Banking Sector Development and its Impact on Economic Growth in Myanmar

By

KHINE, Thae Oo

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

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Professor Sohn, Wook, Supervisor

Professor Lee, Jinsoo

Professor Lee, Seohyun

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ABSTRACT

This study proposes to establish how to connect Myanmar's economic growth and the banking sector after comparing a variety of short- and long-term correlations. The data for this research are gathered from the World Bank Data for 35 financial years, starting from 1986 to 2020. This research utilizes the time series data augmented with the ARDL model to investigate banking factors, which include the private sector credit by banks and deposits and financial system liquidity liabilities to the per capita GDP. The results show that domestic credit and bank deposits positively influence GDP growth, which indicates that the financial sector and savings are important in enhancing the economy. In contrast, liquid liabilities and inflation have negative effects. Moreover, the short-run analysis finds that the past impact of variables such as GDP per capita, domestic credit, bank deposits, liquidity liabilities, foreign direct investments, and inflation influences current GDP per capita. However, the short-term change is not the same as the long-term change, as some of the lags show negative effects in most instances depending on the time keenness. These implications also imply that it is essential for the Myanmar government to go ahead with alterations aimed at improving the performance of the financial sector as well as fostering borrowers' domestic credit demand, liquid liability maintenance, as well as low and moderate inflation to achieve sustained economic growth.

Keywords: ARDL, GDP, Domestic credit, Trade, Bank deposits, Liquidity liabilities, Foreign Direct Investment, Inflation, Myanmar

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ABBREVIATION

ARDL	:	Autoregressive Distributed Lag
BD	:	Bank Deposit
CBM	:	Central Bank of Myanmar
DCB	:	Domestic Credit to the private sector by banks
ECM	:	Error Correction Model
FDI	:	Foreign Direct Investment
GDP	:	Gross Domestic Product
IFC	:	International Finance Corporation
INF	:	Inflation
LL	:	Liquidity Liabilities
MBA	:	Myanmar Banks Association
MPU	:	Myanmar Payment Union
MIB	:	Myanmar Institute of Banking
NBFIs	:	Non-banks Financial Institutions
SMEs	:	Small and Medium-sized Enterprises
YUE	:	Yangon University of Economics

1. INTRODUCTION

A well-functioning financial system, which includes banks, capital markets, and other financial intermediaries, is essential in allocating a country's scarce resources to economic growth potential (Awdeh, 2012). In short, the financial sector is vital in facilitating economic activities by collecting capital and allocating resources effectively. In many economies, of all the categories of financial intermediaries, banks are considered to be the most critical, and the major function of banks is to act as an intermediary between savers and investors for their mutual benefit by receiving deposits of excess funds and allocating resources efficiently among competing economies to promote economic growth (Tripathy & Pradhan, 2014). To maintain financial stability, financial institutions must be sound enough to function effectively as financial intermediaries. This is why a developing economy substantially requires a sound expansion of its banking sector to achieve sustainable economic growth.

While banks obtain funds from entities with surplus to allocate them to those scarcity units in the economy, these institutions have to run the process of liquidity, diversification of financial assets, and efficiency in credits (Abubakar & Gani, 2013). Myanmar's financial system consists of financial institutions, markets, instruments, and services offered to individuals, businesses, as well as the government. The basic structural entities related to financial structure in Myanmar are banks, other non-bank financial institutions, insurance, and stock exchanges. As reported by the World Bank (2022), 90 percent of the financial sector assets have belonged to the banking sector in Myanmar. This is a matter of concern to discuss how an efficient, effective, and modern banking system has important implications for Myanmar's economy.

The correlation between financial system development and the expansion of the economy is a matter of significant contemporary interest for several researchers in any economy, although the findings depend on the different institutional and capital allocations within economies (Ndlovu, 2013). Many researchers analyze the banking sector development and economic growth's connection with various econometric methodologies depending on the various factors of banking sector determinants affecting economic growth (Qamruzzaman & Jianguo, 2018). According to Abusharbeh (2017), some studies have shown that the advancement of the banking industry causes the growth of the economy. However, Mekango (2021) argues that loans to businesses and deposits to banks negatively affect the economic expansion in Ethiopia. The result can differ based on various factors, such as the variables that are used in the banking development, estimation methods, and data frequency specific to each country. Though previous research has been conducted on different economies, this paper focuses on how the growth of the banking sector in Myanmar affects the economic rate.

Since early 2010, the banking industry has been an essential element of Myanmar's broader economic reforms. One significant change was in 2013 when the Central Bank of Myanmar (CBM) gained greater independence by enacting the Central Bank of Myanmar Law, giving it more autonomy and the ability to better regulate the banking industry and execute more effective monetary policies. The Financial Institutions Law of 2016 strengthened the regulatory framework, enhancing capital adequacy requirements, governance, and transparency while allowing foreign banks into the banking sector by issuing licenses in 2014 to enhance and modernize the financial industry by bringing in fresh competitors, technology, and experience.

In addition, the government collaborated with international organizations (for example: the World Bank and International Finance Corporation) which began small and medium-sized enterprises (SMEs) financing and targeted microfinance to increase financial access in the country. Market liberalization, such as removing foreign exchange restrictions and establishing an interbank market, has created a more competitive banking environment, enabling banks to provide a broader range of services. Local bank branches have rapidly developed by expanding their networks and services across the country. However, the banking sector's development still faces challenges, including limited access to international capital and the necessity for further reforms in governance and risk management. Although there has been substantial economic growth in recent years, the banking system has not progressed, and by facing a barrier to achieving more growth and inclusion.

This study aims to underscore how development in the banking sector can raise economic progress in a developing economy. Additionally, this paper proposes that policy initiatives should be explored to advance banks by supporting loans to different sectors of the economy. This research will be relevant to policymakers, banking industries, scholars, and economists in macroeconomic studies.

This paper attempts to analyze the extent of positive economic expansion due to the banking development in Myanmar in the short- and long-term correlation. This research will address the following research question: to what extent does banking sector development enhance Myanmar’s economic development? Mainly, the study purposes to explore how the supply of credit from banks influences economic growth. This paper will also consider the proposition that the recent history of Myanmar has seen significant improvement in economic conditions due

primarily to the banking industry. This study uses data from 1986 to 2020, that is, 35 financial years, on an annual basis obtained according to the World Bank data. The research employs the ARDL model by using the banking industry development data as the independent variables, and economic data as the dependent variables.

There are some limitations to this study. The data availability of Myanmar is the main constraint, as obtaining a diverse range of data on the banking sector's development through time-series analysis is limited. This research depends on primary variables which can be accessed from the World Bank database. Also, this comes with the limitation of data collection time. To address these limitations, future research could employ larger and more representative samples of volunteers, as well as better dataset collection methods over longer periods.

