ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

THE EFFECT OF FINANCIAL SECTOR DEVELOPMENT ON ECONOMIC GROWTH IN ETHIOPIA

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June, 2023
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THE EFFECT OF FINANCIAL SECTOR DEVELOPMENT ON ECONOMIC GROWTH IN ETHIOPIA

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Declaration

I declare that the thesis is my original work and has not been presented for a degree in any other university, and all sources of materials used for the thesis have been dully acknowledged.

Declared by: Name <u>Yonatan Wondwosen</u>

Sign:_____

Date: June, 2023

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Acronyms

ADF - Augmented Dickey Fuller test

ARDL - Auto Regressive Distributive Lag

ECM – Error Correction Model

ECT - Error Correction Term

GDP - Gross Domestic Product

GNP - Gross National Product

IMF – International Monetary Fund

M_2- Broad Money

MOFED - Ministry of Finance Ethiopia

NBE - National Bank of Ethiopia

OLS - Ordinary Least Square

PP - Philips-Perron

UNCTAD - United Nations Conference on Trade and Development

VAR - Vector Autoregressive

Abstract

For a long period of time, most African economies have embarked on financial sector reforms. However, the empirical implications of these reforms have been divergent. This study investigates the impact of financial development on Ethiopian Economic growth by using time series data. This investigation was carried out using five common indicators of financial development (broad money, bank deposit/GDP, domestic credit to private sector, total domestic credit and private credit to total credit). Using the Auto Regressive Distributive Lag (ARDL) technique of estimation, it was discovered that there exist a short-run positive relationship between private investment, inflation rate, domestic credit to private sector and economic growth, a short run negative relationship between bank deposits, monetary mass m2, government expenditure and economic growth equally exists. However in the long run, Domestic credit to private sector credit, private investment inflation rate show a negative and significant impact on economic growth, and the long run effect of broad money supply and private credit to total credit is positive. This paper thus confirms the existence of a positive, negative and long-term impact of all the indicators of financial development on economic growth through bound test. It is therefore proposed that sufficient consideration and proper recognition such as provision of suitable financial reforms should be given to the financial sector in Ethiopia as a determinant of economic growth.

Chapter One

1. Introduction

1.1. Background of the study

Major statistic for evaluating economic performance of a given economy is its annual rate of real GDP growth. As a result, there are numerous studies that attempt to identify the main influencers of economic growth and the potential sources of growth differentials across time from both theory and empirical perspectives. The level of financial development is considered to be one of such drivers of growth. This notwithstanding, there is no clear consensus and the debate on whether financial development is the cause or the effect of the growth process is still on-going. Another source of disagreement on this strand of the growth literature is the issue of appropriate or suitable measure of financial development. This study aims to address these concerns in the literature using time series econometric techniques.

According to Shaw (1973), financial development is the accumulation of financial assets at faster rate than the accumulation of non-financial assets. For Levine (2004), financial development emerge when financial instruments, markets and financial intermediaries reduce, without necessarily eliminating them, the costs of gaining information, the costs of executing contracts and the costs of transaction, and as a consequence, do a better job by providing financial functions. Economic growth is the advancement of Gross Domestic Product (GDP) in the short, medium and long term. It is the result of an improvement in value-added produced by all the firms operating within an economy. GDP is an aggregated value which takes account of all the value-added of all the firms operating on a given national territory. The improvement in the value-added during a given period means that the global wealth of a nation is rising. This reveals itself in the progress of per capita income and in a higher level of well-being.

Ndikumana (2001), Indicated that the impact of financial system on economic growth has attracted and received increased attention from both academia and policy makers, with resulting divergent views emerging. Over the past decades, focus on this specific area has increased, with mixed findings which remain a theoretical and empirical controversy, Boulika (2002). Financial development has played a major role in most developing economies. There is a widespread

assumption among policy makers that financial development increase productivity which in turn promotes growth. Various findings made on financial development and economic growth varies because of different method of analysis is used in different researches. Some researchers found that financial development has a positive effect on economic growth Mushin Kar (2000); Boulika G (2002), while others arrive at an opposite conclusion Robert E. Lucas (1988); Stern, (1989).

Modern finance researchers have broadly investigated the link between financial liberalization and other macroeconomics variables, but the impact of financial development is not universally acknowledged. One of the earliest studies on the relationship between financial development and economic growth is based on the services provided by the financial intermediaries are crucial for innovation and development, Schumpeter (1934). According to Bagehot (1873) and Hicks, (1969), development in the financial system played important role in industrializing England through the facilitation of capital mobilization. Schumpeter (1934), exploit the importance of the banking system in economic growth; financial institutions support innovation and creativity and thus increase future growth by identifying and funding productive investments. Therefore, it contributes to the evolution of wealth, trade and the formation of capital, Ahmed (2006). A further step taken by Fry (1978) and Galbis (1980) suggested that, interventions that imposes restrictions on the banking system such as credit ceilings and high reserve requirements have a negative effect on the growth of the financial sector, which ultimately shrink economic growth. Moreover, Levine (2004) suggested that aiding risk management, improving liquidity and reducing transaction costs leads to financial system development and thus encourages investments.

However, Robert (1988) and Stern (1989) suggested that there is no relationship between financial system development and economic growth. Robert (1988) suggested that finance is an "overstressed" determinant of economic growth. Therefore, any mechanisms aimed at improving financial system development would be a waste of resources, as it diverts focus from more relevant policies such as labor and productivity improvement programs, implementation of pro investment tax reforms, encouragement of exports; amongst others.

Other researches on this area suggested that the financial system develops when there is improved economic growth. Robinson (1979) "Where enterprise leads, finance follows", that is,

as there is improvement in economic growth the financial sector responds to the demands of the economy. A number of studies Shaw (1973); Mushin (2000); Boulika (2002) suggest a unidirectional causality running from economic growth to finance. Economies that grow faster are obliged to offer more investment on improving their financial system in order to stabilize their economic environment, Padilla & Mayer (2002).

The Ethiopian financial system incorporates formal, semiformal and informal institutions. The formal financial system is a monitored sector that encompasses financial institutions such as banks and insurance companies. The microfinance institutions, saving and credit cooperative are considered as semi-formal financial institutions, which are not regulated and supervised by National Bank of Ethiopia (NBE). The informal financial sector of Ethiopia consists of unregistered traditional institutions such as *Iqub*[1] and *Idir*[2] and local money lenders.

The major formal and Semi formal financial institutions operating in Ethiopia are banks, insurance companies, microfinance institutions and credit cooperative.

Banking in Ethiopia goes back to the year 1905, with the establishment of Bank of Abyssinia that was owned by the Ethiopian government in partnership with the National Bank of Egypt that was then under British rule. But a well-organized banking system started to evolve starting in the 1940s-after the Italian departure.

Despite some improvements made on the banking sector in the last couples of years, Ethiopian banking system remains in its low performance. The sector mainly characterized by small banking, limited range of services, absence of capital markets and the sector largely remains closed to foreign investors. (TheAfricanDevelopmentBank, 2011)

Similar to the banking system, Ethiopia's insurance industry is also undeveloped. According to Gebreyes (2011) the insurance market is less developed, less competitive and there exist scarcity of information on the kind of life insurance that is currently present.

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[1] An association of people having common objectives of mobilizing resources, especially finance, and distributing it to members on rotating basis.
[2] A social institution in Ethiopia used for mutual aid and grants cooperative insurance within specific community.

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1.2. Statement of the problem

The connection between financial sector development and economic growth is still an arguable topic and has been ongoing for many years and there no clearly defined consensus up to date. Some researchers suggest that the financial system develops when there is an improved economic growth. According to Robinson (1952) "where enterprise leads, finance follows", that is, as an economy grows the financial sector responds to the demands of the economy. A number of studies (Gurley and Shaw 1955; Goldsmith 1969; Jung 1986; Kar and Pentecost 2000; Boulika and Trabelisi 2002; Islam 2004; Güryay et al. 2007) suggest that there is a unidirectional causality running from growth to finance. Countries, whose economies are advanced, are forced to focus investing on improving their financial system in order to stabilize their economic environment (Padilla and Mayer 2002).

There are those researchers who suggest that financial system development is anti-growth on the other extreme Van Wijnberg (1983), Buffie (1984). Development in financial system facilitates risk maintenance improvement and efficient allocation of resources; this may decrease the rate of savings and risk, and it will lead to lower economic growth, Levine (2004). However, this follows the basic thinking that, where there is high risk there is high return.

The new paradigm in literature suggests that the relationship between finance and growth could be non-linear. In an influential paper, Cecchetti and Kharroubi (2012) established that finance has a positive impact on growth only up to a point, beyond which the impact of finance on growth becomes negative. This is known as the "too much finance" hypothesis. These authors asserted that the financial sector does not exist in isolation but rather competes with other sectors of the economy for scarce resources. Thus, as financial development increases, it begins to deprive the other sectors of the needed resources, and thus the negative effect. Subsequently, several related studies have been done in this direction, but with different approaches in estimating the threshold levels. While Soedarmono et al. (2017) used the square of financial development variable as a measure of a threshold, Tariq et al. (2020) employed the static Hansen's threshold model in their study on Pakistan. However, the findings of both studies were mixed, whereas Soedarmono et al. (2017) showed that the effect of finance is positive but turns negative after attaining a certain threshold. Contrary to the too much finance hypothesis, Tariq et al. (2020) found the impact of finance to be initially negative but that it only becomes positive

after attaining a certain threshold. Swamy and Dharani (2019) employed both the square term and Hansen's threshold model in a sample of 24 developed countries for the period 1983–2013. They showed that above a threshold of 124%, the impact of finance on growth is negative. Law and Singh (2014) and Samargandi et al. (2015) used the Kremer et al. (2013) dynamic threshold model, which is an extension of Hansen's static model. The findings of both studies supported the too much finance hypothesis. In a meta- analysis study by Bijlsma et al. (2018) covering 68 empirical studies, they concluded that the impact of finance on growth is positive but decreases over time in line with the too much finance hypothesis.

From the empirical evidence above, it can be clear that there is disagreement in the effect of financial development on economic growth. The direction of causality between financial development and economic growth in the short-run and in the long-run are not clear in these studies results. These views vary due to changing dynamics of financial policies in the countries studied and the response of these economies to policies, level of development and governance equally vary substantially. All these divergent views give enough reasons to investigate the impact of financial development on economic growth in Ethiopia.

This research is different from the other researches in so many aspects; firstly it employs five indicators of financial development (broad money, deposit/GDP and domestic credit to private sector, private sector credit to total credit, total domestic credit to GDP)) which will allow the researcher to capture all aspects of financial development. Previous studies in Ethiopia did not capture recent economic and financial dynamics since the time frame of their studies date back to 2014. Thirdly, this paper will equally contribute to literature by incorporating recent time series data which captures recent policies aimed at liberation and regulation of the financial sector. In this regard, this paper seeks to respond to the following research question: Is there a short-run or long-run relationship between financial development and economic growth?

1.3.   Hypothesis of the study

The researcher has developed hypothesis that relates the association between financial development and economic growth. By reviewing different literature the following hypotheses is developed.

Hypothesis 1: An increase in Broad money supply leads to an increase to economic growth.

Hypothesis 2: An increase in Domestic credit to private sector leads to a decline to economic growth.

Hypothesis 3: An increase in Bank Deposits leads to an increase to economic growth.

Hypothesis 4: An Increase in Private investment leads to an increase to economic growth.

Hypothesis 5: An increase in Government expenditure leads to an increase to economic growth.

Hypothesis 6: An increase in inflation leads to an increase to economic growth.

1.4. Objective of the study

1.4.1. General objective of the study

The main objective of this study is to investigate the impact of financial sector development on economic growth in Ethiopia.

1.4.2. Specific objective of the study

Specifically, this study addresses the following objectives;

- ✓ To examine short run relationship between financial sector development and Ethiopian economic growth.
- ✓ To examine long run relationship between financial sector development and Ethiopian economic growth.
- ✓ To investigate the trends of economic growth.
- ✓ To investigate the trends of financial development.

1.5. Significance of the study

This research will have a major importance on showing how financial development promotes economic growth and suggesting policy implications after critical analysis of the trends of financial development and economic growth of Ethiopia. It will positively contribute to policy makers and government to make the necessary adjustment on the financial management system and mechanisms so a quality financial services will bring positive economic growth. It will also be a helpful material for other researchers that are eager to conduct their studies in this specific area as a useful reference. Moreover, It will provide a clear direction for different policy makers to evaluate the performance of Ethiopian financial institutions in terms of financial service delivery with respect to money demand and supply by indicating investment areas and close the gap by promoting financial market development which attracts capital inflow.

