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ABSTRACT
of the dissertation for the degree of Doctor of Philosophy

THE FINANCIAL SECTOR DEVELOPMENT AND ITS IMPACT ON ECONOMIC GROWTH IN AFRICAN COUNTRIES

Speciality: 5308.01 – General Economics

Field of science: Economic sciences

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GENERAL CHARACTERISTICS OF THE WORK

Relevance and degree of elaboration of the topic. Financial development, encompassing the growth and enhancement of financial institutions, markets, and instruments, is widely acknowledged as a crucial factor for economic growth and development.

Several Literatures documented the importance of financial development on promoting economic growth and development through reducing information and transaction costs, promoting investment in efficient entrepreneurial activities, and facilitating the efficient flow of funds. However, the empirical evidence on the relationship between financial development and economic growth remains an open question debated amongst scholars in the field of finance research.

The first perspective documents a positive association, suggesting that a well-functioning financial system efficiently allocates capital, promotes savings and investment, enhances risk management, and fosters innovation. An opposing perspective demonstrates negative effects, implying financial development may incite instability, rent seeking and misallocation. A third perspective postulates the relationship as non-linear, dependent on factors like development level, institutional quality, and openness. Specifically, the impacts of financial development on growth may vary across dimensions of development, regions, and degrees of financial inclusion, and a holistic consideration of moderating these factors are needed to clarify the effects between these macroeconomic variables.

Despite the growing attention given to empirical research on finance nexus economic growth in African economies, there is still a lack of comprehensive exploration, and the findings remain inconclusive. This indicates the need for further investigations that address the limitations of previous research work.

On the other hand, Africa has made a significant stride in improving financial inclusion and embracing FinTech application systems, despite historically lagging behind other developing nations in terms of its financial system development for the last two decades.

In addition, following the implementation of economic policy

reforms aligned with the achievement of the Millennium Development Goals agenda 2030, African economies experienced significant growth with between 2000 to 2020, while growth varies across the sectors. These significant transformations observed in both the financial and real sectors of the continent since the turn of the millennium highlight the necessity of investigating their interrelationships over the past two decades.

In conclusion, the lack of comprehensive exploration and inconclusive findings regarding the relationship between finance and economic growth in Africa, tied with significant transformations observed in both the financial and economic sectors on the continent since the early 2000s, highlights the necessity for further research in this area.

The object of this dissertation is to examine the relationship between financial development and economic growth in African countries. **The subject** of the research covers examining the impacts of multidimensional aspects of financial development on aggregate economic growth and sectoral economic growth. The topic addresses the regional and income dynamics of the countries. Lastly, this study covers the impact of FinTech on financial inclusion and income in equalities in African countries.

The purpose of the research. The main goal of this dissertation is to comprehensively provides the multidimensional analysis on the finance- growth nexus in African countries to make an original contribution on the existing body of knowledge in the field of study and provide policy insight recommendations. The dissertation established the following crucial research objectives:

Identify the various aspects of financial development impact on overall economic growth and sectoral economic growth in African countries.

Assess the impact of remittances on economic growth in African countries.

Analyze the finance-growth nexus in African countries across different income levels and geographic locations.

Evaluate the impact of recent fintech developments on financial inclusion and income distributions in African economies.

Research methods. The dissertation utilized a comprehensive and diverse panel dataset consisting of 30 African countries over the study period spans from 2000 to 2020. The study sample encompasses countries from various regions, including North Africa, West Africa, East Africa, Central Africa, and Southern Africa. Additionally, the study ensured income level diversity by including countries classified as lower, lower middle, and upper middle-income levels. The selection of sampled countries for this research study was based on the availability of complete data for the variables of interest throughout the study period to ensure the reliability and accuracy of the study result analysis. The dissertation data collection relied on reputable secondary data sources.

Basic provisions for defense:

Financial development, encompassing the growth and enhancement of financial institutions, markets, and instruments, is widely acknowledged as a crucial factor for economic growth.

The existing empirical literature on the finance- economic growth nexus relationship has yielded mixed and inconclusive results. While some studies suggest a positive and significant relationship between financial development and economic growth, others find no significant relationship or even a negative association. The empirical literature evidence on the context of African economics also presents an inconclusive finding.

Besides the inconclusive empirical findings on the finance-economic growth relationship in African countries, the existing studies have several limitations. These limitations include a focus on old data, reliance on a single measure of financial development, lack of consideration for regional and income-level dynamics within the continent, neglect of sectoral economic growth, and inadequate control of appropriate variables. All of these limitations collectively affect the accurate evaluation and understanding of the relationship between financial development and economic growth in African countries.

Therefore, this study aims to investigate the comprehensive impact of multidimensional financial development on economic growth in African countries. Additionally, the study explores the other aspects of financial development such as the role of remittances in African

countries' economic growth taken in to consider the previous study limitation. Lastly, this study delves into the complex interplay between fintech, financial inclusion, and income inequalities in African countries.