The remainder of this paper will be discussed in four sections. Section two presents the literature of the previous research. Section three presents an overview of the Myanmar economy and banking sector. Section four subsequently considered an empirical test which includes the specification of data and analysis model with which the influence of banking sector development on economic growth in Myanmar; Section five is other tests, which a validation of the empirical results falls under robustness check. The final section further positions these results in the area and concludes along with the policy recommendations.

2. REVIEW OF LITERATURE

In recent years, there has been significant investigation of the correlation between economic growth and financial sector development, both theoretical and empirical studies (see Ahmed & Ansari, 1998; Yu & Gan, 2010). This literature provides important insights into different economies into the factors that influence the relationship between them.

2.1 Theoretical Background

The literature on financial sector liberalization and economic growth has been discussed in this paper using theoretical frameworks. They appear to suggest that several factors that concern an advanced banking sector can promote economic growth at the same time that economic growth which happens farming develops the banking sector. However, as for the interaction of financial structures' development and the growth rate, there is a problem the opinions of the most authoritative economists do not coincide. This is well evidenced in a discourse on the relationship between the causality of processes of financial sector development and economic development.

The complex and various correlations between the development of financial sector and economic expansion are highlighted in the theoretical literature. There are continuing discussions over the direction of causality between them, a well-developed banking system is generally considered essential for long-term economic growth. According to Awdeh (2012), some economists argued that economic expansion generates a demand for financial services to adjust in response, while others highlight the essential role of the financial sector in enhancing economic expansion.

Some proponents such as Bagehot (Kaya, 2020), Schumpeter (Kaya, 2020), and Hicks (Kaya, 2020), argued the supply-leading hypothesis was put forward, according to which an efficient financial system directly contributes to economic potential through optimal capital allocation, costs reduction, and innovation. In contrast, Robinson (Jun, 2012) argued the demand-following hypothesis by positing that it is economic growth that creates demand for financial services hence leading to financial development. The direction of causality can vary across different contexts and periods.

Nevertheless, the banking sector enhancement differs across countries and is influenced by varying degrees of economic growth, regulatory structures, and specific requirements. From a centrally planned economic system to an open market economy in Myanmar, understanding the role of the banking sector development in facilitating and speeding up this transformation is essential. Governments, central banks, and financial authorities' policies, regulations, and initiatives support shaping the growth and direction of the banking industry. This financial sector development also leads to the overall economy and financial stability by reducing information asymmetry, increasing access to credit, and facilitating efficient allocation of resources. Banking sector reforms can enhance economic development in many countries. These reforms can include measures to strengthen banking regulation and supervision, promote competition, and improve the stability and efficiency of the financial system. Studying the correlation between banking sector development and economic growth in Myanmar goes beyond academic interest; it is a crucial task with significant consequences for the nation's financial advancement and the well-being of its citizens.

2.2 The Empirical Studies

According to Tripathy and Pradhan (2014), several studies have individually examined the connection between the banking industry advancement and economic growth and also the role of financial sector advancement on the economic growth of recipient countries using cross-sectional, time series, and panel data techniques. Although there is an increasing amount of empirical literature, the causal connection between the financial sector and economic growth is still debated.

Burzynska (2009) argued that the functional market view states that a well-established financial system adds to liquidity, reduces investment risks, and therefore fosters economic investments. It is provided by efficient financial institutions that offer a variety of services to balance the supply and demand for economic resources through financial intermediation aimed at an adequate distribution of limited resources (Qamaruzzaman & Jianguo, 2018). Fadare (2010) and Mhadhbi et al. (2020) argued that financial intermediaries mainly banks have an essential responsibility in the banking process and they can help up to some extent in maintaining the long-run stability of the economy.

Many empirical researches on the relationship between the development of the banking sector and economic growth provide some insights into this angle in many countries (e.g. Moshirian & Wu 2012; Ho & Odhiambo 2013; Qamruzzaman & Jianguo, 2018). Empirical studies have provided mixed results on the impact of banking sector development on economic expansion. A common result is that the growth of the financial sector typically has a beneficial impact on economic development. However, the magnitude of the effect is subject to variations in the

indicators of financial development, the method of estimation, data frequency, and the functional form of the relationship (see Mekango, 2021). A substantial number of empirical studies explore the notion that economic growth is positively correlated with the expansion of the financial sector across countries (Mhadhbi et al., 2020; see also Aluko & Ajayi, 2018; Fadare, 2010).

Wijesinghe & Dulanjani (2022) still analyze the causality between the banking sector of the economy and the economic development in Sri Lanka for the period 1960-2019 only They found that growth in the banking industry helps economic growth in both the short-term and long-term. Tripathy and Pradhan (2014) examined short-run and long-run co-integration and causality between the banking sector development and economic growth in India for a period between 1960 and 2011. Domestic credit has been found to have a mutually beneficial causal, as well as an exogenous impact on the economic growth in India, however, the private sector credit, total assets, and liabilities are found to have only a one-way causal effect on economic growth in India, which points to the fact that the development of banking sector and economic growth are interrelated in India. In addition, Thi Thuy Hang Le et al. (2021) examined the role and connotation of various depth indices of bank credit on economic growth in Vietnam for the period of the first quarter of 2000-2020. They also established the existence of short-run causality between banking sector development and growth of the economy but discovered, in the long-run, other macroeconomic factors imply negative causality between the two and finally supported the mutual causality between the growth of GDP and banking depth.

Moreover, Alfara (2012) conducted a study in Palestine focusing on the banking sector's role in financing economic development from 1995 to 2011. This study proposed the hypothesis that various financial indicators, such as credit to investors, interest rates on debt, deposits, and the

number of bank branches, impact economic growth. The study's findings indicated that banking credits positively influence economic growth, although they may not attain the necessary threshold for achieving robust economic development in Palestine.

Furthermore, there was an empirical analysis by Sumaira & Bibi (2022) to determine the role of banking sector development in a sample of four South Asian countries; Sri Lanka, Bangladesh, Pakistan, and India. The average results suggested that bank-based financial development is vital for improving growth and thus the governments of the sampled nations should endeavor to build on their banking sectors by adopting better channels and regulations to achieve superior economic growth. Qamruzzaman & Jianguo (2018) examined whether there is related financial sector innovation, the development of the banking industry, and economic growth for eight Asian nations, namely, India, Japan, China, Nepal, Bangladesh, Pakistan, Sri Lanka, and Malaysia throughout the years 1974 to 2016. As a result, this study notices that financial innovation is positively linked to economic growth with both long-term and short-term effects supported by Granger causality results, highlighting its role in fostering sustainable economic growth through various financial improvements.