1.6. Scope and Limitation of the Study

The scope of this study is confined to thirty years secondary data from the National Bank of Ethiopia, World Development Indicators, International Financial Statistics, and data recorded for macroeconomic variables from Ministry of Finance Ethiopia (MOFED). It will also use quantitative approach for analysis as a tool for analyzing the data. Though the researcher is highly motivated to conduct this study, there might be problems on, shortage of time, the reliability and validity of data collected. The use and interpretation of the macro economic variables might require additional factors due to the dynamic nature of the world.

1.7. Organization of the thesis

The paper is organized as follows. Chapter two presents an extensive review of the theoretical empirical literature on financial development and economic growth. Chapter three of the paper deals with estimation techniques and data issues. The results and discussions thereof are presented in Chapter four and chapter five concludes the paper with summary of findings and some policy recommendations.

Chapter Two

2. Literature Review

The theoretical and empirical literature reviews that looked the relationship between financial sector development and economic growth did not just begin. One important question that has been asked is: will the financial sector development influence economic growth positively?

2.1. Concept and definition of variables

2.1.1. Economic Growth

The term economic growth denotes growth in the production of goods and services within a particular period, commonly assessed by using indicators such as Gross Domestic Product (GDP) or Gross National Product (GNP). It is a critical indicator of a country's economic health and can lead to higher employment rates, improved living standards, and increased investment. Economic growth is influenced by several factors, including technological advancements, increases in productivity, investment in capital, improvements in infrastructure, and government policies that promote entrepreneurship and innovation, Tamplin (2023).

The most common measure of economic growth is real GDP rate. The real economic growth rate, or real GDP growth rate, measures economic growth, as expressed by gross domestic product (GDP), from one period to another, adjusted for inflation or deflation. In other words, it reveals changes in the value of all goods and services produced by an economy the economic output of a country—while accounting for price fluctuations, Banton (2022).

2.1.2. Financial Development

Development of financial sector may be defined as the development of the size, efficiency and stability of financial markets along with increased access to the financial markets that can have multiple advantages for the economy. For instance, a well-developed financial market channelizes the savings of an economy to profitable investments (Stiglitz and Weiss, 1983; Diamond, 1984), reduce information cost thereby leading to better capital allocation (Greenwood and Jovanovic, 1990) and also reduce the cost of corporate governance (Bencivenga and Smith, 1993). Also, developed financial intermediaries boost the technological innovation through rewards to the entrepreneurs (King and Levine, 1993b). Further, according to Levine (1997), financial systems assist in trading, diversification, hedging and risk amelioration, apart

from facilitating transactions of goods and services. Also, according to Levine (1997), capital accumulation and technological innovation are the paraphernalia between financial development and growth. The allocation of credit through financial system works as a channel between financial and real sectors, which can be used to finance working capital requirements and investment in fixed capital; the former is used to raise production whereas the latter enhances productivity in the real sector, Das and Guha-Khasnobis (2008).

Many variables are used in the previous literature as indicators of financial development. However, variables representing financial development need to be organized systematically. Cihak et.all, (2012), developed several measures of four characteristics of financial institutions and markets and financial development variables were categorized as access (degree to which individuals can and do use financial institutions and markets), depth (size of financial institutions and markets), efficiency (efficiency of financial institutions and markets in providing financial services) and stability (stability of financial institutions and markets). Financial innovation was included by considering as a new internal dynamics of financial development in this analysis. In this study I attempt to measure financial development from the perspective of financial depth and efficiency.

2.2. Theoretical Literature

Chuah & Thai (2004) identified four main lines of argument in the theoretical literature on the relationship between finance and growth. The first line of argument led by Schumpeter (1934) asserted that finance has a positive impact on growth by financing innovative ideas. McKinnon, (1973) and Shaw (1973) developed a framework within which the financial sector increases growth by raising savings and investment. To achieve this, they called for liberalization of interest rates and, as the real interest rate increases, the incentive to save also increases. Gurley and Shaw (1955) highlighted the role of financial institutions in directing surplus units to deficit units to promote growth. Bencivenga & Smith (1991) developed an endogenous equilibrium model in which the role of the bank is central in financial intermediation. They argued that financial intermediation affects growth through investment, where banks mobilize and direct savings into productive investment. King and Levine (1993) complemented this argument by explaining the role of finance in growth through an endogenous growth model. They argued that financial institutions help growth by screening potential projects of entrepreneurs and, through

financial intermediation, mobilize finance to support the most productive economic activities and diversifying the risk associated with these economic activities.

The second argument is the demand-following hypothesis which states that it is economic growth rather than financial development that leads to the emergence and development of the financial sector. This view was introduced by Robinson (1952), who argued that expansion in economic activities within an economy necessitates the presence of financial institutions to provide services essential for economic growth. Hence, growth leads, and finance follows.

The third standpoint sought to combine the two arguments above and suggested the existence of a mutual relationship between finance and growth. Patrick (1966) put forward the stages of a development hypothesis where finance initially spurs economic growth, as suggested by the finance-leading or supply hypothesis. As growth is enhanced through expansion in economic activities, growth then supports finance, following the demand-leading hypothesis. This position is supported by Greenwood & Jovanovic (1990) who argued that there is an inextricable link between finance and growth. They explained that at the initial stage of development, the inter-mediation function played by finance promotes growth by encouraging a higher return on capital. At a later stage, the resultant growth supports the expansion of the financial structure. The final line of argument led by Lucas (1988) sought to suggest that the role of finance in the growth process has been overstretched and, hence, the impact of finance on growth is negligible.

A large growth accounting literature suggests that only physical capital accumulation does not account for much of long run economic growth (Jorgenson, 1995, 2005).Thus, if finance is to explain economic growth, there should be theories that describe how financial development influences resource allocation decisions in ways that foster productivity growth and not aim the analytical spotlight too narrowly on aggregate savings. To organize a review of how financial systems influence savings and investment decisions and hence growth, Lavine (2005), stated five broad functions provided by the financial system in emerging to ease information, enforcement, and transactions costs. While there are other ways to classify the functions provided by the financial system [Merton (1992), Merton and Bodie (1995, 2004)], I believe that the following five categories stated by Lavine are more helpful in organizing a review of the theoretical literature, financial systems:

✓ Produce information ex ante about possible investments and allocate capital.

- ✓ Monitor investments and exert corporate governance after providing finance.
- ✓ Facilitate the trading, diversification, and management of risk.
- ✓ Mobilize and pool savings.
- ✓ Ease the exchange of goods and services.

While all financial systems provide these financial functions, there are large differences in how well financial systems provide these functions. Financial development occurs when financial instruments, markets, and intermediaries ameliorate, though do not necessarily eliminate, the effects of information, enforcement, and transactions costs and therefore do a correspondingly better job at providing the above five financial functions.

According to Adwoa D. (2013), there are two general controversies in terms of distinguishing between economic growth and the emergence of financial arrangements that improve resource allocation and reduce risk. Specifically, higher returns ambiguously affect saving rates due to income and substitutions effects. savings rates. Levhari and Srinivasan, (1969), lower risk also ambiguously affects savings rates. Thus, financial institutions function as improvement in resource allocation and lower risk may also lower savings rates. Financial development could retard economic growth and lower welfare if the drop in savings and the externality combine to produce a sufficiently large effect. Resource allocation is improved when financial intermediaries reduce the costs of acquiring and processing information (Boyd and Prescott, 1986).Investors would face the large fixed costs associated with managers, evaluating firms and economic conditions without these intermediaries.

As sited in Adwoa, D.(2013), if groups of individuals form financial intermediaries, the cost of researching investment possibilities for others may be reduced. Financial intermediaries act like banks by accepting deposits and making loans (Boyd and Prescott 1986).Models where financial intermediaries arise to arise to produce information on firms and sell this information to savers were developed by Ramakrishnan and Thakor (1984),Bhattacharya and Pfeiderer (1985),and Allen (1990). Adwoa D.,(2013), these intermediaries do not necessarily both mobilize savings and invest those funds in firms using debt contracts in Boyd and Prescott (1986).Financial intermediaries by economizing on information acquisition costs improve the ex-ante assessment of investment opportunities with positive ramifications on resource allocation. Financial intermediaries can accelerate economic growth by improving information on firms, managers

and economic conditions. Taking the assumption that entrepreneurs solicit for capital and that capital is scarce, financial intermediaries that produce better information on firms will thereby fund more promising firms and induce a more efficient allocation of capital (Greenwood and Jovanovic, 1990).

There are large costs associated with evaluating firms, managers, and market conditions before making investment decisions. Individual savers may not have the ability to collect, process, and produce information on possible investments. Since savers will be reluctant to invest in activities about which there is little reliable information, high information costs may keep capital from flowing to its highest value use. Thus, while many models assume that capital flows toward the most profitable firms, this presupposes that investors have good information about firms, managers, and market conditions, Bagehot (1873).

Financial sectors role believed to be growth enhancing from a theoretical perspective is risk sharing and optimal allocation of capital, risk and returns. The links between cross sectional risk diversification, and growth was carefully modeled by Acemoglu and Zilibotti (1997). They assume that (i) high-return, risky projects are frequently indivisible and require a large initial investment, (ii) people dislike risk, (iii) there are lower returns, safe projects, and (iv) capital is scarce. In the absence of financial arrangements that allow agents to hold diversified portfolios, agents will avoid the high return, risky projects because they require agents to invest disproportionately in risky endeavors. If financial systems allow agents to hold a diversified portfolio of risky projects, allocation of savings toward high return ventures with positive repercussions on growth can be improved. Cross sectional risk diversification can stimulate innovation activity in terms of technological change (King and Levine (1993b).Agents are making progress in technological advances to gain a profitable market niche. Engaging in innovation is risky; however, the ability to hold a diversified portfolio of innovation projects reduces risk and promotes investment in growth enhancing innovation activities (with sufficiently risk averse agents).Thus, financial systems that minimize risk diversification can accelerate technological change and economic growth. Theories have focused on the advantageous role of intermediaries in easing inter-temporal risk smoothing (Allen and Gale, 1997).

Financial intermediaries may reduce the costs of acquiring and processing information and thereby improve resource allocation [Boyd and Prescott (1986)]. Without intermediaries, each investor would face the large fixed cost associated with evaluating firms, managers, and economic conditions. Consequently, groups of individuals may form financial intermediaries that undertake the costly process of researching investment possibilities for others. In Boyd and Prescott (1986), financial intermediaries look like banks in that they accept deposits and make loans.

Allen (1990), Bhattacharya and Pfleiderer (1985), and Ramakrishnan and Thakor (1984) also develop models where financial intermediaries arise to produce information on firms and sell this information to savers. Unlike in Boyd and Prescott (1986), however, the intermediary does not necessarily both mobilize savings and invest those funds in firms using debt contracts. For our purposes, the critical issue is that financial intermediaries – by economizing on information acquisition costs improve the ex-ante assessment of investment opportunities with positive ramifications on resource allocation.

By improving information on firms, managers, and economic conditions, financial intermediaries can accelerate economic growth. Assuming that many entrepreneurs solicit capital and that capital is scarce, financial intermediaries that produce better information on firms will thereby fund more promising firms and induce a more efficient allocation of capital, Greenwood and Jovanovic (1990).

Stock markets may also stimulate the production of information about firms. As markets become larger and more liquid, agents may have greater incentives to expend resources in researching firms because it is easier to profit from this information by trading in big and liquid markets [Grossman and Stiglitz (1980)] and more liquid Kyle (1984) and Holmstrom and Tirole (1993)]. Intuitively, with larger and more liquid markets, it is easier for an agent who has acquired information to disguise this private information and make money by trading in the market. Thus, larger more liquid markets will boost incentives to produce this valuable information with positive implications for capital allocation [Merton (1987)]. Morck, Yeung and Yu (2000) provide tests of the information content of stock markets. While some models hint at the links between efficient markets, information, and steady-state growth [Aghion and Howitt (1998)],

existing theories do not draw the connection between market liquidity, information production, and economic growth very tightly.

Finally, capital market imperfections can also influence growth by impeding investment in human capital [Galor and Zeira (1993)]. In the presence of indivisibilities in human capital investment and imperfect capital markets, the initial distribution of wealth will influence who can gains the resources to undertake human capital augmenting investments. This implies a suboptimal allocation of resources with potential implications on aggregate output both in the short and the long run.

Furthermore, economists have had very different views on finance-growth theories. For instance, Lucas (1988) believes that the relevance of financial matters is very badly over emphasized even in popular and much more professional discussions. Miller (1998) however argues that, financial market's contribution to economic growth is a proposition almost too obvious for serious discussion. In the midst of such disagreements, the literature on finance and growth continues to expand with new theoretical models and advanced empirical methods. And one such model is the one in the work of Akinlo and Egbetunde (2010). They identified three possible relationships concerning finance and economic growth. They include, the growth driven finance, the finance led growth and the two way causal relationship that is known as feedback hypotheses.