This dissertation research is conducted based on a panel study of 30 sampled African countries over the study period between 2000 to 2020. To analyze the data, this research employs advanced multivariate regression techniques, including panel ARDL, pooled OLS, and structural equation modeling regression methods.

The dissertation findings demonstrated that the impacts of financial development on economic growth are dependent on the measure we used, and the effects varies across sectoral economic growth, income levels and the geographic locations of the countries. Further the dissertation results shows that remittance positively impact economic growth in African countries and this result is robust in across different income levels and geographic locations with the magnitude of the effects is varies. Lastly, the dissertation shows that Fintech significantly increase income inequalities and financial inclusion in African countries. However, fintech decrease income inequalities through enhancing financial inclusions in African countries.

Finally, the dissertation study result recommends to policy makers to tailored policies with financial development measures, sectoral economic growth perspectives, considering the income levels and the regional dynamics of the countries. Make smooth and less costly to the transfer methods of remittances. Use easy FinTech application system that are accessible for every community to enhance financial inclusion.

Scientific novelty of the research. The scientific novelty of this dissertation is discussed as follows:

1. The study utilized the most recent data to analyze the relationship between finance and economic growth.

2. The study utilized a comprehensive set of multidimensional financial development proxies to examine the intricate relationship between finance and economic growth in African countries.

3. This study breaks new ground by investigating the relationship between finance and economic growth, adopting a sectoral economic growth perspective.

4. The study considers the regional and income level outlooks of the sampled countries.

5. This study presents novel empirical investigations that examine the impact of the latest fintech development on financial inclusion and income inequalities in African countries.

The theoretical and practical significance of the research. This study aims to make novel theoretical and policy-oriented contributions to understanding the complex relationships between finance and economic growth within the under-researched African context. Specifically, it seeks to advance academic theory on the finance-growth nexus by providing much needed empirical evidence from African countries through examine the impacts of different aspects of financial development on economic growth, building a more nuanced perspective. Further, this study outcomes will inform essentials policy interventions by identifying priority areas for financial sector reforms and developing tailored policies to boost key sectors and foster inclusive development. Additionally, this research aims to lay the foundation for future scholarly work by facilitating more regional and country-specific analyses that account for diversity, stimulating deeper investigations into causal mechanisms and pathways linking finance and economies, and enabling comparative analyses based on Africa's income levels and geographic stratification. In conclusion, by addressing theoretical, empirical and policy gaps, this study strives to enhance academic understanding and support evidence-based interventions toward realizing Africa's sustainable development goals through optimized finance-economy linkages.

Approbation and application of the research. This research work has attained approval from the Khazar University Scientific Council while the main findings of the thesis were reviewed by the scientific supervisor and the department of "Graduate School of Economics and Business" at Khazar University. The dissertation work was applied for publication in a reputable journal, also some of the resources of the statements presented at the international and local scientific seminars, conferences, and symposiums.

The dissertation work was carried out at the graduate School of Economics and Business of Khazar University.

Structure and Overall Volume of the Dissertation: The structure of the dissertation consists of an introductory section (19,973 characters), Chapter I describes the definitions, measurements and theories of financial development and economic growth (32,113 characters); Chapter II - 10,394 characters; Chapter III is a literature review (60,574 characters); Chapter IV: presents the research methodology (13,765 characters); Chapter V: describes the analysis and results of the study (65,240 characters); Chapter VI: presents the final part of the study (22,598 characters); The total volume is 224,657 characters.

DISSERTATION CONTENTS

MAIN CONTENT OF THE RESEARCH

To the first chapter the study provides an analytical overview of the relationship between financial intermediation and economic growth. The study follows[1] and, for simplicity, assumes that production function depends only on the capital stock:

$$y_t = f(k_t) \qquad (1)$$

where y and k denote output and the stock of capital at time t, respectively. By differentiating equations (1) we obtain the rate of output growth as follows:

$$\widehat{y_t} = \frac{dk_t}{y_t} f'(k_t) \equiv s_t \emptyset_t \qquad (2)$$

where s_t is the product of the savings rate and $\emptyset_t$ is the marginal productivity of capital.

The second chapter of the dissertation: In this section, the study thoroughly reviews various empirical findings that highlight the study gap in the relationship between different dimensions of financial development and economic growth, remittance and economic growth, Fintech, financial inclusion, and income inequality in global and African countries context in detail.

The third chapter of the dissertation: In this chapter, the study provides an overview of the research methodology, sample size, and data sources employed. To accomplish the study objectives, a comprehensive and diverse panel dataset comprising 30 African countries was utilized. The study period spans from 2000 to 2020, ensuring a broad temporal scope. The selection of countries for the study is based on the availability of complete data for the variables of interest throughout the study period, ensuring the reliability and accuracy of the study's result analysis. The study obtained economic growth and other macroeconomic variables from the World Development Indicators database, while financial development indicators were sourced from the Global Financial Development Indicator Database. The collected data is carried out for unit root, co-integration, and Husman tests to assess the suitability of the study for

[1] *De Gregorio and Guidotti. Financial development and economic growth, World Development (1995). https://doi.org/10.1016/0305-750X(94)00132-I.*

the chosen econometrics model. The dissertation utilized panel ARD, Pooled OLS, and structural equation regression techniques to estimate the relationship among the study variables.