A few, however, contradict this finding. Despite the optimistic outlook presented by substantial research, the existing body of literature also offers varying perspectives regarding the detrimental effects of the correlation between the rise of the banking industry and economic expansion. Numerous empirical studies conducted in transitional economies indicate that, at the very least, there is uncertainty (e.g., Krkoska 2001; Berglof & Bolton 2002; Aluko & Ajayi 2018). Furthermore, Ayadi et al. (2015) find evidence that bank deposits and credit to the private sector exhibit an adverse correlation with economic growth, with the suggestion that this phenomenon is

attributed to shortcomings in credit allocation in the Mediterranean region. Petkovski & Kjosevski (2014) investigated whether economic growth in Central and Southeastern Europe is impacted by development in the banking sector. This research employed independent variables; the ratio of money, interest rate margin, and banking credits, with GDP serving as a proxy variable. Their findings revealed a negative impact on economic expansion.

Analyzing the correlation between the advancement of the banking system and economic growth carries special significance in terms of offering policy implications for nations with economic transitions, such as Myanmar. Policymakers have recognized the importance of a sound and stable banking sector in improving economic expansion. Policies that focus on improving regulations, increasing access to financial services, and promoting competition in banking can positively affect economic growth.

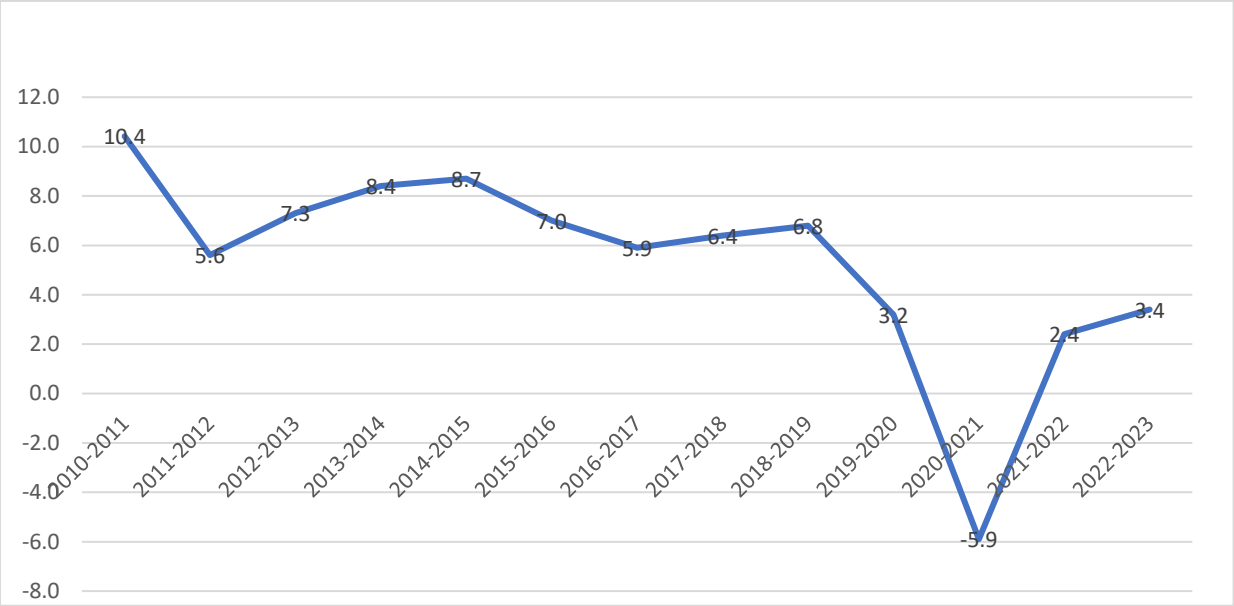
In general, the link between economic growth and the development of banking sector is complicated and varies between countries and periods. Both theoretical models and empirical research continue to evolve as scholars seek a deeper comprehension of this critical relationship. The next section of this study will explore a summary of Myanmar's banking sector.

3. AN OVERVIEW OF THE MYANMAR BANKING SECTOR

3.1 An Overview of the Myanmar Economy

Myanmar, a developing nation, is one of the "low-income" economies designated by the World Bank. After decades of military rule, Myanmar made a peaceful transition to Democracy in 2010. During its democratic periods, Myanmar had the fastest-growing economy with an average GDP growth rate of 6 percent annually between 2011 and 2019 and a substantial decrease in poverty. This progress was supported by economic reforms, the removal of sanctions, and optimism for increased stability. Beginning in 2020, the economy declined due to the COVID-19 pandemic and the period immediately following the political instability, with economic activity continuing to be weak and restricted. As a result, Myanmar's economic growth fell sharply to -5.9 percent in the first half of the fiscal year 2020-2021. During the fiscal year 2022-2023, Myanmar's economy is progressively recovering with moderate growth following the severe impacts of COVID-19. In the fiscal year 2021-2022 (October 2021 to March 2022), economic growth bounced back to 2.4 percent. In 2022-2023, GDP increased to 3.4 percent and the annual average inflation rate rose to double digits due to rising fuel prices and foreign exchange rates. The following figure depicts fluctuations in the real GDP growth rate from the fiscal year 2010-2011 to the fiscal year 2022-2023.

Figure 1 The Growth of GDP in Myanmar (2010-2023)



Source: Ministry of Planning and Finance, Planning Department

Currently, Myanmar heavily relies on extractive industries since it is rich in natural resources and the extractives sector contributes to a significant portion of GDP of the country. It highlights the need to enhance agricultural, manufacturing and service sectors for longer sustainability. As of Myanmar 2022-2023 fiscal year GDP's composition, the service sector's GDP contribution was 42.51 percent as the primary growth driver, followed by the industry sector as the second contributor, amounting to 33.89 percent. And third, the agriculture sector contributed to 23.59 percent. As long as the service sector becomes significant in economic growth, a well-functioning and developed financial industry plays a vital role in efficient and effective capital distribution. However, as Myanmar is still struggling with weak institutional capacity, more economic reforms and efforts are indeed essential for sustainable growth. Moreover, prudential and effective macroeconomic policies including fiscal and monetary regulatory frameworks are necessary to properly manage price fluctuations, interest rates, exchange rates, and wages.

