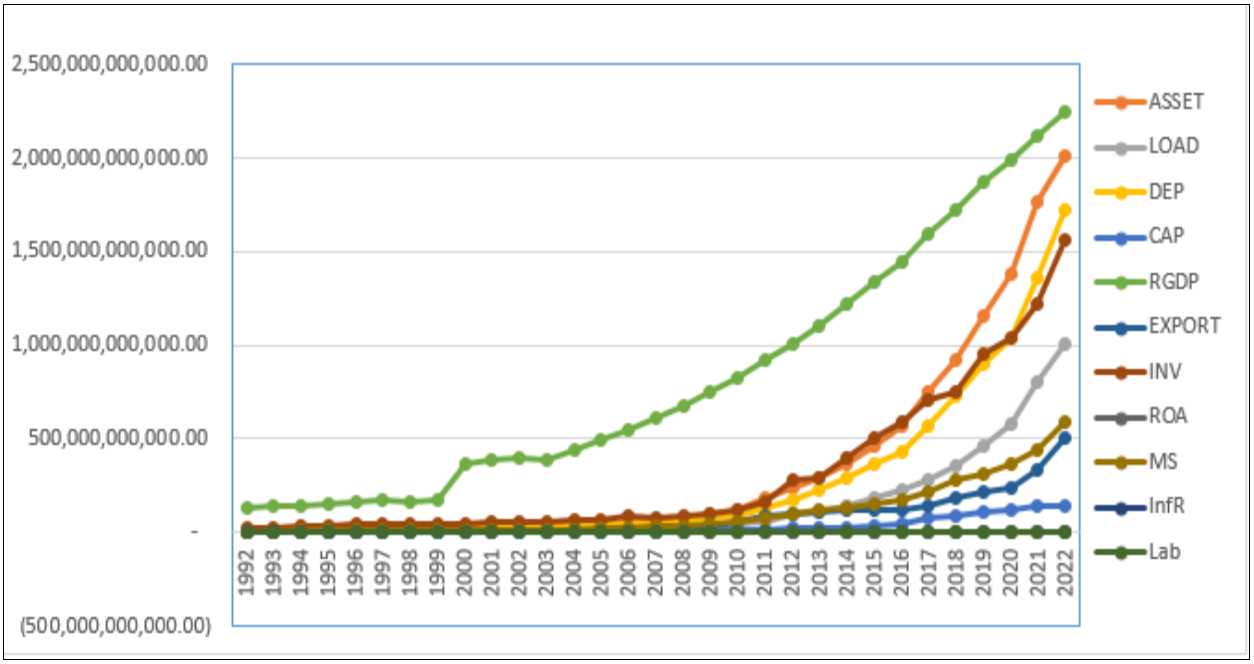
2022. The summaries of descriptive statistics consist of measurements of the two statistics, location and variation.

The standard deviation (SD), which is the square root of the variables and depicts the dispersion of data from a mean, reveals how the presented data relate to the mean value of the variables. The standard deviation is the sample mean of the squared difference from the mean. Another method to measure dispersion is the difference between the maximum and minimum values, or highest and lowest values. The greatest value of the variable is its maximum value, while the lowest value is its minimum value. As a result, as shown in table 4.1 above, RGDP used in this study as determined Ethiopian economic expansion, and explanatory variables serving as the banking sector's development are taken into consideration to assess the role played by Ethiopian banks in the country's economic expansion.

The descriptive analysis result in above table, RGDP's mean valued to 27 and it has minimum 25 and maximum 28. In case among explanatory variables, the mean of LDR is valued to 3.87. But, their average mean is highly different. The mean of total deposit is 24.9, and it has quite different as the average value of LDR and real GDP. On other hand, a mean value of total asset is 25, minimum 21.7 maximum 28. The average value of asset and maximum is approximately the same as to RGDP. The rate at return on asset (profit) of a given bank has a mean of (1.959726) and its average of minimum and maximum values are different from the mean value of the variable profitability. The mean value of capital accumulation is 22 and it's minimum and maximum are valued 18 and 25.7 respectively, which is highly different from that of RGDP. In case among the control variables, the mean of export is valued to 23.7. But, average mean of export and RGDP are 27, and it settled between 23 and 28. The mean value of labor is 17, and it is the quite different from RGDP. The mean of investment is 25.5 and the mean of RGDP is quite different. Money supply has mean value of 24 and Inflation rate has the mean value 2.28 that different from that of RGDP.

In addition, value of asset, deposit, loan to deposit ratio, return on asset, capital accumulation and other control variables are remained elevated over the future. The volumes of asset are over 2 trillion, deposit volumes are 1.7 trillion Birr, load & advance are 1 trillion Birr and the return on asset is nearly 40 percent. On other hand, the value of RGDP increases to more than 2.24 trillion Birr and some control variables export is more than 500 billion, investment 1.5 trillion, money supply 550 billion, labor 60 million and inflation is near to 34 percent at the end of June 2022 and it displayed graphically as follows.

Figure 4.1: Banking development indicators and RGDP in Ethiopia (1991-2022)



Source: - National Bank of Ethiopia (NBE)

4.2 EMPERICAL ANALYSIS

The regression analysis, Normality test, multicollinearity test, Autocorrelation test, unit root test and granger causality tests are firmed in this chapter. In addition to this, it justifies the evaluation of a acquired actual data, presents the results, and illustrates how banks' development indicators effects on economic expansion of Ethiopia.

4.2.1 Data testing

The testing of data is insuring a Stata software program to verify an anticipated outcome of a given variable. The most critical tests are autocorrelation, normality, multicollinearity and model specification tests such as unit root and granger causality tests have been conducted as follows:

4.2.1.1 Test of unit root

Certain stochastic processes have a property called unit root, which can lead to issues with statistical inference in time series models to the presumptions of statistics and probability theory. The unit root test has gained widespread popularity as a means of determining stationary or non-stationary. As a result, the unit root test serves as the foundation for time series variable analysis. Tests for stationary in a time series are known as Unit root test. Consequently, ADF Unit root test was utilized for determine when the variables has a unit root, handling greater and more complex models.