The research defines the following regression model.

$$RGDPG_{i,t}=\sum_{j=1}^{p}\sigma_{i,j}\,RGDPG_{i,t-j}+\sum_{j=0}^{q}\beta 1_{i,j}\,Domostic\ credit_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 2_{i,j}\,Liquid\ Liability_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,BNIM_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Bank\ Z\ Score\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Domestic\ Saving_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Foreign\ Direct\ Investment_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 5_{i,j}\,Aid_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 8_{i,j}\,Consumer\ Price\ Index_{i,t}\text{-}j+\varphi_i+\varepsilon_{i,t} \quad (3)$$

$$AGRI_{i,t}=\sum_{j=1}^{p}\sigma_{i,j}\,AGRI_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 1_{i,j}\,Domostic\ credit_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 2_{i,j}\,Liquid\ Liability_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,BNIM_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Bank\ Z\ Score\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Domestic\ Saving_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Foreign\ Direct\ Investment_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 5_{i,j}\,Aid_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 8_{i,j}\,Consumer\ Price\ Index_{i,t}\text{-}j+\varphi_i+\varepsilon_{i,t} \quad (4)$$

$$MANFU_{i,t}=\sum_{j=1}^{p}\sigma_{i,j}\,MANFU_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 1_{i,j}\,Domostic\ credit_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 2_{i,j}\,Liquid\ Liability_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,BNM_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Bank\ Z\ Score\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Domestic\ Saving_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Foreign\ Direct\ Investment_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 5_{i,j}\,Aid_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 8_{i,j}\,Consumer\ Price\ Index_{i,t}\text{-}j+\varphi_i+\varepsilon_{i,t} \quad (5)$$

$$TRADE_{i,t}=\sum_{j=1}^{p}\sigma_{i,j}\,TRADE_{i,t}\text{-}j+\sum_{j=0}^{q}\beta 1_{i,j}\,Domostic\ credit_{I,t}\text{-}j+\sum_{j=0}^{q}\beta 2_{i,j}\,Liquid\ Liability_{I,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,BNIM_{I,t}\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Bank\ Z\ Score\text{-}j+\sum_{j=0}^{q}\beta 4_{i,j}\,Domestic\ Saving_{I,t}\text{-}j$$

$$+\sum_{j=0}^{q} \beta 4_{i,j}\ \text{Foreign Direct Investment}_{I,t}\text{-}j+\sum_{j=0}^{q} \beta 5_{i,j}\ \text{Aid}_{I,t}\text{-}j$$

$$+\sum_{j=0}^{q} \beta 8_{i,j}\ \text{Consumer Price Index}_{I,t}\text{-}j+\varphi_i+\varepsilon_{i,t} \qquad (6)$$

The dependent variables are economic growth proxied by the annual growth rate of real GDP, annual growth rate of agriculture and natural resources as a share of GDP (AGRI Growth), annual growth of manufacturing as a share of GDP (MANFU growth) and Trade as a share of GDP (TRADE Growth). whereas the explanatory variables are Domestic credit provided to private sector scaled by GDP as a proxy variable of financial deepening aspects, Liquid liabilities scaled by GDP as a measure of the liquidity aspects of financial development, Bank Net interest margin used as a measure of financial efficiency, Bank -Z- score as a proxy variables of financial stability, foreign direct investment scaled by GDP, Aid measured by net ODA received scaled by GDP , inflation proxied by consumer price index.

Where, $\sigma_{i,j}$ is the coefficient of lagged economic growth, $\beta_{i,j}$is the coefficient of the regressors. i=1, 2……, N: t=1, 2……., T: p q is the optima lag order: $\varepsilon_{i,t}$is the error term.

We specify the error correction model for the re-parameterized panel ARDL (p, q, q . . . . . q) as follows.

$$\Delta \text{RGDPG}_{i,t}= \theta i(Y_{i,t}\text{-}1\text{-}\gamma_i X_{i,t})+\sum_{j=1}^{p-1} \sigma_i\ \Delta \text{RGDPG}_{i,t}\text{-}j+\sum_{j=0}^{q-1} \omega_i$$

$$\Delta X_{i,t}\text{-}j+\varphi_i+\varepsilon_{it} \qquad (7)$$

$$\Delta \text{AGRI}_{I,t}= \theta i(Y_{i,t}\text{-}1\text{-}\gamma_i X_{i,t})+\sum_{j=1}^{p-1} \sigma_i\ \Delta \text{AGRI}_{i,t}\text{-}j+\sum_{j=0}^{q-1} \omega_i$$

$$\Delta X_{i,t}\text{-}j+\varphi_i+\varepsilon_{it} \qquad (8)$$

$$\Delta \text{MANFU}_{i,t}= \theta i(Y_{i,t}\text{-}1\text{-}\gamma_i X_{i,t})+\sum_{j=1}^{p-1} \sigma_i\ \Delta \text{MANFU}_{i,t}\text{-}j+\sum_{j=0}^{q-1} \omega_i$$