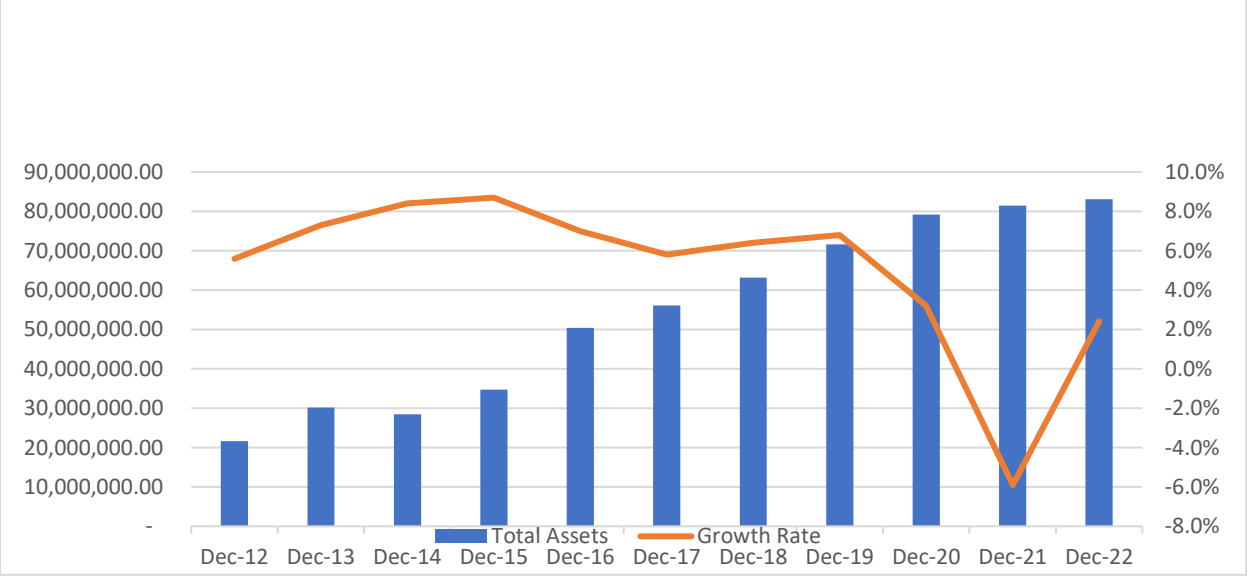
3.2 Financial System and Banking Sector Development of Myanmar

Myanmar’s financial system is comprised of financial institutions, markets, instruments, and services related to finance. Financial entities including banks, non-bank financial institutions (NBFIs), insurance companies, and stock exchanges provide financial services to individuals, businesses, and the government. Before 1988, Myanmar's Economy was the planned economic system, and then, Myanmar embarked on a market-oriented economic system. During the planned economy period, only public banks (such as Myanmar Economic Bank, Myanmar Foreign Trade Bank, and Myanmar Investment and Commercial Bank) were allowed to offer banking services in Myanmar, playing a crucial role in the country for a long time. However, CBM enacted the Financial Institutions of Myanmar law in 1990 and according to the Law, private banks have been allowed to operate banking services. Since then, Myanmar’s banking sector became the fast rapid emerging sector in the country. In March 2016, the banking sector made up 92% of the total assets in the financial sector, amounting to approximately 42.4 trillion MMK (Myanmar currency). The remaining part belongs to insurance companies, securities firms, finance companies and microfinance institutions (GIZ, 2018).

Through a series of economic reforms since 2010, the Government has continuously put efforts to the banking sector development. At present, there are four state-owned banks, 27 domestic private banks and 17 branches of foreign banks including 3 foreign bank subsidiaries. Additionally, there are 34 representative offices of foreign banks listed on the CBM website. Myanmar's banking sector is a key player in the financial industry, but its impact on the economy is still restricted.

As of December 2012, total bank assets amounted to 21 trillion MMK. The growth rates since 2012 are increasing with the highest rate of 8.7% in December 2015. It is notable that the growth of bank assets has peaked due to the entry of foreign bank branches into the market in the beginning of 2015. However, in the COVID-19 pandemic outbreak starting from 2020, the growth rate substantially declined. By December 2022, total bank assets had reached 83 trillion MMK, with the growth rate rebounding to 2.4%.

Figure 2 Total Bank assets and growth rate (2012-2022)



Source: CBM Quarterly Financial Statistical Bulletin

3.3 Banking Sector Transformation

From 2015 onwards, the Central Bank of Myanmar has exerted substantial efforts to maintain the banking standards in alignment with international standards including accounting standards improvement, digital banking enhancement, and promoting financial access for SMEs and individuals. This has been facilitated by key institutions such as the Myanmar Banks Association (MBA), the Myanmar Payment Union (MPU), and a newly formed Credit Bureau,

namely the Myanmar Credit Bureau Limited. Additionally, several educational and training institutions such as the Myanmar Institute of Banking (MIB) and Yangon University of Economics (YUE) are also making an impact.

After a shift to a market-based economy, Myanmar has implemented key financial sector reforms. The CBM has become more independent under the Central Bank of Myanmar Law (2013) and made financial liberalization to the private sector. Driven by robust demand from banks, consequently, the commercial banking sector is growing rapidly. Additionally, according to the Financial Institutions Law of 2016, non-bank payment service providers have been allowed to enter the market. These significant reforms have provided the stakeholders with easier and more efficient payment services, leading to a rise in consumption by using advanced payment instruments. Thereby, continued expansion of the banking sector is itself regarded more as an emerging trend of economic development.

The government and the CBM introduced two financial inclusion roadmaps in 2014 aiming to enhance access to the formal financial sector for citizens and businesses. Among various components, digital financial services have been a critical piece of this strategy. The CBM is taking action to improve the digital transaction services for nationwide payment service platforms, strengthen the digital payment infrastructure, and minimize cash usage. The CBM shall authorize digital banking services such as Internet banking, mobile banking, mobile pay, and mobile financial. The tremendous growth of mobile technology in Myanmar has tremendously changed the lives, businesses, and even government services.

With help from other countries, the CBM has made a working Real Time Gross Settlement (RTGS) system. It has also set up standard T-bill auctions, made T-bills without paper, and has government bonds in banks, which are all logged in a Central Collateral Registry run by the Central

Bank. In 2016, with the support of JICA, the CBM implemented the CBM-NET to improve the Funds Transfer system and Payment Systems, also in Securities Settlements. In 2019, the CBM introduced the MMMQR Specification version 1.0 for domestic QR code payments to implement interoperability among payment systems of financial institutions and has the vision to go across borders in terms of QR code payment. The CBM also issues merchant acquiring service licenses to authorize eligible banks to receive customer payment for issuing participants. The CBM would further support decreased cash, and awareness raising for digital products & services and contribute to the economic growth through digital platforms.