The long term relationships between the variables and the model as a whole are impacted by the stationary of the data, which makes it significant. Previous values of the variables are caused by their nonstationary.

Table 4.2**a**: Stationary variables at level

Variables	**ADF t-statistics value**	**ADF at first difference**		
		Critical value at 1%	**Critical value at5%**	**Probability**
lnLDR	5.945	3.709	2.983	0.0000
lnINR	6.864	3.750	3.000	0.0000

Table 4.2**b**: Stationarity tests of all the variables at first difference

Variables	**ADF t-statistics value**	**ADF at first difference**		
		Critical value at 1%	**Critical value at 5%**	**Probability**
lnRGDP	4.698	3.716	2.986	0.0001
lnASS	5.557	3.716	2.986	0.0000
lnDEP	8.679	3.716	2.986	0.0000
lnLDR	7.699	3.716	2.986	0.0000
lnROA	8.642	3.716	2.986	0.0000
lnCAP	6.508	3.716	2.986	0.0000
lnEXP	12.773	3.716	2.986	0.0000
lnINV	13.986	3.716	2.986	0.0000
lnMS	2.732	3.716	2.986	0.0687
lnLAB	5.506	3.716	2.986	0.0000
lnINFR	10.802	3.750	3.000	0.0000

Source: - result from Stata 15 software program

In the above table 4.2a and table 4.2b a variable lnLDR t-statistic value (-5.945) percent at actual level is higher than the critical value -3.709, -2.983 at 1 percent, 5 percent confidence interval at level with p-value 0.000 and its t-statistic value -7.699 at level is higher than the critical value -3.716, -2.986 at 1 percent, 5 percent confidence interval and p-value is also 0.000 at first difference respectively. So lnLDR and lnINFR is stationary both at level and at first difference. Therefore, the H_0 of the model has no unit root and can be rejected.

In addition, a variables lnASS, lnDEP, lnROA, lnCAP, lnEXP, lnINV and lnLAB have a unit root at level. As AD-F t-test in table 4.1b, all above listed variables has no unit root problem at first difference at 1 percent and 5 percent with p-value of 0.000. But variable lnMS is not stationary and insignificant at 1percent, 5percent and its p-value is more than 0.05 (0.05<0.0687). On other hand, the all variables are significant at a given percentage levels except lnMS. Therefore, at given percentage levels above variables are found to be stationary and the null hypothesis of those variables has no unit root and can be rejected.

4.2.1.2 Test of Granger causality

When determining whether x causes y, the Granger causality method often involves calculating the extent to which the current y may be clarified via previous values of y and then determining whether adding lag values of x can help with the explanation. If X aids in the prediction of Y or, conversely, if the coefficients on the lag X are statistically significant, then Y is said to be Granger-caused by Y.

Table 4.3: pairwise granger causality test

Equation	**Excluded**	**Chi^2**	**df**	**Prop > Chi^2**
ln_RGDP	ln_asset	0.53166	1	0.466
ln_RGDP	ln_ldr	10.82	1	0.001
ln_RGDP	ln_export	4.1203	1	0.042
ln_RGDP	ln_roa	15.903	1	0.000
ln_RGDP	ln_dep	3.4e-06	1	0.999
ln_RGDP	ln_cap	0.07451	1	0.785
ln_RGDP	ln_inv	9.8645	1	0.002
ln_RGDP	ln_ms	2.1788	1	0.140
ln_RGDP	ln_infr	14.763	1	0.000
ln_RGDP	ln_lab	3.0843	1	0.079

ln_RGDP	All	232.38	10	0.000

Source: ***-result from Stata 15 software program***

The above table 4.3 clarifies that the study's primary method of examining the casual relationship was the pairwise Granger causality test. Therefore, depending on the p value for each variable either more than or less than 0.05, the table shows that lagged values of the variables, lnLDR, lnEXP, lnROA, lnINV, lnINFR and lnLAB causes lnRGDP as p-values of them are less than 0.05 as result displays in above table. But, the lag values of lnASS, lnDEP, lnCAP, lnMS do not cause lnRGDP as their p-values are greater than 0.05. So the direction of causality is therefore from lnLDR, lnEXP, lnROA, lnINV, lnINFR and lnLAB to lnRGDP.

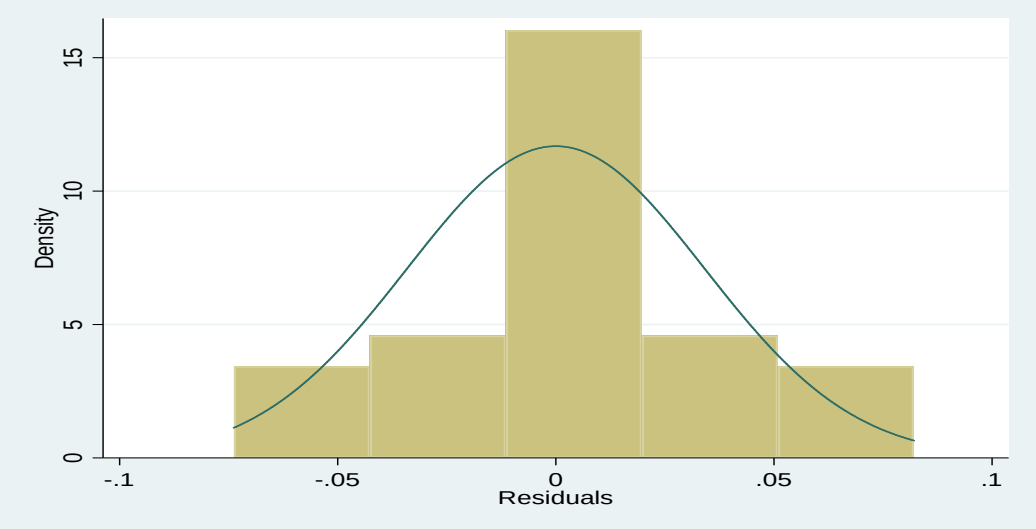
4.2.1.3 Test for normality

The normality test conducted to residual variable was carried out using graphical techniques. For this Skewness and Kurtosis takes place and the result of tests indicated a dependent variable as normally distributed.