$$\Delta X_{i,t}\text{-}j+\varphi_i+\varepsilon_{it} \qquad (9)$$

$$\Delta \text{TRADE}_{i,t}= \theta i(Y_{i,t}\text{-}1\text{-}\gamma_i X_{i,t})+\sum_{j=1}^{p-1} \sigma_i\ \Delta \text{TRADE}_{i,t}\text{-}j+\sum_{j=0}^{q-1} \omega_i$$

$$\Delta X_{i,t}\text{-}j+\varphi_i+\varepsilon_{it} \qquad (10)$$

Where; X is a set of explanatory variables θi represents the

coefficient of the speed of adjustment to the long-run status; γi is the vector of long-run relationships, $Y_{i,t} - 1 - \gamma_i X_{i,t}$ is the error correction term; σi and ωi are short-run dynamic coefficients, and φi is the fixed effect.

Likewise, the previous section, after testing the stationarity and cointegration of the variables the study also further refines the model to analyze the long-term and short-term connections between remittances and economic growth in African countries as follows.

$$RGDPG_{i,t} = \sum_{j=1}^{p} \sigma_{i,j} RGDPG_{i,t}\text{-}j + \sum_{j=0}^{q} \beta_{i,j} X_{i,t}\text{-}j + \varphi_i + \varepsilon_{i,t} \quad (11)$$

where, X is a set of explanatories ($Remitt$, FDI, Aid, EXC, openness, DS and M2); $\sigma_{i,j}$ is the coefficient of lagged economic growth, $\beta_{i,j}$is the coefficient of the regressors. i=1, 2……, N: t=1, 2……., T: p q is the optima lag order: $\varepsilon_{i,t}$is the error term. The study specifies the error correction model for the re-parameterized panel ARDL (p, q, q . . . . . q) as follows:

$$\Delta RGDPG_{i,t} = \theta i(Y_{i,t}\text{-}1\text{-}\gamma_i X_{i,t}) + \sum_{j=1}^{p-1} \sigma_i \ \Delta RGDPG_{i,t}\text{-}j + \sum_{j=0}^{q-1} \omega_i \ \Delta X_{i,t}\text{-}j + \varphi_i + \varepsilon_{it} \quad (12)$$

where; θi represents the coefficient of the speed of adjustment to the long-run status; γi is the vector of long-run relationships, $Y_{i,t} - 1 - \gamma_i X_{i,t}$ is the error correction term; σi and ωi are short-run dynamic coefficients, and φi is the fixed effect.

Finally, this research study employed the following two econometric models to investigate the causal relationship between FinTech, financial inclusion, and income inequality in African countries.

Econometric Model 1: Determining the Impact of FinTech and Financial Inclusion on Income Inequality

$$\text{Income inequality}_{i,t} = \alpha 0 + \alpha 1 \text{FinTech}_{i,t} + \alpha 2 FI_{i,t} + \alpha 3 \sum_{\infty=1}^{\infty} \rho X_{i,t} + \mu_{i,t} \quad (13)$$

Second to analyze the relationship between financial inclusion and FinTech, the study employed the following models

$$FI_{i,t} = \alpha 0 + \alpha 1 Fintech_{i,t} + \mu_{i,t} \quad (14)$$

Where, Income inequality is assessed through two primary measures: the Gini coefficient of disposable income and the Palma ratio. FinTech can be measured by the percentage of the population aged 15 and above who have sent or received money using digital payments within the past year. Financial inclusion (FI) is the accessibility and availability of financial services to individuals and businesses measured by the percentage of the population aged 15 and above who have account ownership, savings, and borrowing. X represents control variables.

After confirming the suitability of the research data through a diagnostic test, the following research findings are presented. The analysis section is divided into two three main parts.

Financial development and economic growth in Africa: In this section the study conducted the panel ARDL analyses to examine the long-run and short-run impacts of various financial development dimensions on economic growth in the entire African countries, through controlling for other macroeconomic factors. The optimal lag length was one year according to the SIC log selection method.

As the result shown in Table 1 in the long run model, the study finding demonstrated that the financial deepening measured by domestic credit's provided to private sector has a positive but insignificant impact on economic growth in African countries. The result also confirmed that the financial efficiency aspects of financial development, as measured by the bank net interest margin, significantly boosted growth. However, the liquid liabilities and stability (bank Z-score) negatively significantly impacted growth, possibly because high liquidity and stability constrain credit expansion which hamstrings the real economy's access to adequate funding and financial services. In the short-run model, only the liquid liabilities notably diminished economic growth in African countries negatively. Whereas other financial development variables show an insignificant effect. To summarize, the study findings demonstrated that dimensional conditionality in financial development's long-run influence on African economies, with efficiency fostering but liquidity and stability hindering economic growth - underscoring the

importance of channeling financial resources productively to sustain economic development in the continent.