The finance led growth hypothesis suggests that financial sector development plays an important role in economic growth, by suggesting some means. These include, Ghali, (1999), efficient allocation of capital, pooling of savings through attractive instruments, reduction of the cost of information gathering and presenting among others. In essence, an efficient financial sector is able to pool the limited credit resources from the surplus units to the deficits. By this process the financial sector promotes efficient allocation of resources Akinlo and Egbetunde (2010); Levine (1997);Ghali, (1999) are among the researchers whose work support this hypothesis.

A contrast to the finance-led growth hypothesis is the Growth driven finance hypothesis. This hypothesis is supported by scholars such as Kuznets (1955) and Robinson (1952) .They argued that increase in growth generally leads improvement in financial sector development. The hypothesis argues that the high economic growth increases demand for some categories of financial assets and arrangement and that financial market effectively react to these demands and change.

The feedback scenario suggests a two way causal relationship between finance and growth (Akinlo and Egbetunde 2010). Lewis (1955) a 'pioneer' of development economics put forward that, "a two way relationship exists between financial sector development and economic growth". This means that financial market develops as a result of economic growth, which in turn feeds back as a stimulant to real economic growth.

2.3. Empirical Review

The empirical literature on the finance–growth relationship has been examined at the country and cross-country, levels. Evidence from earlier studies established a linear and positive relationship between financial development and growth, Benczur, Karagiannis, & Kvedaras (2019). Goldsmith (1959) made a pioneering contribution to the empirical examination of the finance–growth nexus. Using a sample of 35 countries, he found a positive correlation between finance and growth. Recent studies also reinforce the positive impact of finance on growth (for example, Tursoy & Faisal (2018); Lenka & Sharma, (2020); Shravani & Sharma (2020); Zeqiraj, Hammoudeh, & O. Iskenderoglu (2020). There are, however, a few studies that have established either a negative or no relationship between finance and growth. For instance, Narayan (2013) in a study of 65 countries across different regions in the world found bank credit to have a negative effect on growth while the stock market did not have any significant impact on growth. Further, Ayadi, Arbak, Ben-naceur, & Groen (2013) focused on 11 Mediterranean countries over the period 1985–2009. These authors found the banking sector to be negatively related to economic growth. They, however, attributed the negative impact to the weak regulatory system.

Other studies reported the impact of finance on growth to vary depending on the structure of the financial system that is whether the financial system was a bank or market dominated. One of the earliest studies in this respect was made by Atje & Jovanovic (1993) who found the stock market rather than the banking sector to have a positive impact on growth. However, their sample contained both developed and developing countries. A line of studies has subsequently been done to confirm whether a market-based or bank-based financial system promotes growth (for example, Boadi et al., 2019; Ibrahim et al., 2017; Lee, 2012; Mahmood & Rehman, 2019). The evidence provided by Lee (2012) demonstrated that, though he found the stock market to drive growth in countries that are market-based and the banking sector to drive growth in bank-based countries, the banking sector affects growth positively at the early stages of development, while

the stock market takes over as the economy advances. The study by Ibrahim et al. (2017) pointed to a significant positive effect of both banks and the stock market in driving growth. Their samples were however a mixture of both developed and developing countries.

In a related study of 17 European countries over the period 1970–2013, Mahmood and Rehman (2019) reported both bank and market indicators to positively affect growth, but the impact of bank development was more persistent relative to the stock market. In another study, Boadi et al. (2019), using a sample of 60 countries, found support for the hypothesis that a market-based financial system drives growth relative to the banking sector. Yet, some found the impact of financial devel-opment on growth to vary based on income levels (see, for instance, Bist & Read, 2018; Deidda & Fattouh, 2002; Kim et al., 2012; Nguyen et al., 2019; Rahman et al., 2020; Sehgal et al., 2012). Sehgal et al. (2012) disaggregated their samples into lower-, middle- and upper-income countries. They found the banking sector to drive growth across the three income groups, while the stock market only drives growth in the middle- and upper-income countries. Similarly, Nguyen et al. (2019) identified the insurance sector to positively affect growth across income groups with the stock market only having a positive effect in middle- and upper-income countries. They however established the effect of the banking sector on growth to be negative across income groups, where they suggested that credit extended could have been utilised on consumption instead of growth-enhancing projects.

Further, some studies moved beyond the relationship to examine the possibility of a causal relation-ship between finance and growth, following Patrick's (1966) demand-following and supply-leading hypothesis, but the results were mixed. In earlier studies, Calderón and Liu (2003) found finance rather to cause growth, while Ang and Mckibbin (2007) established causality running from growth to finance. Hsueh et al. (2013) noted that the direction of causality was sensitive to the choice of financial development variable, and while they found domestic credit to robustly lead growth, growth rather led when money supply measures were used in some cases. Pradhan et al. (2017), using different indicators, pointed to a mixed causal relationship. They established a uni-directional causality running from growth to finance when a banking indicator was used, while a bi-directional causality was established in the case of stock market, bond, and insurance market indicators. Deb et al. (2019) disaggregated their samples into developed and emerging economies using quarterly data over the period 1993–2014. Their

results showed that in developed economies, finance drives growth in line with the supply-leading hypothesis, while the demand-following hypothesis rather exists in the case of emerging economies. Dash et al. (2020), using both insurance and bank development indicators, provided evidence of long-run causality between financial development and growth. In the short run, they found a bi-directional relationship between insurance and growth and then again in banking and growth. They argued that a developed insurance industry helps in overcoming economic shocks while expansion in the economy leads to increase in income levels and, hence, an increase in demand for insurance.

The new paradigm in literature, however, suggests that the relationship between finance and growth could be non-linear. In an influential paper, Cecchetti and Kharroubi (2012) established that finance has a positive impact on growth only up to a point, beyond which the impact of finance on growth becomes negative. This is known as the "too much finance" hypothesis. These authors asserted that the financial sector does not exist in isolation but rather competes with other sectors of the economy for scarce resources. Thus, as financial development increases, it begins to deprive the other sectors of the needed resources, and thus the negative effect. Subsequently, several related studies have been done in this direction, but with different approaches in estimating the threshold levels. While Soedarmono et al. (2017) used the square of financial development variable as a measure of a threshold, Tariq et al. (2020) employed the static Hansen's threshold model in their study on Pakistan. However, the findings of both studies were mixed, whereas Soedarmono et al. (2017) showed that the effect of finance is positive but turns negative after attaining a certain threshold. Contrary to the too much finance hypothesis, Tariq et al. (2020) found the impact of finance to be initially negative but that it only becomes positive after attaining a certain threshold. Swamy and Dharani (2019) employed both the square term and Hansen's threshold model in a sample of 24 developed countries for the period 1983–2013. They showed that above a threshold of 124%, the impact of finance on growth is negative. Law and Singh (2014) and Samargandi et al. (2015) used the Kremer et al. (2013) dynamic threshold model, which is an extension of Hansen's static model. The findings of both studies supported the too much finance hypothesis. In a meta- analysis study by Bijlsma et al. (2018) covering 68 empirical studies, they concluded that the impact of finance on growth is positive but decreases over time in line with the too much finance hypothesis.

Other studies have also looked at the impact of financial development at a sectoral level. Most of the studies were however conducted at country level and only examined a single sector. For instance, Shahbaz et al. (2013) and Oliynyk-Dunn (2017) found the impact of financial development on the agricultural sector to be positive in Pakistan and Ukraine. The study by Topcu and Çoban (2017) examined the causal relationship between finance and the industrial sector in Turkey and their findings support the supply-leading hypothesis. A recent study by Daway-Ducanes and Gochoco- Bautista (2019) addressed the role of finance in the growth of the service and manufacturing sectors using a sample of 77 developing countries. They established a non-linear relationship in both sectors, with the impact of finance becoming positive only after attaining a certain threshold. They argued that because of the initial large and lumpy investment needed in these sectors, the level of financial development would have to rise to a certain point before positive results could be realized.

Empirical Studies in Ethiopia

A lot of studies regarding the issue of the impact of financial sector development on economic growth in Ethiopia. According to a study made by Nyasha, Gwenhure, & Odhiambo (2016), the financial sector of the Ethiopian economy is highly dominated by commercial banks. And another study made on the topic of finance growth nexus by Tesema, 2016 has concluded that financial development has a positive and economically significant impact on economic growth.

2.4. Conceptual framework of the study

The main objective of the research is to investigate the impact of financial sector development on economic growth in Ethiopia. Based on the objective of the study, the following conceptual model is framed. As previously discussed in the related literature review parts; economic growth is affected by financial sector development. Financial sector development indicators are broad money, domestic credit to private sector and bank deposits. The conceptual framework indicates that Real GDP rate is dependent variable and financial indicators are independent variables. In addition to the financial development indicators intervening factors as measured by private investment, government expenditure and inflation rate also have impact on economic growth.

Empirical analysis suggested that the effect of money supply on economic growth is positive. This is based on previous studies made on the topic by Ntezimana & Mulyungi (2020), (Abdulgafar & Olarinde, 2017), Aslam et al (2011) and Babatunde et al (2011) have come to a

conclusion that the coefficient of broad money supply as percentage of GDP has a positive effect on Economic growth. The coefficient of Domestic credit to private sector has negative effect on growth supported by different empirical studies made by Jammeh I. Y (2022), moo, G., Eboreime, M. I., Adamu, Y., & Belonwu, M. C. (2017, Begum, H. M., & Aziz, S. I. (2019). The coefficient of Bank Deposit has positive and significant impact on economic growth as per review made on different empirical literatures. Ribaj & Mexhuani (2021), Agu, C. (1984), Anoruo, E., & Ahmad, Y. (2001) has concluded in their studies that bank deposit has positive impact on economic growth.

Private investment has positive and significant impact on economic growth according to most literatures. A research paper made by Moliso (2022), has indicated the impact of private investment on economic growth of Ethiopia is positive and significant. Government expenditure has positive and significant impact on economic growth. Empirical literatures on the topic have indicated that there exists positive relation between government expenditure and economic growth Poku & Opoku (2022) and Al-Fawwaz, T. M. (2016). The other control variable is inflation rate which is also positively related with economic growth. This is also confirmed by reviewing different empirical literatures like Mallik & Chowdhury (2001), Barro, R., 1996, Bruno, M., 1995 and Tun Wai, U., 1959. The following conceptual model is framed to summarize the main focus of the study is developed by the researcher.

Proxies of financial development
- Broad money as percentage of GDP
- Domestic Credit to private sector
- Bank deposit to GDP ratio

Economic growth
Real GDP rate

Intervening factors
Private investment
Government expenditure
Inflation
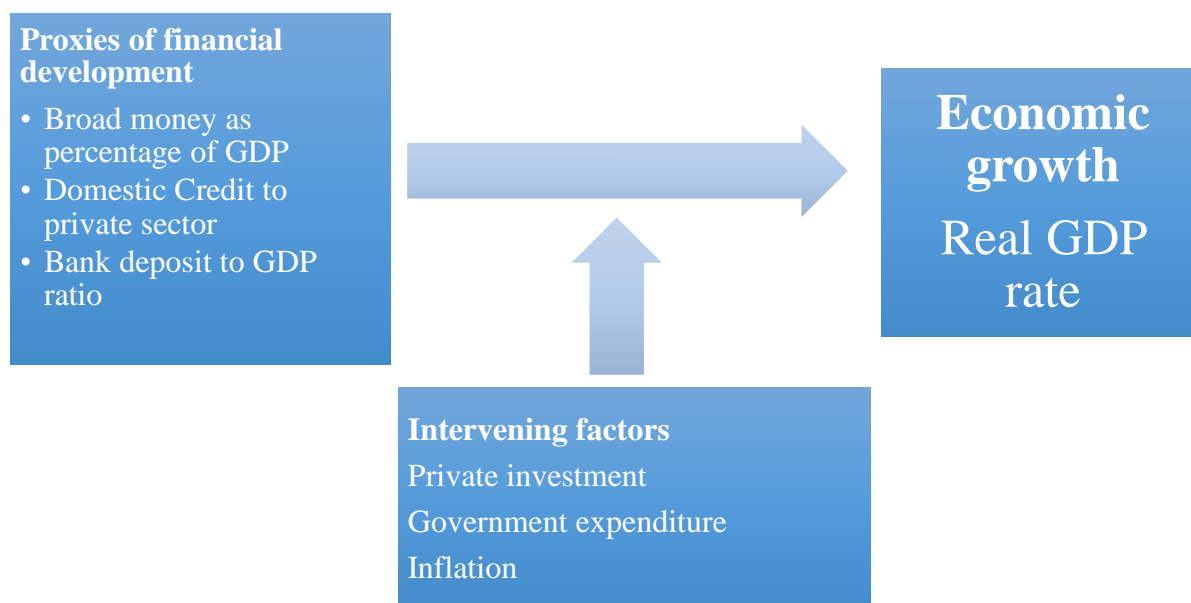
Figure 1 Conceptual framework that shows the relationship between explanatory variables(proxies of financial sector development) and dependent variable(measure of economic growth)

Chapter Three

3. Research Methodology

After discussing the literature review part of the study this paper tries to examine the relationship between economic growth and financial development using time series data covering 30 years.