The degree of asymmetry in a random variable's probability distribution with respect to its mean is measured by its **skewness**. It displays the skew's value and places. **Kurtosis** illustrates how high and sharp the central peak is.

Table 4.4 Normality test

Variable	**Skewness**	**Kurtosis**	**Adj chi2 (2)**	**Prob>chi2**	**Obs**
Residuals	0.6576	0.3259	1.25	0.5359	28



Source: - result from Stata 15 software program

H_0: The data follows a normal distribution.

H_1: The data does not follow a normal distribution.

The skewness test is normally skewed data as shown in above table and graphs the numbers of observations are 28 and the probability of skewness is 0.6576 presents that the skewness is normally distributed which means p-value of skewness proportionally greater than 0.05. On the other hand, Kurtosis is 0.3259, and it is asymptotically distributed, which means p-value of kurtosis is greater than 0.05. Finally, chi2 is 1.25 which is more than 0.05 shows its significance at a 5percent level. In case of this, the H_0 cannot be rejected. Therefore, according to the Skewness test for normality, the residual variable shows normal distribution. Therefore, it is impossible to reject the null hypothesis.

4.2.1.2 Test of multicollinearity

When one explanatory a multiple regression's variable has a significant connection with any number of other explanatory variables, this is known as a multi-collinearity problem. It is difficult because it minimizes an explanatory variable's statistical importance (Allen, 1997). A big standard error is indicative of a high correlation between the independent variables. The relevant regression coefficients will become less statistically significant and unstable as a result.

The collinearity values estimated are close to 1 except that of lnLDR, lnROA, and lnINR. Consequently, there is a strong link between the variables lnRGDP, lnASS, lnDEP, lnCAP, lnEXP, lnINV, lnMS and lnLAB. Therefore, the VIF test should be conducted to test multi collinearity in multiple regression variables. Then mean VIF is also 118.12, which suggesting a very high degree of collinearity. A VIF value of less than 10 often suggests that there is no multi-collinearity between the variables. The tolerance, or 1/VIF, represents the level of collinearity. So, in the above table 1/VIF for all variables except lnLDR and lnINFR is less than 0.1. Therefore, there is intolerable level of multi-collinearity in the model (**see Appendix 3**).

To overcome the problem of multicollinearity some independent and Control variables dropped and conducted as follows:

Table 4.5 Multi-collinearity test result

Variables	**ln_rgdp**	**ln_asset**	**ln_ldr**	**ln_roa**	**ln_dep**	**ln_infr**
ln_rgdp	1.0000					
ln_asset	0.9773	1.0000				
ln_ldr	0.3330	0.2797	1.0000			

ln_roa	0.8493	0.8443	0.4203	1.0000		
ln_dep	0.9662	0.9345	0.3408	0.7929	1.0000	
ln_infr	0.3875	0.3958	-0.1520	0.3450	0.3953	1.0000

Source: - result from Stata 15 software program

By examining the independent variables' tolerance and variance inflation factor (VIF), the researcher additionally assessed the existence of multicollinearity. According to Hair (2006), the tolerance value is the portion of an independent variable's predictive power that is unaffected by the other independent variables in the equation. In addition to providing minimal information to a model, a variance with an extremely low tolerance creates computational issues. The reciprocal of tolerance, the variance inflation factor (VIF) is the other multicollinearity indicator. There is no proof that multicollinearity exists if the VIF is low. However, the regression coefficient's high variation and unstable estimate grow with the VIF. Additional research is necessary if the VIF value is high, as this suggests multicollinearity.

Table 4.6 VIF test result

Variables	**VIF**	**1/VIF**
ln_asset	10.58	0.094540
ln_dep	8.42	0.118787
ln_roa	4.71	0.212489
ln_ldr	2.28	0.438571
ln_infr	1.60	0.625568
Mean VIF	**5.52**	

Source: - result from Stata 15 software program

Table 4.6 indicates that the mean VIF is 5.52, shows that there is no significant correlation. As a rule of thumb, a VIF value low than 10 indicate no multi-collinearity among the variables. This indicates that there is no longer any support for the existence of multicollinearity among independent variables after removing the factors mentioned above.

4.2.1.3 Test for autocorrelation

The estimated variances of the regression coefficients become skewed when serial correlation is present, which makes hypothesis testing inaccurate.

To test the given autocorrelation, Breusch-Godfrey LM test has an advantageous than classical Durbin Watson D test. Furthermore, it enables the testing of serial correlation using many lags in addition to the single lag, which is the correlation between the residuals at time t and t-k (in the case of k indicate lags).

Table 4.7 Breusch-Godfrey LM test for Autocorrelation

lags(p)	**Chi2**	**df**	**Prop > chi2**
4	7.906	4	0.0951

Source: - result from Stata 15 software program

H_0**:** There is no serial correlation.

H_1: There is a serial correlation.

Based on results, the Bruesh-Goelfery correlation LM test indicates an observed r value of p = 0.0951. This value is considered insignificant as it is greater than p = 0.05. Therefore, it supports the null hypothesis, suggesting that residential values are not serially correlated. In summary, the results indicate that the model's residential value is not significantly correlated.

4.2.1.4 Test for heteroscedasticity

Heteroscedasticity refers to a situation where there are systematic patterns in the errors, causing the variance of error terms is inconstant. This can have implications for the efficiency of ordinary least squares estimators, as the computed variance and coefficients' covariance may become biased and inconsistent. As a result, hypothesis tests may no longer be valid.

Table 4.8 Test for heteroscedasticity-Breusch pagan test

H_0	Constant variance
Variables	Residuals
Chi2	0.43
Prop>chi20	0.5137

Source: - result from Stata 15 software program

To determine if heteroscedasticity is present, the Breusch-Pagan-Cook-weisberg test can be used. This test checks the null hypothesis that the variance in the residuals is homoscedastic (constant). If the p-value of the adjusted R-squared is greater than 0.05, we would fail to reject the null hypothesis, indicating no significant heteroscedasticity problem. In the above table 4.8, it shows that the residuals in the predicted values are not significant to heteroscedasticity, as the corresponding p-value is 0.5137, which means strongly greater than 0.05. So it implies that there is no evidence to reject the null hypothesis.