Table 1 Financial development and economic growth in Africa

Panel A: Long-run Equation		Panel B: Short- run Equation	
Variable ID	Coefficient	Variable	Coefficient
		COINTEQ01	-0.7833***
DCPs	0.0089	D(DCPs)	0.0659
LL	-0.0470***	D(LL)	-0.1957**
BNIM	0.2177**	D(BNIM)	-0.1483
BZS	-0.1531***	D(BZS)	0.2355
DS	0.0676***	D(DS)	0.2052***
FDI	0.4675***	D(FDI)	0.0281
AID	-0.0101***	D(AID)	0.0086
CPI	0.1418***	D(CPI)	-0.0846
		Constant	1.8171**

DCPs: Domestic Credit Provided to Private Sector scaled by GDP; LL: Liquid Liability scaled by GDP; BNIM: Bank Net Interest Margin; BZS: Bank Z Score; DS: Domestic Finance; FDI: Foreign Direct Investment; AID: Net Official Development Assistance (ODA) received per capita; CPI: Consumer Price Index.

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively.*

Source: authors computation using EViews 13 2024.

Further under this section, the study analyzes extends in different income levels and regional dynamics of African countries. The study findings indicate that financial development significantly supports economic growth primarily among Africa's middle-income nations. Low-income countries require structural reforms increasing inclusion while ensuring finance constructively mobilizes and allocates resources for value-creating development over the long-term - highlighting confirmation of intermediation theory's growth hypotheses at upper middle tiers contexts[2]

The regional dynamics analysis shows that domestic credit positively impacted long rung growth only in Southern Africa, signaling deeper markets most effectively intermediate resources there. Liquid liabilities negatively correlated with expansion in East, North, and South Africa,

[2] *Girma, A.G., Huseynov, F. Multidimensional analysis of finance-growth nexus in Africa: evidence from a panel ARDL model. J Econ Finan (2025). https://doi.org/10.1007/s12197-025-09712-2.*

implying excessive liquidity could overshadow credit provision in some regions. Financial efficiency negatively influenced growth in Central, East, and West Africa, yet positively in South Africa, indicating financial systems' efficiency differentially affects growth across regions. Bank-Z-score positively contributed to growth solely in Central Africa, while negative and significant in North, South, and West Africa. This suggests stability supports expansion contextually. Overall, only South Africa exhibited some positive association between financial development and growth across two dimensions. Notably, the findings highlight that ignoring regional divergences can overlook finance's varying growth impact across contexts.

This section of research study result also presents key findings on the impact of financial sector development on different sectoral economic growth in African economies. The results highlight the varying effects of financial sector development across sectoral levels. In Table 2 the study shows the effects of different indicators of financial sector development, such as depth, liquidity, efficiency, and stability, on agricultural sector growth. The findings demonstrated that there was an insignificant impact of financial development on the agricultural sector in both the long run and short run.

Table 2 Financial development and Agriculture

Panel A: Long-run Equation		Panel B: Short- run Equation	
Variable ID	Coefficient	Variable	Coefficient
		COINTEQ01	-1.1009***
DCPs	-0.039056	D(DCPs)	0.061191
LL	-0.042485	D(LL)	0.136271
BNIM	-0.160790	D(BNIM)	0.776707
BZS	0.042370	DBZS)	0.372327
DS	-0.001757	D(DS)	0.320837
FDI	0.110286***	D(FDI)	0.504878
AID	0.010662	D(AID)	0.005009
CPI	0.057251	D(CPI)	-0.160165
		Constant	6.157144***

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively.*
Source: authors computation using EViews 13 2024

This lack of impact can be attributed to the limited access to financial products and services for rural and agricultural households in African countries, despite efforts to develop the financial sector. Furthermore,

the dominance of commercial banking-based financial systems in African countries, which primarily support commercial activities rather than agricultural production, further hinders the agricultural sector's ability to access financial services and invest in technology.

Table 3 Financial development and manufacturing

Panel A: Long-run Equation		Panel B: Short- run Equation	
Variable ID	Coefficient	Variable	Coefficient
		COINTEQ01	-1.0016***
DCPs	0.025197*	D(DCPs)	-1.159533
LL	-0.015223	D(LL)	0.999502
BNIM	0.628831***	D(BNIM)	-0.335486
BZS	-0.106810***	DBZS)	-1.085259**
DS	0.103558***	D(DS)	-0.129037
FDI	0.547011***	D(FDI)	-0.557047
AID	-0.008003***	D(AID)	-0.023074
CPI	-0.091184**	D(CPI)	0.617433
		Constant	-0.544741

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively.*
Source: authors computation using EViews 13 2024

Further Table 3 shows how different dimensions of financial development affect the growth of the manufacturing sector in African countries. The findings reveal that the depth of financial development positively promotes the long-term growth of the manufacturing sector. However, the liquidity and stability aspects of financial development have a negative impact on the manufacturing sector's growth. Excessive liquidity and instability in the financial system can lead to misallocation of resources and uncertainty in investment decisions, hindering the growth prospects of the manufacturing sector.