On the track, Myanmar's banking sector is expanding. However, its impact on overall economic expansion relies on the scope of reforms and measures implemented by the CBM, the contribution of domestic and foreign banks, and other stakeholders from the near future and onwards.

3.4 Challenges for the banking sector

Despite Myanmar's Banking sector has growth over the years relative to its economy, there are still a lot of remaining challenges related to weak implementation processes, human capacity, financial inclusion, and trust in banking services. Currently, Myanmar's institutional capacity is insufficient, and additional reforms are necessary for long-term improvement. Financial inclusion is not extending as much since most Myanmar people are weak in financial literacy and there is limited capacity for formal financial services. The majority of people in both urban and rural areas have no much knowledge and awareness about formal financial well-being and they are informally served. To improve financial literacy, the government and the CBM should implement policies to

increase public financial education programs in cooperation with financial institutions. Also, a country's financial sector must do more than just be open to promote economic growth.

Important points to think about include having stable politics and economy, the strength of financial institutions, the effectiveness of regulatory bodies, and how well government policies are enforced. Regulations should make sure that risks tied to liberalization and growth in the banking sector are managed correctly by banks in Myanmar and checked properly by the CBM. Next, this study will explain the methods used to explore how banking sector development affects economic growth.

4. Research Methodology

4.1 Data and Variables Description

In this context, econometric relations between the banking sector development and economic growth are analyzed by using the main respective variables. This research is based on annual time series data for the years 1986 to 2020, collated from the World Bank Data.

To indicate the economic growth, this paper will employ GDP per capita as the main measurement. This paper will utilize three key variables to the proxy that provide insights into the efficiency of the banking industry improvement which is DCB, LL (financial depth indicator) , and BD (financial accessibility indicator). Additionally, there are two macroeconomic control variables: FDI and INF.

The key variable is therefore DCB as a percentage of GDP which informs the extent of the banking system and its role in intermediating resources to residents. This measure is widely used as an indicator of the banking industry growth (e.g., Berkes et al., 2012; Ductor and Grechyna, 2015).

All these variables categorized under banking sector development (DCB, LL, and BD) as well as two macroeconomic control variables, FDI and INF are presented in Table 1. These variables provide wide coverage and improve understanding of important variables like credit, financial depth, financial access, FDI, and inflation rate. Details about all the variables used in the study are shown in Table (1).

Table 1. Definition of Variables

	Variable	Proxy
Dependent Variable	GDP	An indicator which expresses the economic growth rate per capita for a country.
Independent Variables	DCB	An indicator that expresses the efficiency of the banking sector by using the private credit provided by banks.
	LL	Liquidity liabilities of the financial system that are explicit as a proportion of GDP are used to indicate financial depth.
	BD	Bank Deposits to GDP. This is indicated in terms of the proportion of GDP used to indicate financial access.
	FDI	Foreign Direct Investment net inflows that specify as the macroeconomic control variable.
	INF	Inflation rate: The changes of overall price in the economy calculated by GDP growth rate implicit deflator annually.

4.2 Model Specification

In the context of applied econometrics, a variety of methods such as the Granger (1981) and Engle-Granger (1987) types of cointegration tests; the Autoregressive Distributed Lag (ARDL) cointegration method or bound test (Pesaran and Shin 1999; Pesaran et al. 2001); Juselius and Johansen (1990) cointegration test have proved valuable. This paper establishes an empirical analysis of the influence that the development of the banking sector has on economic growth in the short-run and long-run using the ARDL model. This method is effective for these dynamics and the Granger causality test to confirm the direction of the causal link from banking sector development to economic growth. Indeed, all the variables can be used in an ARDL model which is widely used in time series analysis to establish a relationship between the dependent variable, GDP, and its past values as well as current values of independent variables such as the DCB, LL, BD, FDI, and Inflation Rate (INF). The ARDL model is generally specified as:

$$Y_t = \alpha + \sum_{i=1}^{P} \beta_i \, Y_{t-i} + \sum_{j=0}^{q} \gamma_j \, X_{t-j} + \epsilon_t$$

Where:

- Y_t = dependent variable (GDP)
- X_t = independent variables (DCB, LL, BD, FDI, INF)
- A = constant term
- β_i and γ_j = coefficients of the lagged values of variables
- ϵ_t = error term.
- p and q = maximum lags for the variables

4.2.1 Test for Unit Root

The properties of the variables in the model need to be tested for stationarity before estimating the long-run relationship between them. Preliminary, unit root tests are core essentials of analyzing timeframes as they determine whether data are stationary or non-stationary. This assessment assists in selecting well-fitted models, enhancing the accuracy of the forecast, and validity of statistical inferences made from time series data. Non-stationary data become problematic in cases where they produce what is known as spurious regression, effectively making the test useless. For this purpose, Augmented Dickey- fuller test will be employed in this study to help establish the unit roots for each variable in the analysis. The null hypothesis of having one or more unit roots in the time series is against the ADF test hence the series is non-stationary. If the test declines the null hypothesis, then the series is deemed stationary. If the non-stationary level variables are found, they will be stationary by applying the first differences till they become stationary.

4.2.2 Selecting Lag Order

The most critical is the identification of an accurate lag length (p) for sufficient identification of the short-run dynamics in the outlined framework. Problems of (omitted variable bias) occur when the length of lag is wrongly identified, which may result in wrong conclusions about the causality between different variables. This research also uses information criteria, that is, the Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC), and Schwarz Bayesian Information Criterion (SBIC) to identify the correct lag order. These criteria make it possible that the number of lags in the model differenced series is not assumed a ridiculously high value: the model fit is key, but not at the cost of complexity. Accordingly, the lag length that yields the minimum value of the selected information criterion is used for the estimation.

4.2.3 Cointegration Testing

In the findings section of the ARDL model analysis, the Bound F-statistic is used to check for long-run relationships. Here, each is assumed endogenous while the others are regarded as exogenous to test for a long-run relationship. The cointegration approach introduced by Pesaran and Shin (1995) and Pesaran et al. (1996b) is suitable for I(0), I(1) or both and yields a long-run approximation.

When there is only one long-run relationship which depends on the number of reduced-form equations between them, the ARDL model can separate between the dependent and independent variables. The main strength of ARDL is in the estimation of the number of cointegrating vectors when there is more than one vector. Besides, it can be possible to obtain an

ECM, by using the information of the long-term while allowing short-term movements in the context of the ARDL model. This leaves the ECM model with sufficient lags to most adequately model the data-generating process.