4.3. EMPERICAL ANALYSIS AND DISCUSSIONS OF RESULTS

Table 4.9 Regression result

ln_rgdp	Coef.	Std.Err.	t	p>|t|	(95% conf.	Interval)
ln_asset	0.0257215	0.0299706	0.86	0.403	-0.037511	0.0889539
ln_ldr	-0.1522671	0.0765233	-1.99	0.063	-0.3137172	0.009183
ln_export	0.0174439	0.0297751	0.59	0.566	-0.045376	0.0802638
ln_roa	0.01923944	0.0242755	0.79	0.439	-0.0319825	0.0704513
ln_dep	0.0388332	0.0226778	1.71	0.104	-0.0090127	0.866792
ln_cap	0.1335577	0.0648194	2.06	0.055	-0.0031993	0.2703146
ln_inv	0.0273998	0.0453846	0.60	0.554	-0.0683533	0.1231529
ln_ms	0.2837096	0.0648829	4.37	0.000	0.1468187	0.4206005
ln_lab	-0.4399594	0.6055044	-0.73	0.477	-1.717162	0.8375432
ln_infr	-0.0011164	0.0096452	-0.12	0.909	-0.0214661	0.0192333
Cons	22.73539	8.467025	2.69	0.016	4.871533	40.59925
R-squared = 0.9979			**Root MSE = 0.04303**		**Prop > F = 0.000**	
Adj R-squared = 0.9966			**F(10, 17) = 789.75**			

Source: - result from Stata 15 software program

Table 4.9 shows that Money supply is shown to be positively correlated with RGDP and statistically significant at the 1% level with a p-value of 0.0000. Additionally, at the 10% level, a loan to deposit ratio (p-value=0.063) negatively related with RGDP and capital accumulation (p-value=0.055) positively related to RGDP, and they had a statistically significant association. However, the result indicated that, asset, deposit, return on asset, export, investment, labor and inflation rate had less statistically significant effect on RGDP. This suggests that changes in these variables have less impact on the RGDP according to the model.

The coefficients of determination i.e. R-squared and Adjusted R-square, were 99.79% and 99.66%, respectively, from above regression result. This suggests that the chosen firm specific baking development indicators (asset, deposit, loan to deposit ratio, return on asset and capital) and the macroeconomic factor (export, investment, interest rate and labor) or independent variables included in

the model successfully explain more than 99% of the change in RGDP. Additional elements not represented in the model were responsible for remaining 1% of changes in RGDP. Additionally, the model was found to be sufficiently fitted and significant at the 1% level (p-value = 0.0000) according to overall test of F statistics.

4.3.1 Regression results discussion

The statistical results of the study are analyzed in the discussion and contrasted with previous empirical evidences. As a result, the relationship between explanatory variables and RGDP is discussed as follows: -

i. Total asset

In the above regression result, the coefficient of asset shows likely an independent variable is to have a positive reaction on a dependent variable. Thus, a larger influence on the dependent variable is indicated by a greater coefficient value. The P-value of deposit is 0.403 and there are a statistically insignificant relation among bank asset and RGDP. Nonetheless, a coefficient of asset indicated there was positive association among the bank assets and RGDP over a given periods of time. Which means an increase in bank size (asset) by one unit leads to increase RGDP in 0.257215 units. However, Melkamu (2015) investigated that whether the development of banks affected Ethiopian economic growth in negative manner as stated in his finding result.

ii. Total Deposit

A predicted result of deposit P value is 0.104. It follows a statistically low significant relation among bank deposits with RGDP. On the contrary, the predicted coefficient of bank deposits (lnDEP) shows bank deposits positively affect the Ethiopian economy's progress potential. Which means an increase in one unit of deposit leads to increase RGDP in 0.388332 units. This finding supports previous study by Aurangzeb (2012) and Melkamu (2015) that found that increases in the number of deposits held by bank sector correspond with increases in economic growth. More people can open bank accounts and deposit money, which raises the total volume of funds that banks are required to lend. Higher lending rates across the country will encourage more investment in a variety of industries, so contributing to the nation's reported economic growth.

iii. Loan to deposit ratio

Estimated result for the LDR indicates, a P-value of 0.063. Consequently, it is determined that loan to deposit ratio have relatively significant effect on RGDP at 10% degree for relevance. In case, regression coefficients showed that, within the specified time, there was a negative relationship between RGDP and

LDR. In case, when loan to deposit ratio increase in one percent the proxy of economic growth (RGDP) will decrease by 0.1522671 unit in a given period of time Because, of an insignificant deposit in given period the ratio of loan to deposit is fluctuating over time and there may be facilitation of loan for public owning sector more than private sectors. On other hand the empirical investigations, such as Melkamu (2015) and Aurangzeb (2012), have discovered a favorable correlation between RGDP and loan and advance. This can be explained by pointing out that through allocating healthy resources, the growth of banks can serve as a stimulant for economic expansion. It frequently occurs that there are individuals who possess the qualities of a potential entrepreneur but lack the funds or capital to carry out their ideas. They are able to carefully consider and pick the plans of driven business owners and provide funding for them. Thus, banks can aid in the rapid expansion of the economy by encouraging both public and private enterprise carefully.

iv. Return on asset

The predicted regression result of ROA P-value is 0.439. It follows that there is statistically insignificant relationship between bank profitability (ROA) and RGDP. Bank profitability (lnROA) positively affects the Ethiopian economy growth. A one percent increase in bank profit results RGDP increase in 0.0192344 units, according to the result of regression analyzed above. However, Omotayo Ajibike Adekola (2016) conducted a study result a negative impact association among the profitability of banks and GDP of Nigeria was proven by likelihood (F-statistic), which is inconsistent with this study

v. Capital accumulation

The estimated regression result for Capital accumulation indicates a P-value of 0.055. Consequently, it is determined that capital accumulation has statistically significant contribution on real GDP at 10 percent degree of significance. The bank Capital accumulation positively affects the Ethiopian economic growth. A one-unit increase in Capital accumulation results 0.1335577-unit increase in RGDP. In contrast to the results of many developing countries where it had a beneficial impact on capital accumulation, a negative and statistically significant result for GDP is found (Weeks, 2001). This outcome could be explained by the fact that; capital accumulation results in healthy economic growth in significant way to stabilize economic growth in this study.