3.1. Research design and approach

The goal of the study is to investigate the impact of financial sector development on economic growth in Ethiopia. The characters of the study examined derived hypothesis and specify the relationship among variables (in terms of direction and magnitude). The study is an explanatory research that used quantitative research approach, as it is the best approach to test hypotheses and to identify factors that influence the outcome Creswell (2013). Quantitative approach specifies how and why the variables are interrelated and why independent variable, influence or affect a dependent variable which is economic growth. So the quantitative approach better provides and explain cause and effect relation among variables. In time series analysis, it is important to understand the behavior of variables, their interactions and integrations over time.

3.2. Data types and sources

The study will use secondary data from the World Bank, IMF and National Bank of Ethiopia. Time series variables will be retained for the study that will cover a period 1999-2022 (23 years).

3.3. Model

The empirical link between economic growth and financial development to be estimated in this paper is adapted from a simple model developed by Jose De Gregorio (1995). In the model the financial development variable is included in an endogenous growth model. The model shows how indicators of financial development through economic relations turn to have an impact on economic growth. The equation below shows the functional and econometric relationship between the variables of the study.

Economic growth=f(financial development, macro−economic environment) $\qquad$ (1)

Economic growth (GDP) = α+ β_1 Domestic credit to private sector $_t$
$\qquad$ +β_2 Bank deposits $_t$ + β_3M2 $_t$
$\qquad$ +β_4 Inflation + β_5 Private Sector Credit to total credit $_t$

$$+ \beta_6 \text{ Total Domestic Credit Private investment }_t$$
$$+\beta_7 \text{ government expenditure }_t + \beta_8 \text{ Private investment} + \varepsilon_t \qquad (2)$$

Where α = constant, εt = error term, while $\beta 1$, $\beta 2$, $\beta 4$, $\beta 5$, are coefficients.

3.4. Definition of variables, measurements and hypothesis

Independent variables

Indicators of financial development

Financial development is captured through two feature of the financial system of Ethiopia; financial depth and financial efficiency. This paper measures financial depth from two perspectives; Broad money which captures broad money and demand while financial system deposits captures savings and time deposits, which are both expressed as a percentage of GDP. Economic and financial sector indicators will be used, broad money (M2/GDP) and financial system deposits (Deposits). The efficiency of a financial system is the ability of the system to perform its principal role of transforming deposits to credits, Asongu (2012). Domestic credit to private sector is used in this paper as an indicator of financial efficiency.

Domestic Credit to private sector (% GDP)

Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits).

The coefficient of Domestic credit to private sector has negative effect on growth supported by different empirical studies made by Jammeh I. Y (2022), moo, G., Eboreime, M. I., Adamu, Y., & Belonwu, M. C. (2017, Begum, H. M., & Aziz, S. I. (2019).

Broad Money (% GDP)

Broad money is a category for measuring the amount of money circulating in an economy. It is defined as the most inclusive method of calculating a given country's money supply, and

includes narrow money along with other assets that can be easily converted into cash to buy goods and services, Liberto (2020).

Empirical analysis suggested that the effect of money supply on economic growth is positive. This is based on previous studies made on the topic by Ntezimana & Mulyungi (2020), (Abdulgafar & Olarinde, 2017), Aslam et al (2011) and Babatunde et al (2011) have come to a conclusion that the coefficient of broad money supply as percentage of GDP has a positive effect on Economic growth.

Bank deposit (%GDP)

Bank deposits consist of money placed into banking institutions for safekeeping. These deposits are made to deposit accounts such as savings accounts, checking accounts, and money market accounts at financial institutions. The account holder has the right to withdraw deposited funds, as set forth in the terms and conditions governing the account agreement.

The coefficient of Bank Deposit has positive and significant impact on economic growth as per review made on different empirical literatures. Ribaj & Mexhuani (2021), Agu, C. (1984), Anoruo, E., & Ahmad, Y. (2001) has concluded in their studies that bank deposit has positive impact on economic growth.

Control variables

Government expenditure

Government expenditure is the aggregate expenditure by local, state, and national governments on goods and services, including salaries of public employees, public infrastructure investments, welfare programs, and national defense. This control variable captures the effect of government expenditure. The choice of variable is inspired by the fundamental role of public expenditure in spurring economic activities and development.

Government expenditure has positive and significant impact on economic growth. Empirical literatures on the topic have indicated that there exists positive relation between government expenditure and economic growth Poku & Opoku (2022) and Al-Fawwaz, T. M. (2016).

Private investment

Private   investment   is   money invested by companies, financial organizations,   or   other investors, rather than by a government. This variable captures gross formation of fixed capital,

and permits us to see how investment increases output which subsequently leads to economic growth.

Private investment has positive and significant impact on economic growth according to most literatures. A research paper made by Moliso (2022), has indicated the impact of private investment on economic growth of Ethiopia is positive and significant.

Inflation rate

Inflation is a rise in prices, which can be translated as the decline of purchasing power over time. The rate at which purchasing power drops can be reflected in the average price increase of a basket of selected goods and services over some period of time. The annual rate of inflation is the price of the total basket in a given month compared with its price in the same month one year previously, Fernando (2023).

The other control variable is inflation rate which is also positively related with economic growth. This is also confirmed by reviewing different empirical literatures like Mallik & Chowdhury (2001), Barro, R., 1996, Bruno, M., 1995 and Tun Wai, U., 1959.

Dependent variable

Real GDP growth rate

The real GDP growth rate is a more useful measure than the nominal GDP growth rate because it considers the effect of inflation on economic data. This variable captures the rate at which the economy grows from 1 year to another; it captures value added from year to year, Gordon (2023).

3.5. Model and estimation procedures

This research makes use of a technique suggested by (Pesaran, Shink, & Smith, 2001) known as Autoregressive Distributive Lag Model (ARDL), which is based on the general to specific modeling technique. In order words, this research utilizes the newly proposed autoregressive distributive lag (ARDL) approach which was developed and introduced by Pesaran and Shin (1995 and 1998), Pesaran et al. (1996), Pesaran (1997) and Pesaran et al. (2001), and later revised by Nayaran (2005) for the case of small sample size data(30-80 observations).

The Autoregressive Distributive Lag (ARDL) model is used as a method of estimation in this paper. This model is useful over other techniques of co-integration because it permits the use of

variables that become stationary without differencing (I(0) and variables that become stationary after first differentiation I(1), it does not accept variables that become stationary after second differentiation (I(2)). Also, this technique can be applied irrespective of whether the variable is I(0), I(1) or fractionally co-integrated (Pesaran 1997). Rather than having a multiple equation to estimate as in the case of the Vector Autoregressive (VAR) model, it involves just a single-equation set-up, which makes it simple to implement and interpret. Also different variables can be assigned different lag-lengths as the model is entered. The ADRL technique is free of residual correlation since variables stand as a single equation; it is easy to derive the error correction model from simple linear transformation by integrating short run adjustments with long run equilibrium without loss of information. In addition, this model as well takes sufficient number of lags to capture the data generating process in a dynamic framework of general-to-specific modeling framework. Furthermore, the error correction term (ECT) which integrates short-run adjustments with long-run equilibrium without losing long-run information, can be derived from ARDL through a simple linear transformation.

The long-run and causal relationship between financial development and economic growth in Ethiopia using the Narayan (2005) test will be performed in several steps. First, the order of integration of variables will be verified using the test of unit roots through the Augmented Dickey Fuller test (ADF) and Phillip-Perron test. A great advantage of Philips-Perron (PP) test is that it is non-parametric; that is, it does not require the selection of the level of serial correlation as in the case of ADF. Due to the complicated and dynamic structure of financial time series data, ADF and Phillip Perrons tests are best suited for test of unit roots. It instead takes the same estimation scheme as in Dickey Fuller (DF) test, but corrects the statistic to conduct for autocorrelations and heteroscedasticity. The Augmented Dickey -Fuller (ADF) test is assumed superior due to its popularity and wide application. The ADF test adjusts the DF test to take care of possible autocorrelation in the error terms by adding the lagged difference term of the dependent variable. As for the PP test, it as well takes care of the autocorrelation in the error term and its asymptotic distribution is the same as that of the ADF test statistic. However, ADF is commonly used because of its easy applicability. Then, the number of lags will further be verified using the Akaike information criteria and Schwarz information criteria. Secondly, the model will be estimated using Ordinary Least Square (OLS) technique and test for long-run

causality between financial development and economic growth using the Narayan test. The Narayan test is preferred to that constructed by Peseran et al. (2001) because this test is best adapted for small sample sizes (30 to 80 observations) while Peseran et al. (2001) is adapted for large sample sizes (500 to 1000 observations). The third step entails the estimation of the long-run variables, and then residuals are converted and inserted as an error correction term in the model. The model is estimated with the error correction term in order to capture its long-run speed of adjustment. Also, the Wald Test is used to verify the short-run effect of financial development on economic growth.

The presence of an error-correction term among a number of co-integrated variables shows that changes in the dependent variable is a function of both the level of disequilibrium in the co-integration relationship (represented by the ECM) and the changes in other explanatory variables. This therefore implies that any deviation from the long-run equilibrium will feed back into the changes in the dependent variable, thereby forcing the movement towards the long-run equilibrium (Masih, 2002). However, this research explores the issues surrounding co-integration analysis and the Error Correction model within the Distributed Lag model framework that is, the Autoregressive Distributed Lag Approach to co-integration.

Recall that the basic form of an ARDL model is:

yt = β0+β1yt-1+……⋯+βkyt-p+α0xt+α1xt-1+α2xt-2+……⋯+αqxt-q+εt   (3)

Where εt is the random disturbance term which is serially independent and assumed to be well behaved or constant.

An Autoregressive Distributive Lag model is considered as an ARDL (p q) model whose reduced form is presented as:

$$Y_t = \mu \sum_{i=0}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{q} \beta_i \Delta X_{t-i} + \in t$$ (4)

Where, Y_t is the dependent variable with its lags as independent variables. X_t is the lagged independent variables and $\in t$ being the white noise.

Generally, using the lag operator L applied to each component of a vector.

$L^k X_t = X_{t-k}$, it is easy to defined the lag polynomial A(L) and the polynomial vector B(L).

The ARDL (p, q) is

$A(L)Y_t = \mu + B(X_t) + \mu$

$A(L) = 1 - \alpha_1 L - \alpha_2 L^2 \ldots \ldots - \alpha_p L^p$

$B(L) = 1 - B_1 L - B_2 L^2 \ldots \ldots - B_p L^p$ $\qquad$ (5)

$A(L)Y_t = \mu + B_1(L)X_{it} + B_2(L)X_{2t} + \ldots B_k(L)X_{kt} + \mu_t$ $\qquad$ (6)

A detail specification of the model with respect to the variables of this study is presented below.

Δ economic growth $_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta$ economic growth $_{t-i}$
$\qquad + \sum_{i=0}^{q} \beta_i \Delta$ financial development $_{t-i}$
$\qquad + \sum_{i=0}^{q} \partial_i \Delta$ other factors $_{t-i} + \mu_1$ economic growth $_{t-1}$
$\qquad + \mu_2$ financial development $_{t-1} + \mu_1$ other factors $_{t-1} + \epsilon_t$ $\qquad$ (7)

Where Δ refers to the first difference operator and ϵ t being the error term.

After the estimation of the above model, the long-run causality test is carried out by comparing the results from the F-statistics of the Wald test. Implying the null hypothesis of the test will be:

$\mu 1 = \mu 2 = 0$ (no long-run relationship).

Against the alternative hypothesis.

$\mu 1 \neq \mu 2 \neq 0$ (a long-run relationship exists thus co-integration).

The F-statistics of this test is then compared with that of the Narayan critical values at 5% level of significance with unrestricted and no trend series. The long run variables are regressed and the error term inserted as an explanatory variable, this gives the error correction model (ECM)as seen below:

Δ economic growth $t = Y + \sum_{i=1}^{p} \emptyset i \Delta$ economic growth t-i

$\qquad + \sum_{i=0}^{q} \beta i \Delta$ financial development-i

$\qquad + \sum_{i=0}^{p} \partial i \Delta$ other factors t-i αectt-1

Where ect is the Error correction term.

The Wald test used is meant to verify if there exist short-run causality from financial development to economic growth.