4.2.4 Autoregressive Distributed Lag Model Estimation

The ARDL model uses bound testing to assess long-term relationships between variables. If cointegration is found, the model can estimate both short and long-term dynamics. For the short-run and long-run analyses, this equation can be used to estimate the impact on the dependent variable (GDP per capita). The econometric framework of this study is outlined as follows. Long-run equation:

$$GDP_t = \alpha + \sum_{i=0}^{q} \gamma_j X_{t-i} + \epsilon_t$$

Short-run equation (ECM)

$$\Delta GDP_t = \alpha + \sum_{i=1}^{P} \beta_i \Delta GDP_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta X_{t-j} + \lambda EC_{t-1} + \epsilon t$$

Where:

- Δ indicates the first difference.
- EC_{t-1} is the measure of the adjustment of the present value with the long-run trend.

The next chapter will discuss the outcomes and research from the analysis conducted using econometric methods and models.

5. Results and Discussions

5.1 Descriptive Statistics

The summary statistic for the key variables in the entire sample range of 1986 to 2020 is presented in Table (2) below. A log transformation can help to reduce skewness and create a more symmetrical distribution of variables, which is advantageous for statistical modeling and inference. Transforming variables into their logarithmic form in time series analysis helps stabilize variance and normalize the data, which is essential for many analysis methods. These transformations enhance the performance of forecasting models, stabilizing variance and normalizing the data, and resulting in more accurate predictions. The logarithmic transformations of the data of interest are summarized in Table 2 through descriptive statistics.

Table 2. Summary Statistics of the variables

Variable	Mean	Std.Dev.	Variance	Skewness	Kurtosis	Observation
LGDP	5.58161	1.268291	1.608562	0.01369	1.55724	35
LDCB	2.05959	0.674432	0.454859	0.43051	2.2183	35
LLL	3.47494	0.343684	0.118119	0.2739	2.52281	35
LBD	2.72511	0.604841	0.365833	0.63938	2.40965	35
LFDI	1.02618	1.167937	1.364076	-3.55771	18.2365	35
LINF	2.50548	0.894325	0.799817	-0.22719	1.65532	35

Source: Complied with Stata 18

5.2 Econometric Methodology

The research will employ econometric estimation to establish the existence of a connection and correlation in the dataset between certain variables.

5.2.1 Correlation Coefficients

Table 3. The correlation Coefficients

	GDP	DCB	LL	BD	FDI	INF
GDP	1					
DCB	0.7191	1				
LL	0.6027	0.9267	1			
BD	0.7889	0.9745	0.9368	1		
FDI	0.0068	0.1914	0.1947	0.0876	1	
INF	-0.6819	-0.4306	-0.3631	-0.4942	0.0009	1

Source: Complied with Stata 18

The table (3) shows the regression coefficients for the linear regression model of among variables. The strongest positive relationships are found between private sector credit by banks and bank deposits (r = 0.9745), and between liquidity liabilities and bank deposits (r = 0.9368). These correlations suggest that as credit by banks alongside the liquid liabilities rise, the bank deposit tends to increase. This analysis indicates that domestic financial factors such as domestic credit, liquid liabilities, and bank deposits are strongly interconnected, and together they impact GDP, while FDI and inflation exhibit distinct behaviors within this dataset.

On the other side, the results show negative and quite strong relationships between GDP and inflation (-0.6819) respectively. However, it should be realized that the correlation coefficient is valid only to measure how much two variables are related to each other or how far one variable change necessarily results in change in the other through some kind of cause-effect relationship.

5.2.2 Test for Unit Root and Order of Integration

From unit root tests summarized in Table (4), four variables, log GDP, log DCB, log LL, and log BD, are non-stationary in their level but stationary in the first difference (I(1)), (ΔLGDP, ΔLDCB, ΔLLL, ΔLBD). The order of integration for LFDI and LINF is integrated into their level (I(0)), which implies that they are stationary in levels and do not need to take the first difference to be stationary.

The ARDL model comes in combination with the bounds testing procedure to test the existence of cointegration (a long-run relationship) between the variables. By confirming stationarity through unit root tests, analysts can have more confidence in the reliability of their forecasts and predictions. In econometric analysis, unit root tests are crucial for ensuring the validity of statistical inferences and policy implications drawn from time series data, such as cointegration tests and modeling.

Table 4. Unit Root Test Result with Log Form

Variables	Test Statistic	Critical Value at 1%	Critical Value at 5%	Critical Value at 10%	P.Value	Order of Integration
LGDP	-4.826	-3.689	-2.975	-2.619	0.0000	I(1)
LDCB	-4.46	-3.689	-2.975	-2.619	0.0002	I(1)
LLL	-4.625	-3.689	-2.975	-2.619	0.0001	I(1)
LBD	-4.674	-3.689	-2.975	-2.619	0.0001	I(1)
LFDI	-10.22	-3.689	-2.975	-2.619	0.0000	I(0)
LINF	-3.066	-3.689	-2.975	-2.619	0.0292	I(0)

Source: Complied with Stata 18

5.2.3 Criteria for Selecting Lag Order

Table (5) presents the operational and appropriate statistical performance of different lag order selection criteria. These criteria are useful in determining the optimal lag order depending on one of the following statistical measures. The AIC prefers a model that best fits the data, HQIC corrects for model complexity, and SBIC corrects for complexity even more. The results of this study show that the SBIC indicates that one lag is adequate while the LR test, AIC, and HQIC indicate that the best choice is four lag values. This selection is important in that it allows the model to identify appropriate and dynamic interactions in and between the variables while at the same time not making the model too complex. Consequently, the study concludes that the fourth lag is the most theoretically suitable measure.

Table 5. Criteria for Selection Lag Result

Lag No.	Log Lag	L.R	D.F	F.P.E	A.I.C	H.Q.I.C	S.B.I.C
0	-34.0132	-	-	8.50E-06	2.51698	2.59237	2.74827
1	121.564	311.15	25	1.90E-09	-5.90734	-5.45497	-4.51961*
2	138.31	33.493	25	3.70E-09	-5.37485	-4.54552	-2.83068
3	189.155	101.69	25	1.00E-09	-7.04225	-5.83594	-3.34164
4	241.741	105.17*	25	4.4e-10*	-8.82199*	-7.23871*	-3.96494

*Lag selection (optimal)

Source: Complied with Stata 18

5.2.4 Bound Test (Long-Term Relationship)

The study employs the ARDL bounds test developed by Pesaran, Shin, and Smith (2001) that results in evidence of the existence of an equilibrium relationship amongst variables in a time series context, especially where the variables are first difference stationary I(0) or integrated I(1). If the test accepts the null hypothesis, this means that there is no long-run relationship between the variables. This analysis rejected the null hypothesis with significant probability, showing that the F-statistic (9823.125) is greater than the tabulated values of 90%. Therefore, there has a long-term relationship between variables. Table 6 explains the estimated result of coefficients in the long run of the ARDL model with an optimal lag is (4,4,4,4,4,4).