vi. Export

The financial development is favorably correlated with economic growth, which is influenced by the nation exports (Akram et al., 2011). Export plays a crucial role in a nation's economic development and

ultimately helps to achieve its long-term goals. In similarly the above result displays P-value of exports are 0.566 and which statistically insignificant relationship is and positively affect economic growth in Ethiopia. The increase of Export in one unit leads to increase RGDP in 0.0174439 unit in a given period of time. According to Bhatwati and Srinvasan (1979) & Kruger (1980), the improvement of export is what ultimately leads to the development of infrastructure, a rise in employment rates, and cost savings in production through bunch production, or economies of scale. Furthermore, the claim that exports are the primary driver of long-term growth is reinforced by the endogenous growth hypothesis. Additionally, Pradhan (2010) draws the conclusion that nations with higher trade efficiency experience faster economic growth than nations with lower trade efficiency. Several additional researchers agree that higher exports will result in higher economic growth (Heller & Porter, 1978). International trade is a major factor in industrialized nation economic prosperity and financial progress since it gives them more opportunity to enter new markets and take market shares.

vii. Investment

The above estimation examines P-value of investment resulted 0.554 and the coefficient of investment (lnINV) is statistically insignificant relationship and positively affects economic growth in Ethiopia. The increase of investment in one unit leads to increase RGDP in 0.0273998 units in a given period of time. Contrary to the results of many developing nations where it has had a considerable impact on investment, a positive but statistically negligible result for GDP is achieved (Weeks, 2001). Theories of economic growth provide their own body of empirical research demonstrating that economic growth is more than just a temporary improvement in productivity rather it is focused on the long-term trend of rising production rather than its fluctuations (Pentecost, 2002). It may be concluded that in the event of instability there may be challenges on investment which leads to change on economic growth. Therefore, increasing in domestic investment can help save foreign exchange, lessen reliance on imports, promote the development of domestic industry, and absorb labor, among other advantages. Putting money into different key industries would boost the economic growth.

viii. Money Supply

The regression result of this stay justifies that the P-value of money supply is 0.000 and coefficient of lnMS is significant at 1% level of significance and positively affect RGDP in Ethiopia respectively. Increase money supply in long run by one unit leads to increase RGDP in 0.2837096 units in a given period of time. Similarly, Marshal (2016) state the money supply and the real GDP of the Nigerian economy are positively associated both in both the short and the long term. However, Tobin, (1970)

conclude short-term output fluctuations are impacted by variations in the money supply. According to Komendi and Meguire (1984), the money supply has no long-term impact on output. Bin Liu (2002) determined that the money supply will affect output temporarily but not forever. Therefore, researcher states a regression result to investigate the influence of money supply on RGDP in Ethiopia. According to long-term estimation, the money supply had a positive statistically significant effect on Ethiopia's GDP growth within the specified period of time.

ix. Inflation

Based on the regression result P-value of inflation rate is 0.909 and coefficient of inflation rate (lnINFR) is negative. Therefore, inflation rate has statistically insignificant relation and negatively affect RGDP. In case, an inflation rate increase in one percent, the proxy of economic growth (RGDP) decrease by 0.0011164 unit in a given period of time. However, Teshome (2011) conducted statistical analysis to explain relation among inflation and growth of economy in Ethiopia by separating a period of time. He attempts to determine the relations among the rates of inflation and economic growth from 2004 to 2010 through statistical comparison. As outcome, inflation and RGDP have a positive association between 2004 and 2006, but a negative relationship between 2006 and 2008, and He claims that there is a positive connection among inflation and growth of economy, notwithstanding the differences via magnitude from 2008 to 2010. Somehow in short run inflation may be positively affects RGDP but in long run it results negative impact as above regression result.

x. Labor

Among the population of a nation that is able to generate goods and services is referred to as labor. Depending on the regression result the P value of labor is 0.477 and the coefficient of labor (lnLAB) is negative. Therefore, labor has statistically insignificant relation and negatively affects RGDP in Ethiopia. In case, if labor increases in one unit, the RGDP decrease by 0.4399594 units in a given period of time. Because, the number of unemployment increase time to time in Ethiopia and which results the negative effect on economic growth. In similar to this, Asari et al. (2011) and Leshoro (2013) justified that labor has a negative impact on GDP and that there isn't a direct correlation between the two in the short run. According to Solow growth model, various combinations of labor and capital can be employed to create a given amount of outputs. Less labor is required when more capital is employed, and vice versa. An economy can use this flexibility to determine exactly what combination of labor and capital will be employed to create a certain amount of production.

CHAPTER FIVE

CONCLUSSION AND RECOMMENDATION

5.1 Conclusion

In this chapter, it will provide a summary of the study findings, which aimed to evaluate the impact of banking sector development on economic growth in the Ethiopian economy between 1991 and 2022.

According to Schumpeter (1911), an efficient financial system is vital for a nation's economic growth. Well-functioning banks, in particular, encourage technological innovation by providing funding to entrepreneurs who successfully implement innovative products and production processes. This, in turn, stimulates future economic growth. Moreover, efficient banks can impact economic growth in three ways: increasing investment productivity, reducing financial costs, and directing a larger portion of savings towards productive investments and encourage saving (Pagano, 1993)

The study's dependent variable was the proxy for economic growth (RGDP), and its explanatory variables included bank size (asset), deposit, loan to deposit ratio, capital accumulation returns on bank assets, and a few macroeconomic variables like labor, export, investment, and inflation rate. This study uses data testing techniques like the Granger causality test and the unit root test. In case, a unit root test confirms that only Loan to deposit ratio and inflation rate are stationary at a level and all other variables included in the model are stationary at a first difference. The Granger causality test verifies that certain variables have a bidirectional causal link with a RGDP.