The two sets of critical values reported in Pesaran et al. (2001) provides critical value bounds for all classifications of the repressors into purely I(1), purely I(0) or mutually co-integrated. If the calculated F-statistics lies above the upper level of the band, the null hypothesis is rejected indicating the presence of co-integration. On the other hand, if the calculated F-statistics is below the upper critical value, we cannot reject the null hypothesis of no co-integration. However, if the critical value lies between the bounds, a conclusive inference cannot be made without knowing the order of integration of the underlying regressors. Recently, Narayan (2005) argues that existing critical values which are based on large sample sizes cannot be used for small sample sizes. Hence, Narayan (2005) regenerated the set of critical values for the limited data ranging from 30 to 80 observations by using the Pesaran et al. (2001)'s GAUSS code. With a limited annual time series data on Ethiopia financial development and economic growth, this study employs the critical values of Narayan (2005) for the bounds F-test rather than Pesaran et al. (2001).
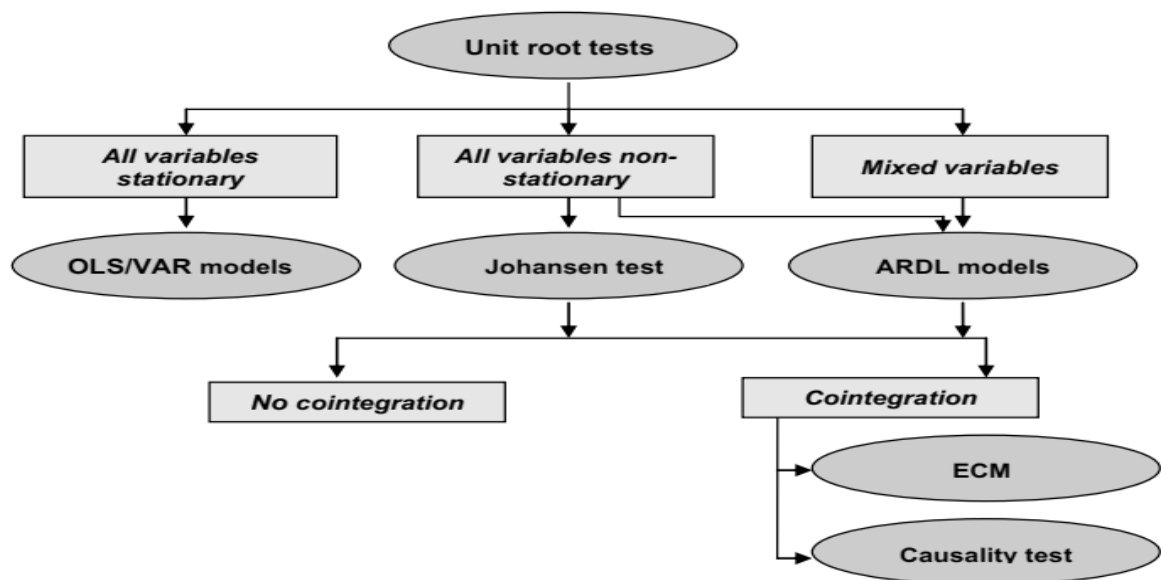
Figure 2 Model Selection Criteria

Chapter Four

4. RESULT AND DISCUSSIONS

4.1.   Trends of financial sector development in Ethiopia

Trend analysis is used in this study to explain the patterns and trends in a data over time. The trend could be downward or upward shifting over a given period of time. The advantage of a trend analysis is it will predict what might happen to the variable in the future. This section discusses the macro-economic situation of the Ethiopian economy for the period of 1991 to 2021 related to the major variables included in the study.

Economic growth rate of Ethiopia

As mentioned by Chris Michelson (2006) The Ethiopian economic growth rate is likely to remain high despite large fluctuation in agricultural production. Ethiopia followed highly aggressive expansionary macroeconomic policy initiating extended fixed investment, much beyond a narrow public expenditure boom in 2003. According to the official data Ethiopia's development performance over the past decade has been one of the most successful among low-income countries. The country achieved a significant and high economic growth over the past decade especially from 2003-2005 and 2012-2015 has registered a notable and sustained growth rate in the graph shown below. Alemayehu and Degefa (2005) stated as the Ethiopian GDP has decreased because of political disputes as cited by Tirsit (2011).

The Ethiopian economy continued to grow and registered 6.4 percent growth in 2021/22 compared to the 6.3 percent last year withstanding the domestic and external challenges. This Real GDP growth was 3.8 percentage point lower than the average base case scenario set for the Ten Year Development Plan but significantly higher than the 3.8 percent average growth estimated for Sub - Saharan Africa (World Economic Outlook update, October 2022).

Ethiopia's economy decelerated to 5.6% growth in 2021 from 6.1% in 2020, due to civil conflict and the effects of COVID-19 on transport and hospitality. On the real sector front, Ethiopia's GDP growth rate followed a volatile fluctuating trend between 1991 and 2003 before the fluctuations stabilized (United Nations Conference on Trade and Development [UNCTAD],

2016). According to UNCTAD (2016), the lowest growth rate of -11% was recorded in 1991, while the highest of 14% was in 2003. Thereafter, the trend has remained positive to date.

Real GDP growth rate in Ethiopia(in %)
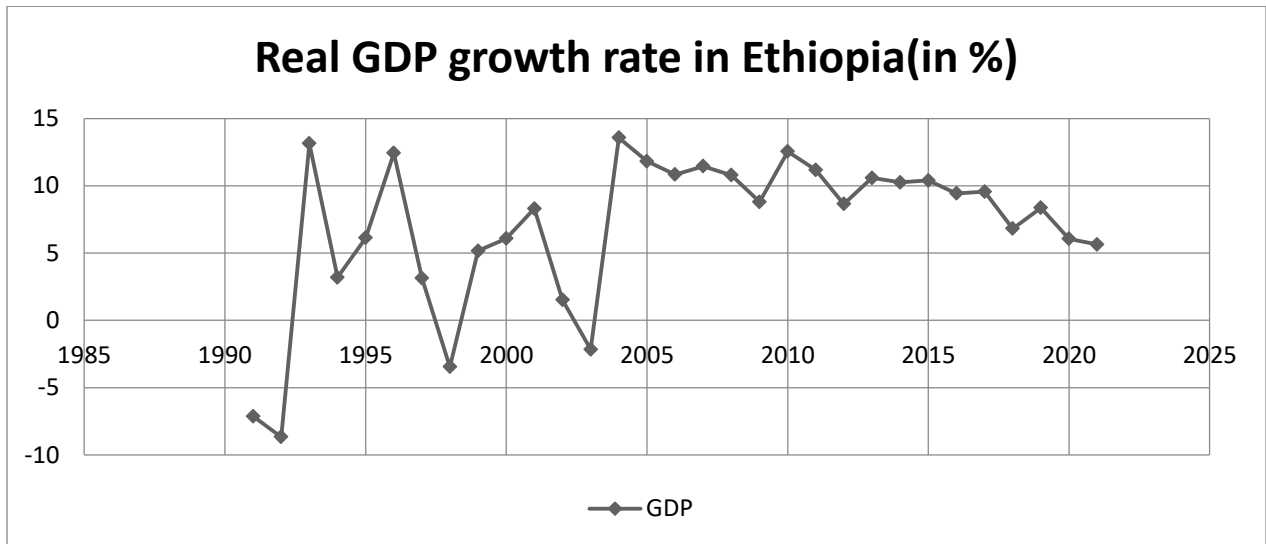
Figure 3 Ethiopian Real GDP growth from 1991-2021

Bank deposit

Bank deposit has shown improvement over the four years as it increases by 5% on average. In 2021 Bank deposit to GDP ratio accounted for 31% which was a big improvement as we compare it to the past fiscal years before.

Trend in Bank Deposit and GDP Growth rate
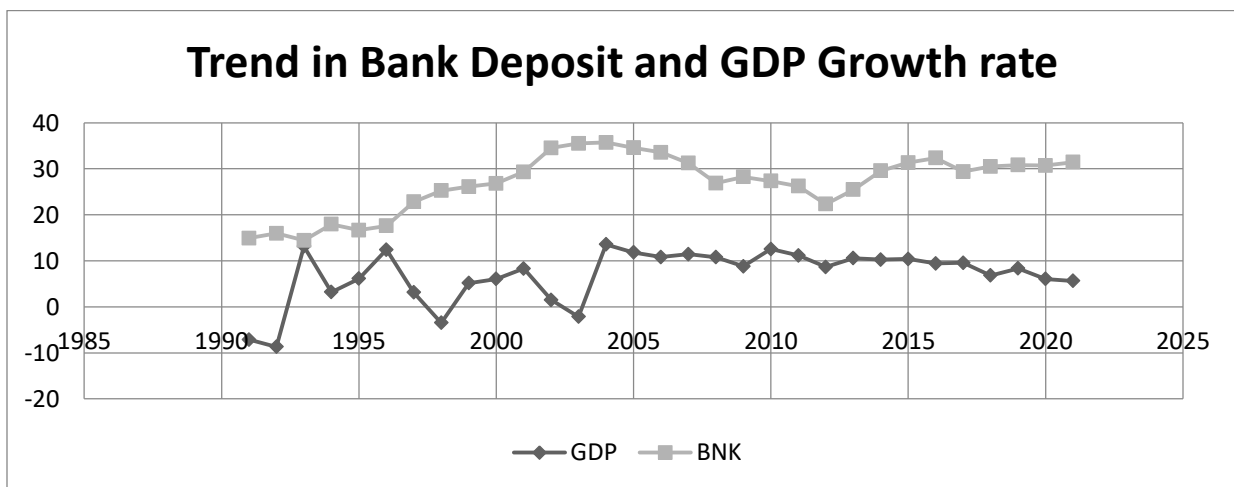
Figure 4 Bank deposit trend in Ethiopia

From the above figure it is easily understood that though bank deposit faces fluctuations at some point in time recently it has shown much improvement compared with real GDP growth.

Domestic Credit to Private sector

If we look at the trend in domestic credit to private sector credit as percentage of GDP it is recently facing decline from the year 2018 up to 2021 by 9% on average. However it was increasing from time if we take into consideration the years between 2009-2017.
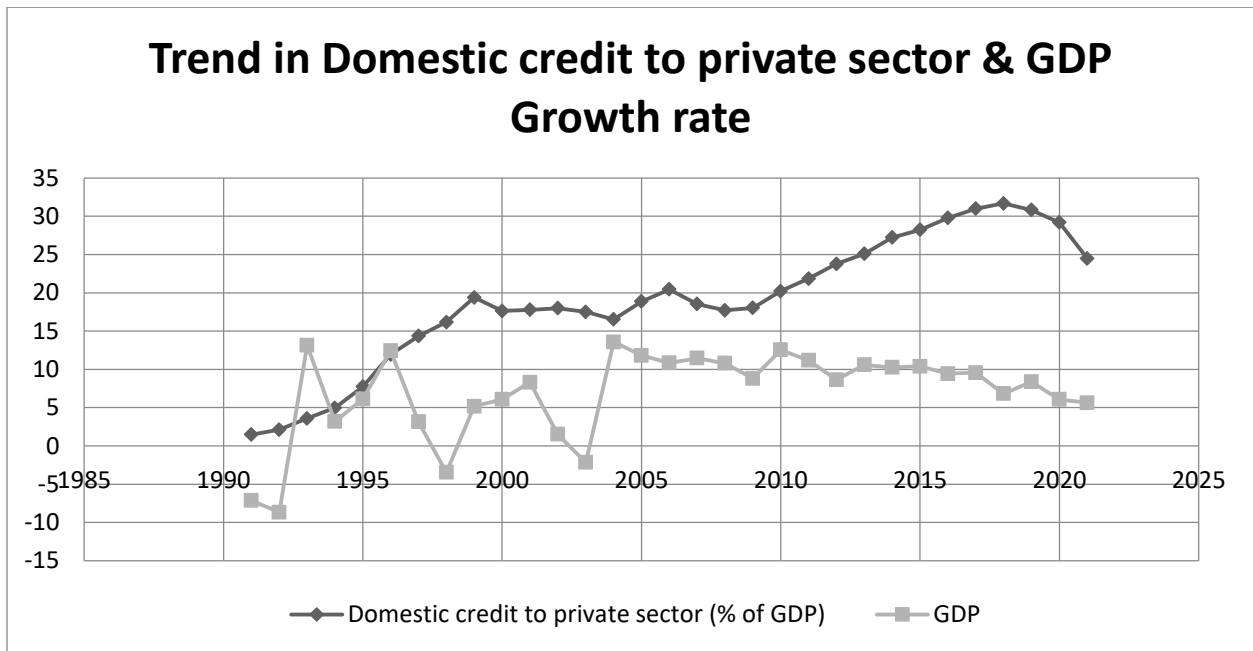
Figure 5 Domestic Credit to Private Sector (% GDP)

From the above figure it can be observed that in 2018, domestic credit to private sector for Ethiopia was 31%. Between 2019 and 2021, domestic credit to private sector in Ethiopia was decreasing on average by 9% each year, although before that, it grew from 1.5 % in 1991 to 20.4 % in 2006.