Finally, the study investigates the relationship between financial development and trade sector growth in African countries. The analysis in Table 4 shows that the depth, liquidity, and efficiency of financial development have a robust positive association with long-term growth in the trade sector. A well-developed financial sector can enhance access to capital, facilitate international transactions, manage risks, encourage innovation, attract foreign investment, and amplify the

effects of trade-related reforms. However, no association was found between any financial development metric and short-run growth in all sectors of the economy in African countries.

Table 4 Financial development and trade

Panel A: Long-run Equation		Panel B: Short- run Equation	
Variable ID	Coefficient	Variable	Coefficient
		COINTEQ01	-0.2442**
DCPs	0.107311*	D(DCPs)	-0.131728
LL	0.652033***	D(LL)	0.375285*
BNIM	1.696956***	D(BNIM)	-0.115870
BZS	-0.325408	DBZS)	0.610413
DS	-0.509336***	D(DS)	0.112077
FDI	1.705340***	D(FDI)	0.165001
AID	0.021322	D(AID)	-0.018545
CPI	-0.042739	D(CPI)	0.329031**
		Constant	8.280992***

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively.*

Source: authors computation using EViews 13 2024

Financial inclusion plays a pivotal role in boosting long-run economic growth in African countries. The results also reveal that the impacts of financial inclusion on economic growth vary across income levels. Specifically, financial inclusion has a significant long-term positive effect on growth in low-income, negative in lower-middle-income, and insignificant in upper middle income African countries[3]

Remittance and Economic growth: This section of analysis presents the panel ARDL model estimation results of the relationship between remittances and economic growth in the entire African countries, Accordingly, the long run results in Table 5, shows that remittances have a positive impact, on economic growth in African countries over the long term. However, the short-run relationships are not statistically significant.

3 Girma, A. (2024). The Impact of Financial Inclusion and Stability on Economic Growth in African Countries. International Journal of Business and Economic Studies, 6(2), 69-81. https://doi.org/10.54821/uiecd.1471840.

Table 5 Remittance and economic growth

Long run model		Short run model	
Variables	Coefficient	Variables	Coefficient
		COINTEQ01	-0.772***
Remittances	0.6988***	D(Remittances)	-0.2242
FDI	0.1124**	D(FDI)	0.1026
Aid	-0.0044	D(Aid)	0.0075
Trade	0.0573***	D(Trade)	-0.0247
Saving	0.1066***	D(Saving)	0.0803
Broad Money	-0.0977***	D(Broad Money)	-0.1422**
		C	-2.0351***

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively. Source: authors computation using EViews 13 2024.*

In Table 6 the study shows that whether the geographic locations affect the relationship between remittances and economic growth in African countries. Accordingly, our long-term estimations models provide mixed results. Specifically, while remittances significantly boost the long run economic growth in Central Africa, North Africa, and East African countries slightly its impact on West and South African countries shows an insignificant impact. The short run model confirmed that the error correction terms indicate convergence to long run equilibrium across all regions in the short run. The study finds that while remittances negatively affect Western Africa countries economy in the short run; the impact in other regions shows insignificant.

Table 6 Remittances regional dynamics

Region	Central-Africa	East-Africa	North-Africa	South-Africa	Weast-Africa
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
			Long run model		
Remittances	52.719***	0.6702*	1.0974***	-0.1047	0.1644
FDI	0.0688	0.1454	0.5902***	0.0212	0.0128
Aid	0.0194**	0.0137	-0.0070	0.0094	-0.0139
Trade	0.1134**	0.0091	0.0308*	-0.0215	0.0015
Saving	-0.0448	-0.1063*	0.1764***	0.0767	0.2856***
Broad Money	0.0336	-0.238***	-0.0385***	-0.3999**	-0.0518
			Short run model		
COINTEQ01	-0.8254*	-0.955***	-0.9808***	-0.7156***	-0.7905
D(Remittance)	-16.4150	0.3986	0.0462	18.9561	-0.7437**
D(FDI)	-0.0720	0.2688	-0.6248**	0.3149	0.0347
D(Aid)	-0.0063	-0.0305	0.0101	0.0188	0.0156
D(Trade)	-0.0115	-0.0003	-0.0530	0.0402	0.0263
D(Saving)	0.0720	0.0241	-0.1861	-0.2364	0.2284
D (B. Money)	0.1423**	-0.2338	-0.2690**	-0.1149	-0.1440
C	-20.1776	7.4154***	-8.1145***	13.234***	-2.043***

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively.*

Source: authors computation using EViews 13 2024.

In Table 7, the study also shows the impact of remittances on economic growth across different income levels of African countries from 2000 to 2020. The study results demonstrated that remittances have a positive impact on economic growth in all income levels, but the magnitude of the effect varies. Lower-middle-income countries have the highest positive impact of remittances on economic growth, followed by lower-income countries and upper middle-income countries. In the short-run, the error correction terms are negative and significant, confirming convergence to long-run equilibrium.