The regression results revealed that among banking sector development indicators and control variables i.e. Loan to deposit ratio, inflation rate and labor are negative and insignificant contribution to economic growth. Assets, deposit, return on asset, capital accumulation, export and investment have positive impact with insignificant association with RGDP except capital is significant at 10 percent level. The Money supply is positive and significant contribution to the economic growth (RGDP) in a given period of time.

In generally, banks are essential to the economy because they collect deposit and make them investible. They collect demand deposits by issuing loans and buying investment securities. Additionally, banks facilitate trade on a national and worldwide level by accepting and discounting bills of exchange. In addition to facilitating capital mobility, they offer fundamental services such business loan approval, deposit acceptance, and basic investment products.

5.2 Recommendation

The findings of this paper led to below recommendations, which aim to increase the banking sector contribution on economic growth in Ethiopia.

A. The paper recommends, there are a positive relation among bank size and growth of economy. Therefore, it is crucial to increase bank size in order to make them more stable, and able to withstand risks in the event of a financial panic and keep them from going bankrupt. All stakeholders and policymakers should develop strategies and policies to grow total asset of banks in order to give them the potential support to the economic growth in Ethiopia.

B. There is a positive relation of economic growth with bank deposits. The study recommends increasing them in order to boost the country's economic growth. Banks should loosen entrance standards and develop a legislative framework for opening new branches in order to boost deposit mobilization. Therefore, the development of banks can act as an engine for economic progress by providing healthy resources. All stakeholders should encourage banks to contribute rapid economic growth by cautiously promoting both public and private enterprise.

C. In this study, the expected result for the link between loan to deposit ratio and RGDP was positive. But, as a result loan to deposit ratio has negative effect on economic growth in Ethiopia. Therefore, Ethiopia should expand banking sector in order to boost economic growth and maintain stability, resilience, and liquidity in times of financial turmoil. Encourage banks to lend to private investors and remove any obstacles that prevent them from lending to the domestic sector in order for them to fully achieve their role in Ethiopia's economic growth. Banks should also plan how to draw in and keep stable deposit to loan in order to enhance their lending performance even more. To do this, all stakeholders should create plan and guidelines to reduce non-performing loan (NPL) that brings negative effect on economic growth of Ethiopia.

D. The research findings indicate that the outcome is positive relation of RGDP with profitability. The development of banks can act as an engine for economic progress by providing stable profit. Therefore, the study recommends that all stakeholders should encourage both public and private banking sectors to get health return from their goods and services supplied.

E. The study recommends that, the capital accumulation has statistically significant contribution on economic growth. Capital accumulation positively affects the Ethiopian economic growth. Therefore, banks should accumulate more capitals to bring stable economic growth in Ethiopia.

F. The researcher presents a long run linear regression result to study the impact of supplied money on RGDP in Ethiopia. According to long-term estimates, the money supply had a positive statistically significant effect on Ethiopia's economic. However, government should regulate the money circulation in an economy to control inflation and economic disturbance that flows from unstable money supply.

Even if their insignificancy, the finding suggests that export has a positive contribution on economic growth. Exports are critical to a country's economic development and, eventually, help it accomplish its long-term objectives. Therefore, the study recommends that, government should encourage and expand the volume of exports for continuous economic growth in Ethiopia.

As a result, increasing domestic investment can help save foreign exchange, reduce reliance on imports, encourage the growth of domestic industry, and absorb labor, among other benefits. Investing in numerous major industries would improve economic growth. It can be suggested that, encouraging domestic and foreign investment will bring a positive economic growth in Ethiopia.

Inflation may have a favorable effect on RGDP in short period and it results a negative influence in long run, as shown this study. Government should regulate inflation by reducing the general price of a food and nonfood in Ethiopia.

The study suggests that, labor has negative contribution on economic growth in Ethiopia. According to Solow growth model, several combinations of labor and capital can be used to produce a given quantity of production. But, in Ethiopian context the number of unemployment increasing time to time and it results negative impact on economic growth. However, the researcher strongly advises any interested stakeholder to do further research in order to clear confusion on relation between labor and RGDP in Ethiopia.

In generally, financial sector development in Ethiopia should regulated by stakeholders, including the National Bank of Ethiopia, to bring stable economic growth. Adapting new technologies in banking sector from both industrialized and developing countries are plays crucial role for economic growth in Ethiopia.

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APPENDIXES

Appendix 1: Unit Root test at first difference

```
. dfuller d.ln_ldr

Dickey-Fuller test for unit root                    Number of obs   =        30

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -7.699           -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000

.
. dfuller d.ln_export

Dickey-Fuller test for unit root                    Number of obs   =        30

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)           -12.773           -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000


. dfuller d.ln_rgdp
Dickey-Fuller test for unit root                    Number of obs   =        30

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -4.698           -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0001
.
. dfuller d.ln_asset
Dickey-Fuller test for unit root                    Number of obs   =        30

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -5.557           -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000

. dfuller d.ln_roa

Dickey-Fuller test for unit root                    Number of obs   =        30

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -8.642           -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000

.
. dfuller d.ln_dep

Dickey-Fuller test for unit root                    Number of obs   =        30

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -8.679           -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

```
. dfuller d.ln_cap

Dickey-Fuller test for unit root                   Number of obs   =        30

                         ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -6.508            -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000

.
. dfuller d.ln_inv

Dickey-Fuller test for unit root                   Number of obs   =        30

                         ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)           -13.986            -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000

. dfuller d.ln_ms

Dickey-Fuller test for unit root                   Number of obs   =        30

                         ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.732            -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0687

.
. dfuller d.ln_lab

Dickey-Fuller test for unit root                   Number of obs   =        30

                         ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -5.506            -3.716            -2.986           -2.624
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000

. dfuller d.ln_infr

Dickey-Fuller test for unit root                   Number of obs   =        22

                         ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)           -10.802            -3.750            -3.000           -2.630
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

Appendix 2: Granger causality Wald tests

Vector autoregression

Sample: 1992 - 2022, but with gaps		Number of obs	= 25
Log likelihood	= 409.0488	AIC	= -23.04391
FPE	= 5.53e-24	HQIC	= -21.40768
Det(Sigma_ml)	= 1.70e-28	SBIC	= -17.14455