Money supply

Financial development in Ethiopia over the years, as measured by M2/GDP, followed an upward trend from 1980 to 2006, with fluctuations between 1992 and 1997 (NBE, 2016b). In 1992, M2/GDP was 33%. It moderated to 28% in 1993, before increasing to 32% in 1994 (NBE, 2016b). The M2/GDP ratio went down from 40.0% in 2002 to 25.6% in 2011, reflecting a

contraction in financial deepening in the country (NBE, 2016b). The M2/GDP ratio peaked at about 45% in 2004; but following a tight monetary policy stance by the government of Ethiopia over the preceding years to combat inflation, there was a declining trend in the M2/GDP ratio from 2005 to 2009 (NBE, 2016b). Since 2007, the NBE has been using different monetary policy instruments such as reserve requirement, liquidity requirement and credit capital on banks to reduce the banks' credit capacity (NBE, 2015). This has subsequently led to a reduction in the growth of the broad money supply relative to GDP (Zwedu, 2014).
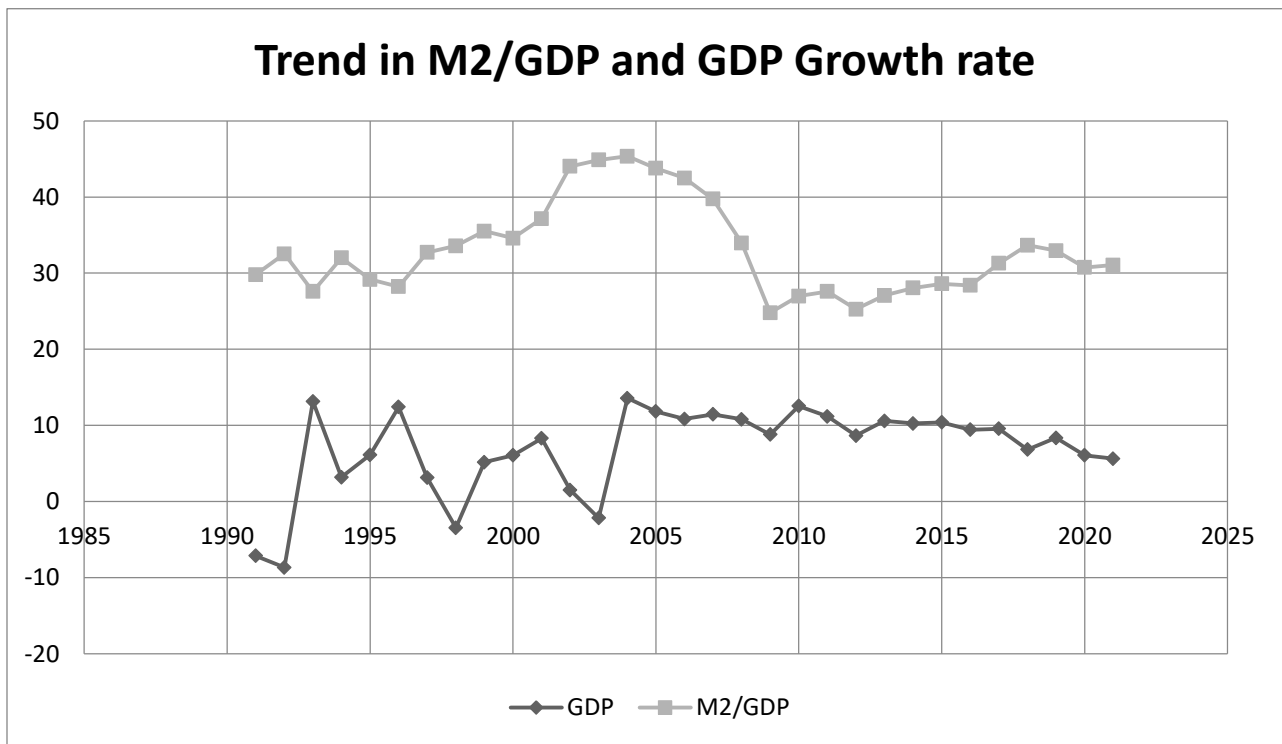
Figure 6 Broad money in Ethiopia (% of GDP)

The figure above tell that the ratio of broad money supply (M2) to GDP, an indicator of financial deepening, reached 0.29, a slight decline from 0.33 last year same period, reflecting a slight weakening of financial liquidity and depth.

Private investment

Investment has major and an important role for the country's economic growth. Private investment is one of the component of total investment. The amount of private investment in terms of capital composed of domestic and foreign investment. In Ethiopia in 1992/93-2010/11 the total amount of private investment in terms of capital has reached about birr 806.3 billion out

of these birr 424.1 billion attributed to domestic investors and 382.2 goes to foreign investors (NBE,2010/11 annual report; Ethiopian investment agency). During 2016/17, the total amount of investment in terms of capital reached about birr 8.9 billion out of these 99.8 percent were private owned. However, the annual growth rate of private investment is lowered by 41.9%.

Inflation in Ethiopia

Inflation increased to 26.7% in 2021 from 20.4% in 2020, much above the central bank's 8% target, because of domestic credit expansion to revive the economy and COVID-19-induced supply chain disruptions.

Inflation persisted to the extent that real interest rates fell within negative territory. The official inflation records were 2.5% up to 2004 and 15.1% thereafter. While it was envisaged for 11.1% economic growth, the performance achieved was 10.9%.

The inflation rate for consumer prices in Ethiopia moved over the past 55 years between -9.8% and 44.4%. For 2021, an inflation rate of 26.8% was calculated. During the observation period from 1991 to 2021, the **average inflation rate was 9.4%** per year. Overall, the price increase was 11,027.98%. An item that cost 100 Birr in 1991 costs 11,127.98 birrs at the beginning of 2022.
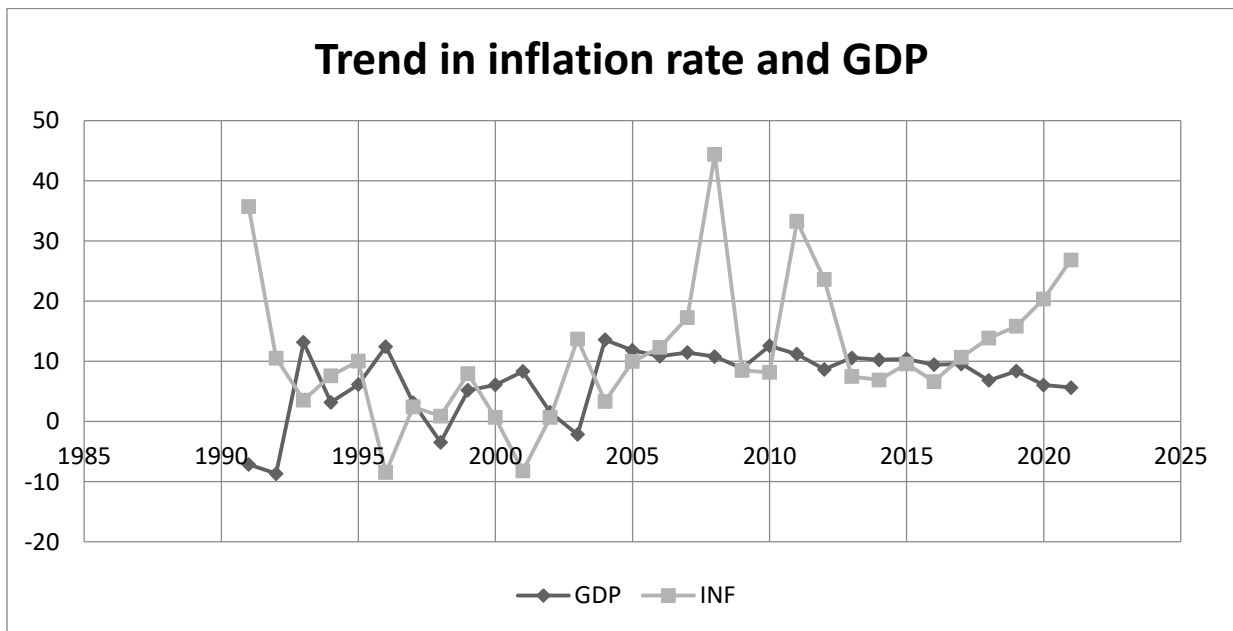
Figure 7 Inflation in Ethiopia

4.2.   Econometrics model result

After briefly disusing the trend analysis part of the research now it is possible to proceed to the econometric model result of the study.

4.2.1. Stationery test result (Unit root test)

The result of the first test will be presented in this section and it allow us to know the structure of the time series data. The results of the Unit root test, granger causality, lag length determination will as well be presented. Table 1 below shows the results of the unit root test.

Table 1 Unit root test

Variables	Augmented Dickey Fuller Test					Decision
	At Level		At First difference			
	t-statistics	Critical value	t-statistics	Critical value	Prob*	
Real GDP Growth (annual percentage)	-4.414	-3.716^a			0.0003	(0)
Domestic credit to private sector (% of GDP)	-1.329	-2.986	-3.314	-2.989^b	0.0143	(I)
Broad Money (Percent of GDP)	-1.496	-3.716	-4.720	-3.723^a	0.0001	(I)
Government expenditure (percentage of GDP)	-0.779	-3.716	-5.104	-3.723^a	0.0000	(I)
Total Domestic Credit to GDP percentage	-1.784	-3.716	-4.426	-3.723^a	0.0003	(I)
Bank deposit as percentage of GDP	-1.872	-3.716	-4.206	-3.723^a	0.0006	(I)
Private investment	-1.499	-3.716	-6.287	-3.723^a	0.0000	(I)
Inflation rate	-3.997	-3.716^a				
Variables	Phillips-Perron Test					Decision
	At Level		At First difference			
	t-statistics	Critical value	t-statistics	Critical value	Prob*	
GDP Growth (annual percentage	-4.430	-3.716^a			0.0003	(0)
Domestic credit to private sector (% of GDP)	-1.473	-2.986	-3.259	-2.989^b	0.0168	(I)
Government expenditure (percentage of GDP)	-0.822	-3.716	-5.102	-3.723	0.0000	(I)
Broad Money (Percent of GDP)	-1.773	-3.716	-4.777	-3.723^a	0.0001	(I)
Total Domestic Credit to GDP percentage	-2.039	-3.716	-4.483	-3.723^a	0.0002	(I)
Bank deposit as percentage of GDP	-1.894	-3.716	-4.194	-3.723	0.0007	(I)
Private investment	-1.464	-3.716	-6.262	-3.723^a	0.0000	(I)
Inflation rate	-4.082	-3.716			0.0010	(0)

a/b/c indicates stationerity at 1%/5%/10% respectively
Source: Author

The results in table 1 shows all the variables are integrated in the same order. This implies, all these variables will become stationary after first difference thus, they are integrated of order one. The conformity of these results is equally tested using the Phillips Perron unit roots test, it shows that all variables are integrated of order one. This is in conformity with the results obtained from the Augmented Dickey Fuller test. This means that a linear combination of the variables will give a stationary series, thus a great possibility of co-integration. It is therefore imperative to test for the presence of co-integration, the bound test will be used, before that the number of optimal lags will be determined, this is done using the Akaike and Swartz criteria.

4.2.2. Optimal lag length selection

It is very important to know the optimal lag length, especially in order to estimate the direction of causality. The Akaike and Schwarz criterion is used in this study. Consequently, various specifications of the model were estimated at varying maximum lags, and in each case, each model was tested for serial correlation, heteroskedasticity and normality in their residual. The study found the ARDL (1,2,2,2,1,1,3) to have best-fit in describing the relationship between real GDP growth and the financial sector indicators under consideration. Detail of the lag selection is discussed in the appendix.

4.2.3. Bound testing for co-integration for relationship

The results of the co-integration test are presented below in Table 5, unrestricted intercept and unrestricted trend is used. It is clear from the table that there is a long run relationship amongst the variables. The computed F-statistics (25.131) is higher than the critical values at 10%, 5% and 1% respectively from the Narayan (2005) table. This means that the null hypothesis of no co-integration between financial development indicators and economic growth is rejected.

Table 2 bound testing for co-integration analysis

Computed F-statistic	Critical bounds					
	10%		5%		1%	
25.131	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	1.95	3.06	2.22	3.39	2.79	4.10

The table above indicates estimates of the finance-growth nexus, the effect of credit to private sector, money supply and deposits on economic growth was assessed. The results show that the 1 period lag has positive/negative and significant impact in the long run.