Table 7 Remittance and economic growth Income Dynamics

Income level	Lower income countries	Lower-Middle income countries	Upper middle-income countries
Variable	Coefficient	Coefficient	Coefficient
	Long Run Model		
Remittances	0.5273***	1.0476***	0.6968**
FDI	0.1545	0.5814***	0.1759
Aid	-0.0339**	-0.0050	0.0129
Trade	0.0720**	0.0336**	0.0796**
Saving	0.0033	0.1676***	-0.2198**
Broad Money	-0.1377***	-0.0433***	-0.2610**
	Short Run Model		
COINTEQ01	-0.7972***	-0.7290***	-0.9245
D(Remittances)	0.0728	-0.1030	5.2666
D(FDI)	0.0393	0.0778	-0.1553
D(Aid)	0.0295*	-0.0184	0.0395
D(Trade)	-0.0695	-0.0319	0.0686
D(Saving)	0.2311*	-0.0718	0.0539
D (MS)	-0.0860	-0.2420**	-0.0773
C	0.8613	-4.8560***	14.8306

*Where ***, **, * stands for at the 1%, 5%, and 10% significance level respectively.*
Source: authors computation using EViews 13 2024.

Fintech, Financial inclusion, and Income inequality: In this section, Table 8 shows the effect of FinTech development on financial inclusion, and income inequality using a structural equation model. The study model in the structural equation model analysis passes the global fitness indices, and the model passed the fitness test. Accordingly, first, the study tests whether FinTech drives financial inclusion or not to see the indirect effect of FinTech on income inequality through financial inclusion. The regression results show that FinTech significantly and positively drives financial inclusion in Africa. Second, the study tests the indirect effects of FinTech on income inequality through financial inclusion. The regression analysis shows that FinTech helps to reduce income inequality in African countries by boosting financial inclusion. Furthermore, the direct relationship between FinTech and income inequality in African countries is tested using structural equation modeling. The results revealed in Table 8 show that FinTech increases income inequality (GINI and Palma ratio) at 1% and 5% significance levels, respectively.

On the other hand, in Table 8, the study shows the relationship between financial inclusion and income inequalities in African countries. The study results show that accounts and borrowing negatively affect income inequality, implying that in Africa, the recent expansion of financial inclusion benefits the poor and helps to narrow the income gap on the continent. While savings affect income inequality positively.

Table 8 structural equation model estimation

GINI	Estimate	PALMA ratio	Estimate
Account <--FinTech	0.974***	Account <--FinTech	0.974***
Saving <-- FinTech	0.44***	Saving <-- FinTech	0.44***
Borrow <--FinTech	0.496 ***	Borrow <-- FinTech	0.496 ***
GINI <-- FinTech	1.407 ***	Palma <-- FinTech	0.967 ***
GINI <-- account	-1.176 ***	Palma <-- account	-0.924 ***
GINI <-- saving	0.429 ***	Palma <-- saving	0.354 ***
			-0.12
GINI <-- borrowing	-0.223	Palma <-- borrowing	
GINI <-- trade	0.087	Palma <-- Govt exp	0.396***
GINI <-- inflation	0.077	Palma <-- inflation	0.113
GINI <-- Govt exp	0.259 ***	Palma <-- trade	-0.049
GINI <-- population	0.115	Palma <-- GDP	-0.014
GINI <-- education	0.29 ***	Palma <-- internet	-0.238***
GINI <-- GDP	0.093	Palma <-- mobile	0.068
GINI <-- internet	-0.323 ***	Palma <--population	0.047
GINI <-- mobile	0.015	Palma <-- education	0.161 **

V-ID	Total effect FinTech	Indirect effect FinTech	Variable	Total effect FinTech	Indirect effect FinTech
account	0.974	0	Account	0.974	0
Saving	0.44	0	Saving	0.44	0
Borrow	0.496	0	borrow	0.496	0
GINI	0.34	-1.067	Palma	0.164	-0.804

Source: Authors computation using AMOS SPSS 2024

Conclusion and recommendations:

The long-term model used to estimate the finance-economic growth nexus in African economies reveals that while higher financial efficiency substantially promotes economic growth, the liquidity and stability aspects significantly hinder it. It is possible that lack of appetite for risk taking slows credit expansion and negates the effects of financial deepening through loan growth. The study result demonstrated that the effect varies across different income levels and regional dynamics of countries. The study findings also show that the impact of financial sector development's influence varies by sectoral economic growth. Specifically, while financial development affects the long-term manufacturing and trade sector growth, its impact on agricultural sectors shows an insignificant effect. This difference perhaps stems from commercial banking systems dominating African finance development and exclusion of rural populations from services.

Remittances play a significant positive impact on the long run economic growth of African countries during the study period. Further the results confirm that remittances have a positive impact on economic growth across all income levels, although the magnitude of the effect varies.