Equation	Parms	RMSE	R-sq	chi2	P>chi2
ln_rgdp	11	.013973	1.0000	1.72e+08	0.0000
ln_asset	11	.3663	0.9999	221634.6	0.0000
ln_ldr	11	.082651	0.9997	98947.43	0.0000
ln_roa	11	.22136	0.9973	9202.717	0.0000
ln_dep	11	.435657	0.9998	153660.6	0.0000
ln_cap	11	.14614	1.0000	1109195	0.0000
ln_export	11	.176931	1.0000	839486.1	0.0000
ln_inv	11	.079549	1.0000	4736759	0.0000
ln_ms	11	.070597	1.0000	5509838	0.0000
ln_lab	11	.003171	1.0000	1.35e+09	0.0000
ln_infr	11	.720744	0.9523	499.3507	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ln_rgdp						
ln_rgdp						
L1.	.8663766	.0562049	15.41	0.000	.756217	.9765362
ln_asset						
L1.	.0079262	.0058217	1.36	0.173	-.003484	.0193365
ln_ldr						
L1.	-.0835382	.0190234	-4.39	0.000	-.1208233	-.0462531
ln_roa						
L1.	.0293698	.005984	4.91	0.000	.0176413	.0410983
ln_dep						
L1.	.0018057	.0053371	0.34	0.735	-.0086548	.0122662
ln_cap						
L1.	.0027827	.0109285	0.25	0.799	-.0186368	.0242021
ln_export						
L1.	-.0137753	.0061627	-2.24	0.025	-.025854	-.0016966
ln_inv						
L1.	-.036628	.0117686	-3.11	0.002	-.0596941	-.0135618
ln_ms						
L1.	.0440165	.0259212	1.70	0.089	-.0067881	.0948211

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
ln_rgdp	ln_asset	.53166	1	0.466
ln_rgdp	ln_ldr	10.82	1	0.001
ln_rgdp	ln_export	4.1203	1	0.042
ln_rgdp	ln_roa	15.903	1	0.000
ln_rgdp	ln_dep	3.4e-06	1	0.999
ln_rgdp	ln_cap	.07451	1	0.785
ln_rgdp	ln_inv	9.8645	1	0.002
ln_rgdp	ln_ms	2.1788	1	0.140
ln_rgdp	ln_infr	14.763	1	0.000
ln_rgdp	ln_lab	3.0843	1	0.079
ln_rgdp	ALL	232.38	10	0.000
ln_asset	ln_rgdp	2.4602	1	0.117
ln_asset	ln_ldr	.92044	1	0.337
ln_asset	ln_export	.00017	1	0.990
ln_asset	ln_roa	.20682	1	0.649
ln_asset	ln_dep	.50394	1	0.478
ln_asset	ln_cap	.33609	1	0.562
ln_asset	ln_inv	2.358	1	0.125
ln_asset	ln_ms	1.2505	1	0.263
ln_asset	ln_infr	1.0955	1	0.295
ln_asset	ln_lab	2.2548	1	0.133
ln_asset	ALL	38.26	10	0.000
ln_ldr	ln_rgdp	.08625	1	0.769
ln_ldr	ln_asset	.77723	1	0.378
ln_ldr	ln_export	6.7838	1	0.009
ln_ldr	ln_roa	2.7691	1	0.096
ln_ldr	ln_dep	3.3682	1	0.066
ln_ldr	ln_cap	4.9578	1	0.026
ln_ldr	ln_inv	.32469	1	0.569
ln_ldr	ln_ms	.02026	1	0.887
ln_ldr	ln_infr	3.1139	1	0.078
ln_ldr	ln_lab	5.6086	1	0.018
ln_ldr	ALL	40.475	10	0.000
ln_export	ln_rgdp	.0206	1	0.886
ln_export	ln_asset	5.5937	1	0.018
ln_export	ln_ldr	18.288	1	0.000
ln_export	ln_roa	.02864	1	0.866
ln_export	ln_dep	10.061	1	0.002
ln_export	ln_cap	4.717	1	0.030
ln_export	ln_inv	43.847	1	0.000
ln_export	ln_ms	19.018	1	0.000
ln_export	ln_infr	7.737	1	0.005
ln_export	ln_lab	14.672	1	0.000
ln_export	ALL	421.88	10	0.000
ln_roa	ln_rgdp	1.2416	1	0.265
ln_roa	ln_asset	2.5338	1	0.111
ln_roa	ln_ldr	1.5759	1	0.209
ln_roa	ln_export	58.088	1	0.000
ln_roa	ln_dep	1.6075	1	0.205
ln_roa	ln_cap	.13272	1	0.716
ln_roa	ln_inv	.2282	1	0.633
ln_roa	ln_ms	3.2702	1	0.071
ln_roa	ln_infr	2.0669	1	0.151
ln_roa	ln_lab	.04193	1	0.838
ln_roa	ALL	225.13	10	0.000