4.2.4. ARDL long run model estimation result

The long run analysis reveals that, a 1% increase in credit to private sector leads to decrease in economic growth by 1.91% while 1% increase in money supply triggers an increase in GDP by 1.07%. Moreover, one percent increase in private investment leads to a decrease of GDP by 0.75% in the long run. Inflation rate has a negative effect on GDP as a one percent increase of it leads to decrease of GDP by 1.4%. This therefore means there is a long run relationship between financial development and economic growth except for Bank deposit. Table 4 below shows the coefficients of the long run impact of financial development on economic growth in Ethiopia.

The long term negative effect of private sector credit on economic growth is also confirmed in different empirical studies (Jammeh I. Y., 2022), (William Obeng, 2019). The positive effect of money supply and economic growth is supported by both theoretical and empirical literatures (Ross, 2021), (Chaitip, Chokethaworn, Chokethaworn, & Khounkhalax, 2015). Moreover the positive effect of private sector credit as a ratio to total credit and bank deposit is supported by different related literatures (Ribaj & Mexhuani, 2021) , (Adu, Marbuah, & Mensah, 2013).

The supply of money (M2) has a positive impact on economic growth in the long-run, thus using the banking sector to increase the supply of money would facilitate the financing of the economy in the long run.

Table 3 ARDL coefficients for long-run

Variable	Coefficient	Std. Error	t-Statistic
Domestic Credit to private sector(% GDP)	-1.917128[b]	0.4287695	-4.47
Deposits (% GDP)	0.235382[b]	0.1885699	1.25
M2 (% GDP)	1.079728[a]	0.2041434	5.29
Government expenditure	0.1910291	0.1570393	1.22
Private investment	-0.7573054[b]	0.2420879	-3.13
Inflation rate	-1.433423[a]	0.2439781	-5.88

Variable	Coefficient	Std. Error	t-Statistic
Private credit to total credit	1.064296[a]	0.2173545	4.90
Total Domestic Credit as percentage of GDP	-0.0333354	0.2937658	-0.11

Note: a, b and c imply significant at the 1, 5 and 10% levels respectively
Source: author analysis

The table above confirms the bound test results with a positive/negative and significant long run relationship between the financial development indicators and economic growth.

4.2.5. Short Run Error correction model result

The regression table below shows that there is a positive and significant relationship between credit to private sector and economic growth in the short run, however in the long-run, this effect is negative and statistically significant. This therefore means that the efficient allocation of credit to profitable projects only have the potential of improving economic activities and subsequently economic growth in the short run but not in the long run.

Table 4 ARDL coefficients for short-run

Variable	Coefficient	Std. Error	t-Statistic
Domestic Credit to private sector(% GDP)	2.012948[b]	0.4603892	4.37
Deposits (% GDP)	-1.256088[b]	0.3860224	-3.25
M2 (% GDP)	-2.478077[a]	0.3382264	-7.33
Government expenditure	-.4729512[c]	0.2087069	-2.27
Private investment	1.195656[b]	0.2948714	4.05
Inflation rate	1.667584[a]	0.282561	5.90
Private credit to total credit	-1.761282[a]	0.3742734	-4.71
Total Domestic Credit as percentage of GDP	-0.7996756	0.3873093	-2.06
EXM(-1)	-0.805787[a]	0.184469	-4.368139
R-squared	0.9904		
Adjusted R-squared	0.9352		
Log likelihood	-14.895497		

Variable	Coefficient	Std. Error	t-Statistic

The regression results show Bank deposit have a negative but significant impact on economic growth in the short-run. This is principally due to the over-liquid nature of the financing system where deposits are dominated with short term deposits (Piabuo et al. 2015). However, in the long-run, deposits can be used as a main resource for long term investments which have significant effects on output and economic growth.

The error correction mechanism (ECM) is used to verify the short-run relationship between credit to private sector, deposits, monetary mass (M2) and economic growth (GDP). The divergence of results in the short-run and long-run equilibrium explains the fragility of the financial system of Ethiopia. The system cannot quickly adjust to shocks in the short-run, this is principally due to the dominance of the banking sector which is over liquid and information efficiency is very low in the system. The underdeveloped nature of the financial system is equally characterized by high information asymmetry which limits the effective financing of the private sector by banks thus reducing short run benefits to the economy.

4.2.6. Diagnostic results

The results of the diagnostic tests are performed to make sure that the data satisfied the basic assumptions of the classical linear regression model and are shown in this section.

Test for serial correlation

Serial correlation is used to test whether the residual is serially correlated or not. If the residual is not serially correlated it is possible to conclude that the model is best. The table below shows the result of Breusch-Godfrey serial correlation LM test result and it indicated that the p-value is 0.0190.

Hetroskedasticity test

Hetroskedasticity test is used to know whether the variance of the errors from a regression is dependent on the values of the independent variables. Breusch-Pegan test is used to test for hetroskedasticity and the result is 0.3086 which more than 5% value and it means that we can

accept the null hypothesis for constant variance. Detail of the result of the test is discussed in the appendix part.

Stability Test

CUSUM stability test (Fig. 8) we see from the graph above that the blue line lays within the 5% level of significance, thus there is a long- run stability between the variables in our model.

The different tests carried out above have proven our model is suitable to estimate the causal link as well as the long and short-run relationship between financial development and economic growth.
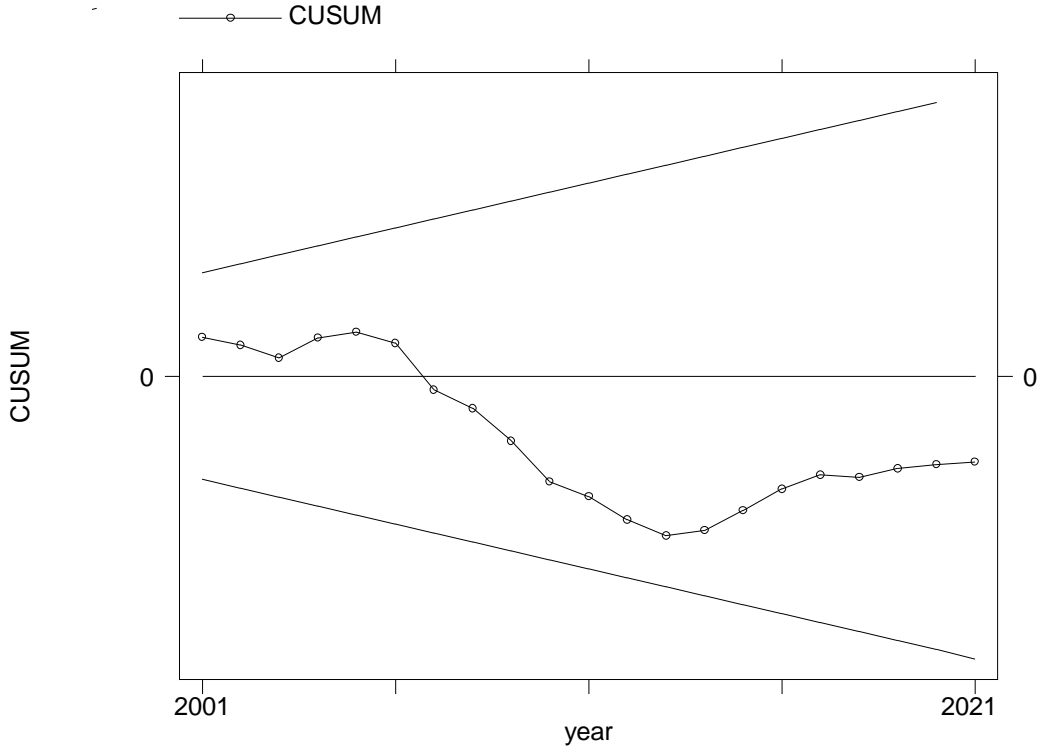
Figure 8 CUSUM stability test

Chapter 5

5. Conclusion and policy recommendation

The objective of this paper is to investigate the long-run and short-run growth effects of financial development on economic growth in Ethiopia. The analysis was done using eight alternative proxy indicators for financial development. The results indicate that the growth effect of financial development is sensitive to the choice of proxy used. For instance using domestic credit to private sector to GDP ratio, Private investment to GDP ratio, Inflation rate and total domestic credit to GDP ratio we found negative and statistically significant effect of financial development on growth. However, same cannot be said when one uses broad money supply to GDP ratio and Private Credit to total credit ratio to proxy for financial development as the coefficients on this variables were found to be significantly (both statistically and economically) positive. This finding helps in understanding the conflicting results in the literature as many studies rely on single indicators hence unable to identify which financial sector variables have positive growth enhancing effects and which does not.

Following from the key findings of the paper, we recommend caution when choosing financial development indicators as policy instruments in the design and implementation of growth policies. The main policy recommendation therefore is that sufficient consideration and proper recognition such as provision of suitable financial reforms should be given to the financial sector in Ethiopia as a determinant of economic growth. On the basis of the evidence, policies that improve access to affordable credit by the private sector, including small and medium enterprises (SMEs), would spur the needed innovation, expansion in plant capacity in agriculture, industry and manufacturing to generate desired employment levels, household incomes and overall growth of the economy. Further, our results also indicate that expansionary fiscal and monetary policies resulting in excess money supply could promote growth. Thus, monetary expansion using the banking sector as major tool should be applied and must be accompanied by productivity improvement to generate the needed growth-enhancing effects on the economy. Finally, government should reduce macroeconomic uncertainty by reducing inflation towards growth-enhancing targets while promoting policies to reduce high lending rates on credit.

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Appendix

1. Optimal lag length selection

```
Selection-order criteria
Sample:  1995 - 2021                          Number of obs      =        27
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-76.9712				18.8743	5.77564	5.78991	5.82364
1	-75.0963	3.7498	1	0.053	17.694*	5.71083*	5.73938*	5.80682*
2	-74.7191	.75435	1	0.385	18.5415	5.75697	5.79978	5.90095
3	-73.7501	1.9379	1	0.164	18.608	5.75927	5.81635	5.95125
4	-73.5352	.42987	1	0.512	19.7641	5.81742	5.88878	6.05739

```
Endogenous:  gdp
 Exogenous:  _cons
```

```
Selection-order criteria
Sample:  1995 - 2021                          Number of obs      =        27
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-83.2409				30.0309	6.24007	6.25434	6.28806
1	-58.0411	50.4	1	0.000	5.00222	4.44749	4.47603	4.54347
2	-55.7108	4.6605*	1	0.031	4.53576*	4.34895*	4.39176*	4.49293*
3	-55.5285	.36467	1	0.546	4.82512	4.40952	4.4666	4.60149
4	-55.4997	.05764	1	0.810	5.19607	4.48146	4.55281	4.72143

```
Endogenous:  dcps
 Exogenous:  _cons
```

```
Selection-order criteria
Sample:  1995 - 2021                          Number of obs      =        27
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-80.6695				24.8224	6.04959	6.06386	6.09758
1	-59.525	42.289*	1	0.000	5.58344	4.55741	4.58595*	4.6534*
2	-58.389	2.2721	1	0.132	5.53104*	4.54733*	4.59015	4.69131
3	-58.3759	.02619	1	0.871	5.95812	4.62044	4.67752	4.81241
4	-58.3388	.07417	1	0.785	6.41224	4.69176	4.76312	4.93173

```
Endogenous:  bnk
 Exogenous:  _cons
```

```
Selection-order criteria
Sample:  1995 - 2021                            Number of obs      =          27

  +----------------------------------------------------------------------------+
  | lag |    LL      LR      df     p      FPE      AIC      HQIC      SBIC      |
  |-----+----------------------------------------------------------------------|
  |  0  | -87.5078                        41.1938  6.55613   6.5704   6.60413   |
  |  1  | -67.6753  39.665*   1  0.000    10.2116  5.16113   5.18967  5.25712*  |
  |  2  | -66.0543   3.242    1  0.072   9.75888*  5.11513*  5.15795* 5.25912   |
  |  3  | -65.8439   .42078   1  0.517    10.3599  5.17362   5.23071  5.3656    |
  |  4  | -64.5551   2.5776   1  0.108    10.1622  5.15223   5.22359  5.3922    |
  +----------------------------------------------------------------------------+

Endogenous:  m2gdp
 Exogenous:  _cons


Selection-order criteria
Sample:  1995 - 2021                            Number of obs      =          27

  +----------------------------------------------------------------------------+
  | lag |    LL      LR      df     p      FPE      AIC      HQIC      SBIC      |
  |-----+----------------------------------------------------------------------|
  |  0  | -88.4815                        44.2749  6.62826   6.64253  6.67626   |
  |  1  | -62.7883  51.387*   1  0.000   7.11017*  4.79913*  4.82767* 4.89512*  |
  |  2  | -62.6961   .1844    1  0.668    7.60967  4.86638   4.90919  5.01036   |
  |  3  | -62.4587   .47467   1  0.491    8.06222  4.92287   4.97995  5.11485   |
  |  4  | -61.4873   1.943    1  0.163    8.09647  4.92498   4.99634  5.16495   |
  +----------------------------------------------------------------------------+