Table 6. Long run cointegration Result

Variables	Coefficient	Std. Error	t-Statistic	Prob.
LDCB	1.09469	0.011443	95.66	0.007
LLL	-4.529033	0.032647	-138.73	0.005
LBD	2.491143	0.012535	198.74	0.003
LFDI	0.1174636	0.011767	9.98	0.064
LINF	-1.089666	0.009516	-114.5	0.006
Constant	-16.38482	0.192072	-85.31	0.007

Source: Complied with Stata 18

The estimations reveal that the long-run coefficient equal to 1,094,7 means a positive effect for GDP per capita with the p-value 0.007. On the other hand, the coefficient for liquid liabilities is -4.5290, indicating that the current hypothesis of negative affectation where an increase in liquid liabilities reduces the GDP per capita. For bank deposits, the coefficient is 2.4911 and shows a positive contribution to GDP per capita. For FDI, the coefficient 0.1175 is positive, but not significant at 5% (P = 0.064) which expresses weak or no correlation with GDP per capita in terms of the long-run in this model. Last, it is inflation which stands at -1.0897 and this finds that inflation has a negative effect on the GDP.

Overall, these findings imply that where sustainable economic growth is the goal, it is imperative for policymakers to especially on the quality rather than the quantity of developments in the financial system by encouraging credit provided by domestic banking systems while controlling the level of liquid liabilities. Also, keeping inflation rates low and more particularly, inflation rate volatility should be another goal. Therefore, the enhancement of banking, solving

financial problems, and developing the culture of saving are immensely important for the further development of Myanmar's economy.

5.2.5 Short-Run Relationship (Error Correction Model)

Table (7) presents the results of the short-run analysis of variables with the Error Correction Model using the lagged values of the variable containing GDP and other lagged variables. The model operates with data from four years ago, to explain the present. The estimated negative signs of the lagged differences of GDP per capita (L1D., L2D., L3D.) imply that if GDP per capita was not following a trend in the previous periods, then these discrepancies negatively affect the present discrepancies from the trend. In other words, current values of GDP per capita above or below the expected trend in previous periods also lead to an increase in the difference in GDP per capita from a trend value or further reduction of this difference from a trend value.

The domestic credit to the private sector that is provided by banks has shown short-term patterns of interacting with GDP per capita. The first difference, D1, which is the level of current GDP has a positive effect on GDP per capita in the short run. Nevertheless, opposite effects can be observed depending on the moment and some lagged effects are negative given by the domestic credit. The sign and symbol for lagged differences (LD) is negative – 1.17 with p – 0.02 which suggests that while credit by banks to the private sector has been beneficial for current GDP, past changes have a direct opposite and slightly more dramatic effect on GDP growth in the subsequent quarter. This implies that although domestic credit may be associated with a rise in GDP per capita in the initial periods, effects transition to being less favorable or even negative, in subsequent periods.

Liquid liabilities have an unpredictable but relatively short-term similar but significantly negative impact on the GDP per capita. This implies that any changes in the liquid forms of liabilities (Cash or easily accessible assets) are likely to reduce the GDP per capita, at least in the short run. Also, it could be appreciated that for different periods, the influence of the liquid liabilities can be different, and the assessment of their role may include the consideration of the different time lags.

This paper also found that bank deposits have a positive effect on GDP per capita in the short-run though the impacts may differ over time. FDI on GDP per capita is fit by sine wave this means that it has different periods where it goes negative, this indicates the fact that FDI may have unpredictable impacts. Inflation counteracts GDP in the short run and aggregate level, similar to its effects on the aggregate level in the long run.

The model indicates that the past value of GDP per capita, domestic credit, bank deposits, and inflation causally dominate the current levels of GDP per capita. Liquid liabilities have a negative effect on GDP per capita, while FDI has a positive but less consistent influence. All variables' effects differ in the short run with the time lag, and some of the lagged variables result in negative values.

The overall result discusses that this has an effect of raising the deposits from which funds for investment and consumption are available in the case of Myanmar in the short-term situation. Exactly as domestic credit, additional financing of economic activities also has a positively related GDP per capita. However, the increase in liquid liabilities is generally inimical to the GDP per capita; this arises from either efficiency or stability problems in the financial sector.

Table 7. The result of Short-run Model Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	-3.694423	0.027983	-132.03	0.005
LDCB	-1.171746	0.037155	-31.54	0.020
LLL	-3.199913	0.046028	-69.52	0.009
LBD	3.368512	0.047821	70.44	0.009
LFDI	-0.153539	0.009248	-16.6	0.038
LINF	-0.954988	0.023225	-41.12	0.015

Source: Complied with Stata 18

5.2.6 Diagnostic Evaluation

Several diagnostic tests are run when carrying out an ARDL analysis to provide valid conclusions about an economy based on the phenomenon of cointegration. These tests then tend to cover the presence of autocorrelation, non-constant variance, normality of residuals, as well as model stability. Table (8), tests for heteroscedasticity with the null hypothesis, show that the data are homoscedastic (possess constant variance). Hence obtained p-values are greater than 0.05, therefore we are not able to reject the null hypothesis. This indicates that there is no heteroskedasticity in the data we have analyzed. There is also a breakdown of the test results by individual aspects such as heteroskedasticity, skewness, and kurtosis among others but since the p-values are all greater than 0.05, all of which indicate no significant issues since the p-values are all above 0.05.

Table 8. Cameron & Trivedi's decomposition of the IM-test

	chi2	df	p
Heteroskedasticity	31.00	30	0.4154
Skewness	25.97	29	0.6273
Kurtosis	1.58	1	0.2088

Source: Complied with Stata 18

Ensuring normality is important for the reliability of confidence intervals and hypothesis tests, especially in small samples. This study employs the Skewness test, and Kurtosis test to conduct the normality test. The null hypothesis is that the residuals are normally distributed. The residuals are close to normally distributed, but there's weak evidence of deviation from normality. With a joint p-value of **0.0685**, which is slightly above 0.05, there is weak evidence to reject the null hypothesis. Thus, the residuals are close to being normally distributed.