ln_dep	ln_rgdp	.66133	1	0.416
ln_dep	ln_asset	.00015	1	0.990
ln_dep	ln_ldr	4.7386	1	0.029
ln_dep	ln_export	13.646	1	0.000
ln_dep	ln_roa	.58027	1	0.446
ln_dep	ln_cap	3.3874	1	0.066
ln_dep	ln_inv	.24446	1	0.621
ln_dep	ln_ms	.15892	1	0.690
ln_dep	ln_infr	.26338	1	0.608
ln_dep	ln_lab	.002	1	0.964
ln_dep	ALL	109.05	10	0.000
ln_cap	ln_rgdp	10.607	1	0.001
ln_cap	ln_asset	1.0542	1	0.305
ln_cap	ln_ldr	2.0317	1	0.154
ln_cap	ln_export	.45749	1	0.499
ln_cap	ln_roa	.02189	1	0.882
ln_cap	ln_dep	.24561	1	0.620
ln_cap	ln_inv	2.8897	1	0.089
ln_cap	ln_ms	13.475	1	0.000
ln_cap	ln_infr	.03489	1	0.852
ln_cap	ln_lab	.88262	1	0.347
ln_cap	ALL	55.044	10	0.000
ln_inv	ln_rgdp	18.383	1	0.000
ln_inv	ln_asset	1.5354	1	0.215
ln_inv	ln_ldr	1.3877	1	0.239
ln_inv	ln_export	2.8231	1	0.093
ln_inv	ln_roa	.00163	1	0.968
ln_inv	ln_dep	.23428	1	0.628
ln_inv	ln_cap	5.6237	1	0.018
ln_inv	ln_ms	119.57	1	0.000
ln_inv	ln_infr	1.0113	1	0.315
ln_inv	ln_lab	6.7501	1	0.009
ln_inv	ALL	816.36	10	0.000
ln_ms	ln_rgdp	7.9022	1	0.005
ln_ms	ln_asset	1.9764	1	0.160
ln_ms	ln_ldr	.95172	1	0.329
ln_ms	ln_export	1.1565	1	0.282
ln_ms	ln_roa	1.8853	1	0.170
ln_ms	ln_dep	6.3949	1	0.011
ln_ms	ln_cap	3.2662	1	0.071
ln_ms	ln_inv	3.7903	1	0.052
ln_ms	ln_infr	3.6472	1	0.056
ln_ms	ln_lab	3.0694	1	0.080
ln_ms	ALL	20.046	10	0.029
ln_infr	ln_rgdp	.72788	1	0.394
ln_infr	ln_asset	1.847	1	0.174
ln_infr	ln_ldr	3.3314	1	0.068
ln_infr	ln_export	.19522	1	0.659
ln_infr	ln_roa	3.8875	1	0.049
ln_infr	ln_dep	3.8571	1	0.050
ln_infr	ln_cap	.87756	1	0.349
ln_infr	ln_inv	14.646	1	0.000
ln_infr	ln_ms	.728	1	0.394
ln_infr	ln_lab	.27484	1	0.600
ln_infr	ALL	40.602	10	0.000
ln_lab	ln_rgdp	.00669	1	0.935
ln_lab	ln_asset	4.3212	1	0.038
ln_lab	ln_ldr	1.2647	1	0.261
ln_lab	ln_export	.57454	1	0.448
ln_lab	ln_roa	.31395	1	0.575
ln_lab	ln_dep	2.9369	1	0.087
ln_lab	ln_cap	2.8636	1	0.091
ln_lab	ln_inv	.01565	1	0.900
ln_lab	ln_ms	.82983	1	0.362
ln_lab	ln_infr	.8495	1	0.357
ln_lab	ALL	15.602	10	0.112

Appendix 3: Multicollinearity test

```
. pwcorr ln_rgdp ln_asset ln_ldr ln_export ln_roa ln_dep ln_cap ln_inv ln_ms ln_lab ln_infr
```

	ln_rgdp	ln_asset	ln_ldr	ln_exp~t	ln_roa	ln_dep	ln_cap
ln_rgdp	1.0000						
ln_asset	0.9773	1.0000					
ln_ldr	0.3330	0.2797	1.0000				
ln_export	0.9662	0.9445	0.3517	1.0000			
ln_roa	0.8493	0.8443	0.4203	0.8980	1.0000		
ln_dep	0.9662	0.9345	0.3408	0.9190	0.7929	1.0000	
ln_cap	0.9853	0.9595	0.4292	0.9756	0.8945	0.9521	1.0000
ln_inv	0.9661	0.9526	0.1958	0.9170	0.7371	0.9190	0.9218
ln_ms	0.9970	0.9755	0.3325	0.9567	0.8317	0.9636	0.9779
ln_lab	0.9874	0.9725	0.3578	0.9841	0.9003	0.9533	0.9940
ln_infr	0.3875	0.3958	-0.1520	0.3943	0.3450	0.3953	0.3241

	ln_inv	ln_ms	ln_lab	ln_infr
ln_inv	1.0000			
ln_ms	0.9718	1.0000		
ln_lab	0.9317	0.9798	1.0000	
ln_infr	0.4295	0.3846	0.3689	1.0000

```
vif
```

Variable	VIF	1/VIF
ln_lab	575.25	0.001738
ln_cap	288.06	0.003471
ln_ms	128.00	0.007813
ln_export	52.61	0.019006
ln_inv	50.73	0.019711
ln_asset	39.41	0.025373
ln_dep	23.66	0.042269
ln_roa	16.99	0.058873
ln_ldr	4.37	0.229076
ln_infr	2.12	0.470736
Mean VIF	118.12	

APPENDIX 4: Long run linear regression result

```
. reg ln_rgdp ln_asset ln_dep ln_cap ln_ldr ln_roa ln_infr ln_inv ln_export ln_ms ln_lab
```

Source	SS	df	MS		
Model	14.6247411	10	1.46247411	Number of obs	= 28
Residual	.031480727	17	.001851807	F(10, 17)	= 789.75
				Prob > F	= 0.0000
Total	14.6562218	27	.54282303	R-squared	= 0.9979
				Adj R-squared	= 0.9966
				Root MSE	= .04303

ln_rgdp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ln_asset	.0257215	.0299706	0.86	0.403	-.037511	.0889539
ln_dep	.0388332	.0226778	1.71	0.105	-.0090127	.0866792
ln_cap	.1335577	.0648194	2.06	0.055	-.0031993	.2703146
ln_ldr	-.1522671	.0765233	-1.99	0.063	-.3137172	.009183
ln_roa	.0192344	.0242755	0.79	0.439	-.0319825	.0704513
ln_infr	-.0011164	.0096452	-0.12	0.909	-.0214661	.0192333
ln_inv	.0273998	.0453846	0.60	0.554	-.0683533	.1231529
ln_export	.0174439	.0297751	0.59	0.566	-.045376	.0802638
ln_ms	.2837096	.0648829	4.37	0.000	.1468187	.4206005
ln_lab	-.4399594	.6055044	-0.73	0.477	-1.717462	.8375432
_cons	22.73539	8.467025	2.69	0.016	4.871533	40.59925