Endogenous:  govexp
 Exogenous:  _cons

Selection-order criteria
Sample:  1995 - 2021                            Number of obs      =          27

  +----------------------------------------------------------------------------+
  | lag |    LL      LR      df     p      FPE      AIC      HQIC      SBIC      |
  |-----+----------------------------------------------------------------------|
  |  0  | -87.6442                        41.6122  6.56624   6.58051  6.61423   |
  |  1  | -69.9907  35.307*   1  0.000   12.1222*  5.33264*  5.36118* 5.42863*  |
  |  2  | -69.5215   .93835   1  0.333    12.6165  5.37196   5.41478  5.51594   |
  |  3  | -68.7415   1.56     1  0.212    12.8402  5.38826   5.44534  5.58023   |
  |  4  | -68.6735   .136     1  0.712    13.7872  5.45729   5.52865  5.69726   |
  +----------------------------------------------------------------------------+

Endogenous:  pvtinv
 Exogenous:  _cons


Selection-order criteria
Sample:  1995 - 2021                            Number of obs      =          27

  +----------------------------------------------------------------------------+
  | lag |    LL      LR      df     p      FPE      AIC      HQIC      SBIC      |
  |-----+----------------------------------------------------------------------|
  |  0  | -103.824                        137.947  7.76471   7.77898  7.8127    |
  |  1  | -101.802   4.044    1  0.044    127.919  7.68901   7.71755* 7.78499*  |
  |  2  | -101.801   .00086   1  0.977    137.84   7.76305   7.80586  7.90703   |
  |  3  | -99.5558   4.4907*  1  0.034   125.854*  7.6708*   7.72788  7.86278   |
  |  4  | -99.5556   .00041   1  0.984    135.816  7.74486   7.81621  7.98483   |
  +----------------------------------------------------------------------------+

Endogenous:  inf
 Exogenous:  _cons
```

```
Selection-order criteria
Sample:  1995 - 2021                              Number of obs    =        27

 +---------------------------------------------------------------------------+
 lag |    LL        LR       df    p      FPE        AIC       HQIC      SBIC
 -----+---------------------------------------------------------------------
   0 | -121.427                          508.166   9.06865   9.08292   9.11664
   1 | -75.6892   91.475     1   0.000   18.4886   5.75476    5.7833   5.85075
   2 | -70.5258   10.327*    1   0.001   13.5909*  5.44636*  5.48917*  5.59034*
   3 | -70.4545   .14268     1   0.706   14.5773   5.51515   5.57223   5.70712
   4 | -68.5515    3.806     1   0.051   13.6632   5.44826   5.51961   5.68823
 +---------------------------------------------------------------------------+

Endogenous:  pctc
 Exogenous:  _cons
```

2. Heterosecedasticity test

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of gdp

        chi2(1)        =       1.03
        Prob > chi2    =     0.3097
```
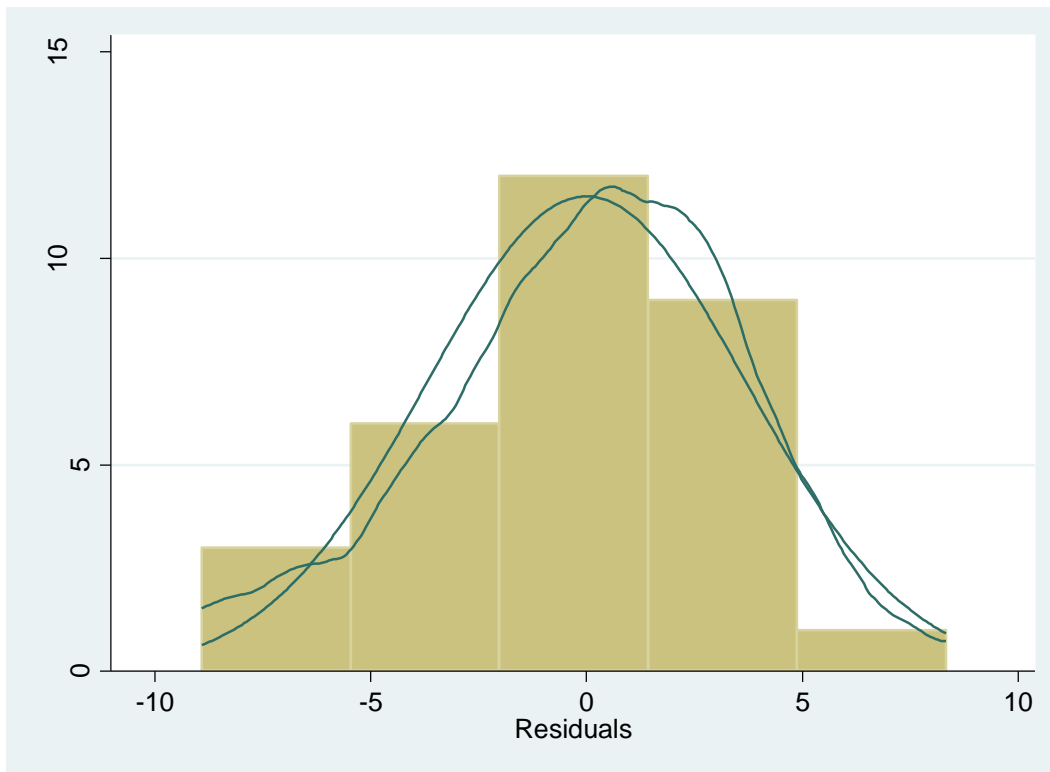
3. Normality test

4. ARDL Regression

```
Sample:     1994 -     2021                    Number of obs    =          28
                                               R-squared        =      0.9933
                                               Adj R-squared    =      0.9551
Log likelihood = -14.895495                    Root MSE         =      1.0898
```

D.gdp	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ADJ						
gdp						
L1.	-1.718111	.1363068	-12.60	0.000	-2.09656	-1.339663
LR						
dcps	-1.917128	.4287695	-4.47	0.011	-3.107583	-.7266735
bnk	.235382	.1885699	1.25	0.280	-.2881719	.7589358
m2gdp	1.079728	.2041434	5.29	0.006	.5129353	1.646521
govexp	.1910291	.1570393	1.22	0.291	-.2449819	.62704
pvtinv	-.7573054	.2420879	-3.13	0.035	-1.429449	-.0851615
inf	-1.433423	.2439781	-5.88	0.004	-2.110815	-.7560314
pctc	1.064296	.2173545	4.90	0.008	.4608231	1.667769
tdc	-.0333354	.2937658	-0.11	0.915	-.8489601	.7822892
SR						
dcps						
D1.	2.012948	.4603892	4.37	0.012	.734703	3.291194
LD.	.6176524	.2416698	2.56	0.063	-.0533305	1.288635
bnk						
D1.	-1.256088	.3860224	-3.25	0.031	-2.327858	-.1843176
LD.	-2.217191	.4532035	-4.89	0.008	-3.475485	-.9588959
m2gdp						
D1.	-2.478077	.3382264	-7.33	0.002	-3.417144	-1.53901
LD.	-1.075882	.2272539	-4.73	0.009	-1.70684	-.4449239
govexp						
D1.	-.4729512	.2087069	-2.27	0.086	-1.052414	.1065122
pvtinv						
D1.	1.195656	.2948714	4.05	0.015	.3769616	2.01435
inf						
D1.	1.667584	.282561	5.90	0.004	.8830686	2.452099
LD.	.526022	.1307895	4.02	0.016	.162892	.889152
L2D.	.162983	.0605602	2.69	0.055	-.005159	.3311251
pctc						
D1.	-1.761282	.3742734	-4.71	0.009	-2.800431	-.7221322
tdc						
D1.	-.7996756	.3873093	-2.06	0.108	-1.875018	.2756674
LD.	-.4441764	.2211387	-2.01	0.115	-1.058156	.1698029
_cons	-38.32842	24.12771	-1.59	0.187	-105.3177	28.66085

Data (1991-2021)

year	GDP	DCPS	M2/GDP	M1/M2	PC/TC	GOVEXP	TDC	BNK	PvtINV	INF
1991	-7.13748	12.7391	29.79848643	41.3458	28.34567	17.3210367	38.70699	14.90696	23.58	35.7225982
1992	-8.67248	11.395	32.53944943	45.2344	28.2345	14.2353493	39.33417	15.97611	21.8	10.527444
1993	13.14283	6.15464	27.59409387	47.2349	29.4389	13.773496	32.497002	14.43553	16.71	3.54306596
1994	3.189965	8.03234	32.00031877	46.2378	30.23456	17.6251609	33.20905	17.95282	18.91	7.593876
1995	6.127511	9.26715	29.16915965	50.2334	32.3456	17.3894974	30.14143	16.66339	23.58	10.0221734
1996	12.42617	14.2208	28.22446613	52.3345	38.789	18.7893495	31.97124	17.59677	21.8	-8.4842487
1997	3.133907	16.9284	32.7246722	54.12345	39.2321	17.9403103	35.90517	22.82368	16.71	2.39520958
1998	-3.45814	20.1128	33.57665089	56.2234	40.1234	21.1296314	41.30145	25.25574	18.91	0.89480169
1999	5.162146	24.5599	35.51496694	58.8435	43.75661	26.8088386	38.11805	26.11808	18.91	7.94144864
2000	6.073217	23.0709	34.58547791	56.0682	44.93605	25.5982946	39.16612	26.82349	26.63	0.66245811
2001	8.301306	21.4454	37.16327065	55.5684	41.97828	22.4380673	40.02923	29.31209	28.26	-8.2378445
2002	1.514726	21.1755	44.03679694	54.6582	38.90676	24.8695456	37.13996	34.53505	31.47	0.6750891
2003	-2.16136	20.3128	44.87788044	55.015	38.34328	27.0414811	34.74736	35.50625	28.8	13.6740452
2004	13.5726	19.3452	45.35308217	52.9438	46.25141	23.1490736	36.60772	35.72101	34.29	3.32737048
2005	11.81877	22.9888	43.77702196	51.3438	48.74564	22.8900293	36.21277	34.57847	30.57	9.96997124
2006	10.83473	23.8371	42.48640017	52.3624	50.81562	22.0670162	34.62722	33.54948	32.19	12.2994763
2007	11.45617	18.6841	39.74275329	52.7409	57.69704	20.5214242	31.45766	31.24697	28.19	17.2404008
2008	10.78852	18.0435	33.96712075	51.0396	63.24507	18.7560307	25.71997	26.8952	28.46	44.3566859
2009	8.802553	18.03081	24.80493533	50.2092	68.38236	17.1127751	26.36763	28.2344	29.48	8.48364405
2010	12.55054	20.22442	26.98409998	52.3955	78.86327	18.4832356	25.64492	27.3423	31.6	8.14926403
2011	11.1783	21.84379	27.59017467	50.0795	88.59884	10.3182461	24.65471	26.2344	32.11	33.2499599
2012	8.647812	23.76665	25.2685238	48.7629	90.58907	8.30218872	26.23567	22.3345	37.1	23.6004177
2013	10.58227	25.08624	27.05805717	45.0261	91.02422	8.95547368	27.55997	25.449	34.08	7.46402193
2014	10.25749	27.22905	28.0535183	41.6629	92.18771	9.24959184	29.53653	29.5567	39.99	6.89001952
2015	10.39246	28.23052	28.60438543	40.113	90.30081	9.01378858	31.26275	31.3435	40.67	9.56889956
2016	9.433483	29.77544	28.39532013	37.808	86.46128	11.1344515	34.43788	32.3456	37.35	6.62813337
2017	9.56419	30.9947	31.28483349	37.9645	86.99975	11.1092075	35.6262	29.4	38.44	10.687115
2018	6.816148	31.67026	33.66257132	34.8392	88.60649	10.2504817	35.74259	30.5	34.73	13.8330357
2019	8.364086	30.81249	32.95202162	34.7503	87.33006	9.19304685	35.2828	30.8	35.26	15.8096322
2020	6.059531	29.19747	30.75100629	32.4411	85.54037	9.12947548	34.13297	30.7	30.58	20.3563469
2021	5.637303	24.4908	31.05611427	34.2804	78.11112	8.83508637	31.35379	31.456	28.02	26.8395222

Note: *GDP (real GDP growth), DCPS (Domestic Credit to Private sector credit), M2/GDP (Broad money as percentage of GDP), DMCBNK(domestic credit provided by bank), PC/TC(private credit to total credit, GOVEXP(government expenditure), TDC(total domestic credit), BNK (Bank deposit to GDP), PvtINV (private investment) INF, (inflation rate).*