6. Conclusion and Recommendation

The results of this empirical research are a beneficial resource that impacts on economic growth in Myanmar not only short-term but also long-term. The results show that as one of the important variables for banking development, private sector credit provided by banks has a long-run and short-run effect on GDP per capita. In the medium term, however, these effects reverse to become negative suggesting that while there is an initial beneficial impact of a rise in credit on economic activity over a longer horizon, it could prove detrimental by creating distortions or imbalances within the financial system. Still, it has an overall positive long-term effect.

In addition, bank deposits are highly correlated with GDP per capita which means that promoting savings generates to positive influence on both short and long-run economic growth. By contrast, the impact of increasing liquid liabilities on GDP per capita causes reduced economic growth, temporally due to irrelevant or instability in the short term and generically maybe ever.

While FDI is correlated to the gross domestic product per capita, it does not prove useful within this model, most likely due to constraints in terms of FDI considerations designated for application in this investigation.

Last, the negative and statistically significant coefficient of inflation confirms that high inflation levels are prejudicial to the volume of per capita GDP. Therefore, it is clear that the price level is helpful in the sustainable economic growth of this country. Hence, there is a need for policymakers to maintain price stability.

Overall, according to this paper, the banking industry is an essential sector to well perform in economic growth. Achieving and maintaining the progress of the banking system is essential

for economic growth. It brings out the importance of inflation concerning economic growth and maintaining stable macroeconomic conditions, thereby safeguarding economic growth and price stability. Moreover, policymakers should strive to increase the efficiency of the banking sector, especially through proper control of credit creation and management of liquidity liabilities. Further, controlling and maintaining the inflation rate will assist Myanmar's economy in stabilizing progress in the long run.

References

Ahmed, S. M., & Ansari, M. I. (1998). Financial sector development and economic growth: The South-Asian experience. *Journal of Asian Economics*, *9*(3), 503-517.

Awdeh, A. (2012). Banking sector development and economic growth in Lebanon. *International Research Journal of Finance and Economics*, *100*(1), 54-62.

http://www.internationalresearchjournaloffinanceandeconomics.com

Alfara, M. (2012). *The role of the banking sector in financing the Palestinian economic development (1995–2011)* (Doctoral dissertation, Islamic University).

Abubakar, A., & Gani, I. M. (2013). Impact of banking sector development on economic growth: Another look at the evidence from Nigeria. *Journal of Business Management & Social Sciences Research*, *2*(4), 47-57.

Ayadi, R., Arbak, E., Naceur, S. B., & De Groen, W. P. (2015). *Financial development, bank efficiency, and economic growth across the Mediterranean* (pp. 219-233). Springer International Publishing.

Abusharbeh, M. T. (2017). The impact of banking sector development on economic growth: Empirical analysis from Palestinian economy. *Journal of Emerging Issues in Economics, Finance & Banking*, *6*(2).

Aluko, O. A., & Ajayi, M. A. (2018). Determinants of banking sector development: Evidence from Sub-Saharan African countries. *Borsa Istanbul Review*, *18*(2), 122-139.

Berglof, E., & Bolton, P. (2002). The great divide and beyond: Financial architecture in transition. *Journal of Economic Perspectives*, *16*(1), 77-100.

Burzynska, K. (2009). Financial development and economic growth: The case of Chinese banking sector. (Master thesis, Lund University).

Ductor, L., & Grechyna, D. (2015). Financial development, real sector, and economic growth. *International Review of Economics & Finance*, *37*, 393-405.

Fadare, S. O. (2010). Recent banking sector reforms and economic growth in Nigeria. Middle Eastern finance and economics. *Journal of Economics*, *14*(3), 20-45.

Ho, S. Y., & Odhiambo, N. M. (2013). Banking sector development and economic growth in Hong Kong: An empirical investigation. *International Business & Economics Research Journal (IBER)*, *12*(5), 519-532.

Krkoska, L. (2001). Assessing macroeconomic vulnerability in central Europe. *Post-Communist Economies*, *13*(1), 41-55.

Kaya, H. D. (2020). The depth of the financial system: A comparison of developed and less developed countries.

LE, T. T. H., LE, T. D., TRAN, T. D., DUONG, Q. N., DAO, L. K. O., & DO, T. T. N. (2021). Banking sector depth and economic growth: Empirical evidence from Vietnam. *The Journal of Asian Finance, Economics and Business*, *8*(3), 751-761.

Moshirian, F., & Wu, Q. (2012). Banking industry volatility and economic growth. *Research in International Business and Finance*, *26*(3), 428-442.

Mhadhbi, K., Terzi, C., & Bouchrika, A. (2020). Banking sector development and economic growth in developing countries: A bootstrap panel Granger cause analysis. *Empirical Economics*, *58*, 2817-2836.

Mekango, S. (2021). *Banking sectors development and economic growth in Ethiopia: Time series analysis* (Doctoral dissertation, St. Mary's University).

Ndlovu, G. (2013). Financial sector development and economic growth: Evidence from Zimbabwe. *International Journal of Economics and Financial Issues*, *3*(2), 435-446.

https://dergipark.org.tr/en/download/article-file/362780 (dergipark.org.tr)

Petkovski, M., & Kjosevski, J. (2014). Does banking sector development promote economic growth? An empirical analysis for selected countries in Central and South Eastern Europe. *Economic Research*, *27*(1), 55-66.

Pradhan, R. P., Arvin, M. B., Hall, J. H., & Bahmani, S. (2014). Causal nexus between economic growth, banking sector development, stock market development, and other macroeconomic variables: The case of ASEAN countries. *Review of Financial Economics*, *23*(4), 155-173.

Qamruzzaman, M., & Jianguo, W. (2018). Investigation of the asymmetric relationship between financial innovation, banking sector development, and economic growth. *Quantitative Finance and Economics*, *2*(4), 952-980.

http://www.aimspress.com/journal/QFE

Sumaira, B. R., & Bibi, R. (2022). Banking sector development and economic growth in south Asian countries: dynamic panel data analysis. *J Environ Sci Econ*, *1*(1), 52-57.

Tripathy, S., & Pradhan, R. P. (2014). Banking sector development and economic growth in India. *Global Business Review*, *15*(4), 767-776.

https://doi.org/10.1177/0972150914543421

The World Bank. (2022). *Myanmar Financial Sector Reforms: Policy Note*. https://elibrary.worldbank.org/doi/epdf/

Wijesinghe, M. D. J. W., & Dulanjani, P. (2022). Banking Sector Development and Economic Growth in Sri Lanka: An Econometric Analysis. *South Asian Journal of Finance*, *2*(1).

Yu, H., & Gan, P. T. (2010). The determinants of banking sector development: Malaysian experience. *International Research Journal of Finance and Economics*, *35*(1), 34-41.