In the last section, the study finding demonstrates that FinTech has a significantly positive effect on income inequalities in African countries. This highlights the potential of FinTech increasing income disparities in African countries. Further the findings shows that the impact of financial inclusion on income inequalities in African countries is conditional and varies depending on the measures of financial inclusion. Specifically, the study reveals that the account and borrow aspects of financial inclusion are associated with a reduction in income inequalities. On the other hand, the saving aspect of financial inclusion shows an increase in income inequalities in African economies. Moreover, the study highlights the importance of FinTech in enhancing financial inclusion in Africa. Finally, the study findings confirmed that financial inclusion plays a significant mediation role in the negative relationship between FinTech and income inequalities in African economies.

Recommendations presents valuable recommendations based on the findings of the study, aimed at policy makers, future researchers, and other stakeholders.

The finance- economic growth relationship study results indicate that the one-size-fits-all financial development policies may not be effective for increase growth - instead, policy alignments with region and income-specific relationships and contexts are essential to effectively harness financial sector reforms for equitable, sustainable African economic growth.

Furthermore, these study results suggest tailored reforms could better support agricultural productivity and development, like specialized agricultural and other investment banks. The findings of this study also implying to governments and policymakers in African countries to focus on expanding access to tailored financial products and services for rural communities and agricultural activities. This could be done through establishing agricultural and investment banks to provide funding, credit and risk management tools tailored to the needs of farmers and rural households.

Lastly, the results of the study suggest that governments and policymakers in African countries should follow tailored financial inclusion initiatives and reforms based on the specific dynamics, to expand access to financial services for the marginalized sections of their population. Finally, this section of study suggests future researchers consider more nuanced data sources and longer-term comparative analyses incorporating institutional and socio-cultural factors could generate novel insights in these areas of topics.

In the relationship between workers' remittances inflows and economic growth in African countries, the study result findings suggest for policy makers to implement policies and regulations that facilitate the smooth and cost-effective transfer of remittances. This includes promoting competition among remittance service providers, reducing transaction costs, and ensuring the security and transparency of remittance channels to increase the inflows of remittances.

Lastly, to further enrich understanding, future studies could explore remittances' interplay with additional economic and social metrics. Examining potential relationships with human capital

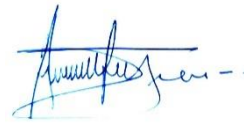
development indicators like education, health outcomes, and labor skills would offer insight into remittances' role in bolstering national productive capacity. Further, analyzing links to entrepreneurial activity and small business development at the local level could provide perspective on remittances' capacity to stimulate innovation and job creation.

In the study result of the relationship between FinTech, financial inclusion, and income inequality, the research findings reveal that FinTech has the potential to increase income gaps. Individuals who utilize FinTech services tend to experience greater economic benefits compared to those who do not. This highlights the importance of understanding the implications of using FinTech in enhancing economic advantages for the consumers. It is recommended that policymakers and regulators in African countries design policies that promote financial inclusion. This can be achieved by implementing an easy FinTech application system and launching simple, innovative formal financial services that are accessible to every household, regardless of their income, knowledge, or location. These measures can contribute to reducing the income inequality gap.

The main findings of the thesis the obtained conclusion and recommendations are reflected in the following published scientific works:

1. Girma A.G. The Causal Relationship between FinTech, Financial Inclusion, and Income Inequality in African Economies /Huseynov F.// Journal of Risk and Financial Management, – 2024, 17(1), – P. 2. https://doi.org/10.3390/jrfm17010002.
2. Girma A.G. The financial sector development and its impact on sectoral economic growth //African Journal of Business and Economic Research, – 2024,19(3), – P. 627-648. https://doi.org/10.31920/1750-4562/2024/v19n3a28.
3. Girma A.G. The Impact of Remittances on Economic Growth: Evidence from African countries // International Research Journal of Economics and Management Studies, –2024, 3 (8), –P. 482-486, 2024. https://doi.org/10.56472/25835238/IRJEMS-V3I8P157.
4. Girma, A.G. The Impact of Financial Inclusion and Stability on

Economic Growth in African Countries // International Journal of Business and Economic Studies, – 2024, 6(2), – P. 69-81. https://doi.org/10.54821/uiecd.1471840.
5. Girma A.G. The Role of Financial Development in Post-War Economic Growth. // Journal Of Economic Sciences: Theory and Practice, – 2023, 80 (2), – P. 14-27.
6. Girma AG. Financial literacy in Ethiopia: What has been studied and what has not been studied in a global context an overview // International Euro-Asia Congress on Scientific research and recent trends 9". Antalya – Turkey, – 2022, – P. 396-406.
7. Girma A.G. The role of financial technology development on reducing income inequalities in African countries // International scientific research congress dedicated to the 30th anniversary of Baku Eurasia university". Baku, Azerbaijan, – 2022, – P. 496.
8. Girma A.G. How Does Firm Specific and Macro-Economic Variables Affect Insurance Financial Performance? Evidence from Ethiopia //5. International Social Sciences and Innovation Congress". Ankara / Türkiye, – 2022, – P. 757.



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